



Southeast Transportation Study Final Report

Prepared for Seattle Department of Transportation by
The Underhill Company LLC in association with
Mirai Associates Inc
Nakano Associates LLC
PB America

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Acknowledgements

Mayor Gregory J. Nickels

Seattle Department of Transportation

Grace Crunican, Director
Susan Sanchez, Director, Policy and Planning Division
Tracy Krawczyk, Transportation Planning Manager
Sandra Woods, SETS Project Manager
Hannah McIntosh, Associate Transportation Planner

SETS Project Advisory Team

Seattle Department of Transportation

Barbara Gray, Policy, Planning and Major Projects
Trevor Partap, Traffic Management
John Marek, Traffic Management
Peter Lagerway, Traffic Management
Randy Wiger, Parking
Dawn Schellenberg, Public Involvement
Pamela Green, Public Involvement
Rob Gorman, Capital Projects
George Dragseth, Street Use
Calvin Chow, Transit
Jeff Bender, Transit
Ron Borowski, Freight
Tim Rood, GIS Analysis

Seattle Departments

Kenny Pittman, Office of Policy and Management
Mian Rice, Office of Policy and Management
Glen Harris, Department of Neighborhoods
Mike Podowski, Department of Planning & Development
Gary Schimek, Seattle Public Utilities
Gary Colburn, Seattle City Light
Maureen Kostyack, Office of Housing
Steve Johnson, Office of Economic Development
Sergeant Cynthia Granard, South Precinct, Seattle Police Department
Motriyo Keambiroiro, Seattle Police Department, Enforcement
Chris Partman, Seattle Police Department, Enforcement

Partner Agencies

Rob Fellows, King County Metro
Mike Williams, Sound Transit
Kamuron Gurol, WSDOT
Dave Anderson, Seattle School District

Core Community Team

Pete Lamb, Columbia City Business Association
Joseph Ayele, Ethiopian Business Association
Mar Murillo, Filipino Community of Seattle
Denise Gloster, Hillman City Business Association
Nancy Dulaney, Hillman City Business Association
Pamela Wrenn, Hillman City Neighborhood Alliance
Sara Valenta, HomeSight
Richard Ranhofer, Lakewood Seward Park Neighborhood Association
Pat Murakami, Mt. Baker Community Club
Dick Burkhart, Othello Station Community Advisory Board
Gregory Davis, Rainier Beach Coalition for Community Empowerment
Dawn Tryborn, Rainier Beach Merchants Association
Seanna Jordan, Rainier Beach Neighborhood 2014
Jeremy Valenta, Rainier/Othello Safety Association
Rob Mohn, Rainier Valley Chamber of Commerce
Thao Tran, Rainier Valley Community Development Fund
Someireh Amirfaiz, Refugee Women's Alliance
Rodney Rutherford, Seattle Bicycle Advisory Board
Ed Rose, Seattle Housing Authority
Molly McCarthy, Seattle Pedestrian Advisory Board
Ahmed Jama, Somali Community Services Coalition
Warren Yee, South Beacon Hill Neighborhood Assoc.
Eric Steinwinder, South Lake Improvement Group
Leslie Miller, Southeast District Council
Scott Barkan, Southeast Effective Development
Cherie Sigrist, Southeast Seattle Senior Center
Quang H. Nguyen, Vietnamese American Economic Development Association

Consultant Team

Jeanne Krikawa, The Underhill Company, LLC
Mary Jo Porter, The Underhill Company, LLC
Tom Noguchi, Mirai Transportation Planning and Engineering
Howard Wu, Mirai Transportation Planning and Engineering
John Davies, Mirai Transportation Planning and Engineering
Kenichi Nakano, Nakano Associates LLC
Ida Ottesen, Nakano Associates LLC
Dennis Haskell, PB America

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Southeast Transportation Study

Executive Summary

Introduction

Southeast Seattle — Change is happening now

The people of Southeast Seattle come from every corner of the globe, bringing their cultures, languages and food, and a shared determination to succeed in their new home. In 2009, Sound Transit's Link light rail will help make this crossroads of the world one of the most accessible places in the Puget Sound region.

Already, new construction is adding hundreds of new homes, from Beacon Hill to Rainier Beach. New businesses are opening in old storefronts, revitalizing commercial districts into vibrant urban centers where residents can find what they need within walking distance of where they live. New and enlarged libraries and community centers reflect the city's investment in neighborhoods and people. An open-air farmer's market attracts hundreds of shoppers on Wednesday afternoons from May to October.

Building on a firm foundation

Over a decade of political foresight, neighborhood activism and thoughtful planning have resulted in the changes taking place in Southeast Seattle today. The Link light rail investment and the Mayor's Southeast Seattle Action Agenda create a rare opportunity to achieve the goals of Seattle's Comprehensive and Transportation Strategic Plans and to implement the visions captured in the Neighborhood and Station Area Plans. The Southeast Transportation Study (SETS) is a set of projects, programs, and policy recommendations designed to do just that.

Goals

With the help of community leaders, the following goals were developed to guide the work of this study:

- Improve mobility and safety for the diverse needs of Southeast Seattle.
- Improve the transportation network with a particular focus on connections to the new light rail system.
- Support the growth to enhance neighborhood livability.
- Make cost-effective investments to maintain existing roads and build on other existing efforts.
- Prioritize transportation improvements that support the City's Comprehensive Plan as well as the strategies and actions defined in the Seattle Transportation Strategic Plan Update.

Transportation choices for today and 2030

The study developed over 70 recommendations which, taken together, have the potential to:

- Greatly improve safety for all travelers, reduce collisions and reduce the human toll of injuries and fatalities.
- Strengthen neighborhood business districts so that surrounding residents can meet more of their daily needs within walking distance of their homes.
- Make walking, biking and transit safe and convenient.
- Maintain current capacity to meet today's needs, and reduce delays at critical intersections, while meeting the challenges of growth primarily by strengthening opportunities to walk, cycle and take transit.

Project Recommendations

What is a project?

A SETS project can be as simple as retiming an existing traffic signal to give pedestrians more time to cross the street, to constructing a bicycle/pedestrian walkway and bridge over I-5. Despite the difference in scope, each project is important and as much information as possible on each is included in the final report.

The majority of project recommendations are physical improvements at specific locations. Some of these recommendations come from the neighborhood plans, while others are more recent. In all, the project team sifted through over 500 potential projects from past planning studies and community feedback, and then identified new projects through a detailed needs and opportunity assessment in coordination with community leaders.

In addition to the physical projects, SETS includes recommendations to improve transit speed and reliability, in coordination with King County Metro. The three main corridors in the study area, Rainier Ave S, Martin Luther King Jr. Way S. and Beacon Ave S. are all heavily used by transit, and keeping transit moving quickly and reliably along them is a high priority.

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What will happen where I live?

To meet the SETS goals, the geographic focus of the study was defined as: areas within a half-mile of Link light rail stations; major east-west connectors; major commercial/residential hubs; and major north-south roadways, with the exception of Martin Luther King Jr. Way S. which will be completely rebuilt with the introduction of light rail. As a convenience in developing and presenting the project recommendations, projects are grouped within urban villages, along major corridors and, for projects falling outside those parameters, within three general areas of Southeast Seattle.

North Beacon Hill Urban Village

The North Beacon Hill Urban Village is the densest neighborhood in Southeast Seattle, with a projected 30 people per acre in 2024. Currently, 28% of households do not own a car. In 2020, 3,000 riders a day are expected to board light rail at the Beacon Hill Station in the heart of the business district.

SETS recommended projects will make this business district more inviting to people on foot, bicycle and transit. Proposed projects will encourage people to travel to and from Beacon Hill Station and strengthen the business district by supporting a greater diversity of retail and services. SETS projects were developed to improve safety for all travelers and maintain capacity on arterial streets while discouraging drivers from diverting through residential streets.

Key projects include:

- Extending the Beacon Ave. S. median through the heart of the business district and provide urban design improvements along the street.
- Creating a public plaza between the Beacon Hill Station and El Centro de la Raza, by redesigning one block of Lander St.
- Reconfiguring intersections on Beacon between 14th Ave. S and S. Stevens St. to improve safety for all modes, calm traffic and add pedestrian crosswalks.
- Improving safety on 15th Ave. S. by calming traffic through the business district.

MLK at Holly Urban Village and Station Area

In the last decade, the MLK at Holly Urban Village and station area has undergone a greater transformation than anywhere else in Southeast Seattle. Holly Park became the first of Seattle's three Hope VI projects; the Seattle Housing Authority rebuilt what is now called NewHolly/Othello Station, with homes set along a newly developed street grid, replacing 871 housing units with 1,450 apartments, townhomes, duplexes and single family homes. Othello Station will open in 2009, attracting additional customers to the business district and providing the incentive, over time, for redevelopment and new development of pedestrian oriented shopping, restaurants and services.

Because Martin Luther King Jr. Way is being completely rebuilt from the intersection with Rainier Ave. S. to the south city limits as part of the light rail project, SETS focused on access to and from the light rail station from adjacent areas and did not develop projects along MLK.

Key projects include:

- Improving pedestrian and bicycle safety with intersection and crossing improvements at 43rd Ave. S. and at S. Othello St.
- Providing a safe bicycle route from Renton Ave. S. to the Othello Station with improvements along 43rd Ave. S.

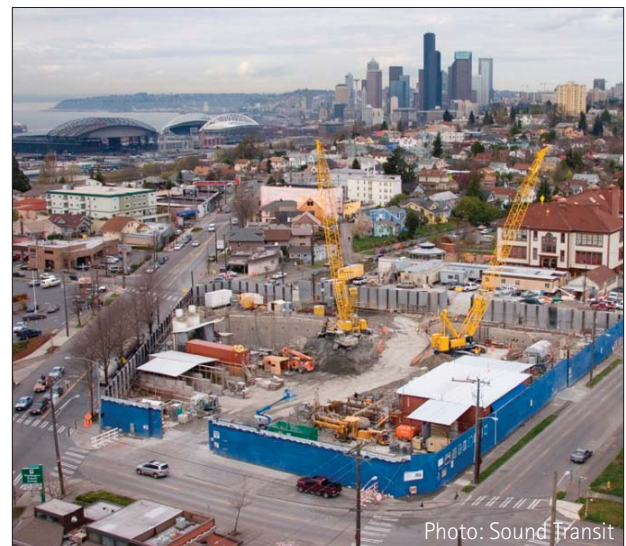


Photo: Sound Transit

The Beacon Hill Station will serve about 3,000 riders a day. These riders will be potential customers for local businesses. The area's enhanced accessibility could be a catalyst for development, including higher density mixed-use projects where allowed by current zoning.

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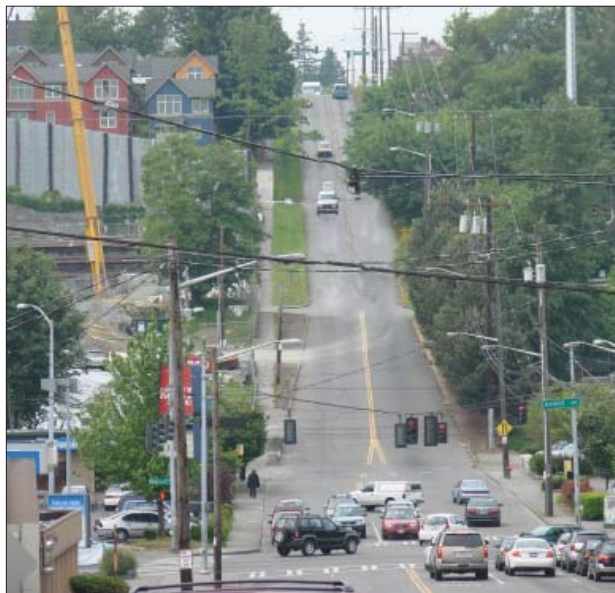
North Rainier Hub Urban Village

The North Rainier retail core centers around Rainier Ave. S between S. McClellan St. and MLK, with small shops and specialty retail stores extending from I-90 at the north end of the urban village to S. Dakota St. Retail tends to be auto oriented, with businesses set behind parking lots fronting the street. That said, 30% of the households in this area do not own a car. A variety of institutions and businesses are located in this neighborhood, with over 1,400 students attending Franklin High School; large employers include Pepsi, the Lighthouse for the Blind, King County United Way, the University of Washington Laundry and Darigold.

SETS projects focus on improving safety; maintaining vehicle capacity and freight accessibility on Rainier; improving transit access, speed and reliability; and supporting the transition of the core business district around Mt. Baker Station to a pedestrian-friendly urban village.

Key projects include:

- Reconfiguring the intersection at Rainier and MLK, so that pedestrians can cross at-grade on all approaches.
- Improving two intersections that are currently High Collision Locations.
- Improving S. McClellan St. for pedestrians and cyclists traveling to and from the light rail station.



New townhomes overlook the tunnel portal where the Link light rail line emerges from Beacon Hill. People's desire to live and shop close to the station is likely to change this area between now and 2030.

Columbia City Urban Village

Columbia City is a thriving business district and attractive residential area. In the last several years it has undergone a renaissance, due in no small part to the Columbia City Business Association's vision for: "First, a pedestrian-friendly, one-stop shopping district that meets the day-to-day needs of the surrounding neighborhoods, and second, a Seattle-wide destination for great food and for stimulating art, entertainment and specialty shops." [Source: Columbia City Business Association website.]

Columbia City already has many of the transportation improvements that make a great place: wide, well-maintained sidewalks, street furniture, curb bulbs, and pedestrian lighting. But for many hours of the day, Rainier has high volumes of quickly-moving traffic. Taming traffic through the business district will have minimal effect on drivers' convenience, and a huge effect on the livability of Columbia City, for both its residents and visitors.

Key projects include:

- Convert travel lanes along Rainier Ave. S. from four lanes to three lanes to slow traffic, improve safety, and create a pedestrian-friendly area.
- Add or improve pedestrian crossings on Rainier at S. Genesee St, S. Oregon St, and 39th Ave. S.
- Improve S. Alaska St. between the Columbia City Station on MLK and Columbia City at Rainier for pedestrians, bicyclists and transit riders.



Shoppers of all ages enjoy the Columbia City Farmers Market held Wednesdays from May to October

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Hillman City

The heart of the Hillman City business district is a five-block stretch centered on Rainier Ave. S. and S. Dawson St. Longstanding small businesses share the street with new businesses opening in refurbished storefronts; "Coming Soon" signs are a common sight in Hillman City shop windows. Pleasant residential neighborhoods of well-kept homes surround Rainier. The sidewalks of Hillman City, however, lack the urban design treatments installed a few blocks north in Columbia City and are in disrepair, making walking in the business district uninviting. There is only one full signal in Hillman City, located at S. Orcas St.

Key projects include:

- Convert travel lanes along Rainier Ave. S. from four lanes to three lanes to slow traffic, improve safety, and create a pedestrian-friendly area.
- Add urban design elements in the business district to make it more attractive to customers and increase pedestrian comfort.
- Add two full signals at S. Findley St. and S. Mead St, to calm traffic and improve pedestrian crossings.

Rainier Beach Urban Village

The Rainier Beach Urban Village combines large-scale retail and apartments with single-family homes and small businesses. Major public facilities in the neighborhood include the new public library, Rainier Beach High School, Dunlap Elementary School, Rainier Beach Community Center, and the soon to be constructed South Lake High School and The New School. All of these facilities are pedestrian-generators, especially for children.

Development in Rainier Beach is almost entirely auto-oriented. However, Rainier Beach has one of the lowest auto-ownership rates in the city, and one of the highest percentages of children and youth, both important reasons to improve access and safety for people walking, bicycling, and riding transit. Rainier Beach community and business organizations have been working hard to improve the business district and create a true, pedestrian-friendly, urban village.

The Henderson Station, at the corner of S. Henderson St. and MLK, is the most southerly station in Seattle. Pedestrian and bicycle improvements along Henderson, connecting the business district to the light rail station, have been recently completed as part of the Link light rail project. SETS recommendations include eight separate, but linked, projects to improve safety and walkability, create routes for bicyclists, and support existing and future businesses.

Key SETS projects include:

- Improving the Mapes Walkway and adding a connection west to the public library, to strengthen a non-motorized pathway separated from traffic in the heart of the business district.
- Intersections improvements along Rainier south and east of Henderson to improve crossings for pedestrians and cyclists and make the business district more pedestrian friendly.

Projects outside the Urban Villages

Twenty-two of the physical project recommendations in SETS are located outside the boundaries of the urban villages. In addition, one project, implementing a four-lane to three-lane conversion on Rainier Ave. S. between S. Alaska St. and S. Cloverdale St. passes through Columbia City, Hillman City and the north end of Rainier Beach, and the areas in between.

As within the urban villages, the projects in other areas range from as small as improving pedestrian safety at a single intersection to as large as adding a bicycle crossing over I-5. Highlights include:

- Improving safety at eight intersections that are High Collision Locations.
- Improving or adding bicycle routes or trails at both ends of Rainier Valley and connecting the Chief Sealth Trail across I-5.
- Installing two roundabouts.

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The Rainier Corridor, a challenging environment, an emerging opportunity

Rainier Ave. S. provides an important opportunity in the study area to transform a corridor into a more livable, complete street. Along the three primary north/south corridors in Southeast Seattle, Rainier Ave. S, Martin Luther King Jr. Way S. and Beacon Ave. S, the new light rail system will lead to increased densities, transit-oriented development and infill for areas with-in walking/bicycling distances of stations. Through the Link light rail project, MLK already has been transformed into an improved street for nearly all users, with many more pedestrian crossing opportunities, convenient transit access and wonderful urban design amenities. Rainier Ave. S. is one of the seven major transit corridors identified by the Seattle Department of Transportation as a Transit Priority Corridor, with the goal to increase the speed and reliability of buses relative to general purpose traffic. Rainier Ave. S. has one of the highest ridership routes in the region: Route 7 with 3.4 million riders a year.

Now Rainier needs to be transformed to better serve those who travel on it, and those who live and do business there.

Rainier at a crossroads

Rainier, mile for mile, is one of the highest collision corridors in the city. In the three-year period between 2002 and 2004, 1,743 collisions occurred, or nearly 50 collisions per month, including 37 where someone was killed or disabled. Seventy-three pedestrians were involved in collisions, of which seven were fatal. For bicyclists, 19 were involved in collisions with one fatality. Most collisions occurred on clear days, in daylight hours, and all but 55 drivers were sober.

Recently, the Rainier Traffic Safety Project Task Force developed a number of near-term engineering measures to improve safety on Rainier; many of these have been implemented (http://www.seattle.gov/transportation/docs/rainier_actionplan.pdf).

Building a better street for all

Nearly half of all the projects recommended in this study are on Rainier; a few others cross Rainier or connect to it. The number one focus of these projects is safety. Intertwined with this is the intention to build a street that works for all users: trucks, buses,

cars, walkers, bicyclists, and those who live, work, shop, worship and play along it. Over its seven-and-a-half mile length, the character of Rainier varies as it passes through different neighborhoods. The study recommendations address the street from end-to-end, matching solutions to needs in each location.

The draft SETS recommended consideration of a four-lane to three-lane conversion on Rainier between S. Alaska St, at the north end of Columbia City, and S. Cloverdale St, just north of the Rainier Beach business district. This project had been explicitly and repeatedly recommended since 1976, and was the top priority in the Genesee/Columbia City/Hillman City Neighborhood Plan completed in 1999.

Results of the analysis

SETS included a high-level planning analysis of the four-lane to three-lane conversion. This initial study concluded that Rainier could potentially function as a three-lane roadway with acceptable impacts to auto and transit. A more detailed operational analysis was recommended to determine if the project should move forward. *The in-depth operational analysis and visual simulation of the conversion indicated severe impacts of the lane conversion on Rainier from S Alaska St. to 57th Ave. S. and concluded that, by 2030, very serious levels of congestion and delays in travel time would be experienced by both bus riders and motorists along*



Drivers sometimes park on the sidewalk, which is unpleasant for pedestrians and a hazard to the trees.

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the corridor and at the intersections. Especially high levels of congestion would be experienced on the side streets (east/west travel).

Next steps

SDOT has met with SETS Core Community Team and other stakeholders to discuss the results of the in-depth operational analysis and the overall advantages and deficiencies of the proposed three-lane project. It is clear that, using the best available information and traffic projections, conversion to a three-lane roadway in the near-term would result in very significant delays for transit and all other traffic. Severe delay would also occur for motorists trying to turn on to or across Rainier and traffic would be diverted, some into the neighborhood streets. However, there is still need for improvements for all corridor users including bicyclists, pedestrians, transit users, and motorists. Therefore, as a near-term solution, SDOT plans to move forward to design a four-lane street section that includes transit, pedestrian, bicycle, and traffic calming improvements. These improvements include:

- Bus "bulbs" that reconstruct and widen sidewalks at bus stops, provide additional waiting space, and allow buses to stop in-lane and not have to fight to get back into traffic.
- New pedestrian lighting and bike racks.
- Striping the parking lane to better distinguish the travel lane from the parking lane; striping the centerline in such a way as to help calm traffic and thus improving safety.
- Special signs and crosswalk treatments in the neighborhood business districts.

- Bicycle "sharrows" to increase motorist awareness that bicycles are present.
- Ongoing monitoring of traffic conditions for possible future consideration of a three-lane cross section

Funding

One of the key challenges in developing a sub-area transportation plan is to ensure that the recommended programs and projects will be fully implemented by the horizon year. In the case of the Southeast Transportation Study (SETS) this year is 2030. SETS requires approximately \$69 million to complete all of the High, Medium, and Long-term Priority projects.

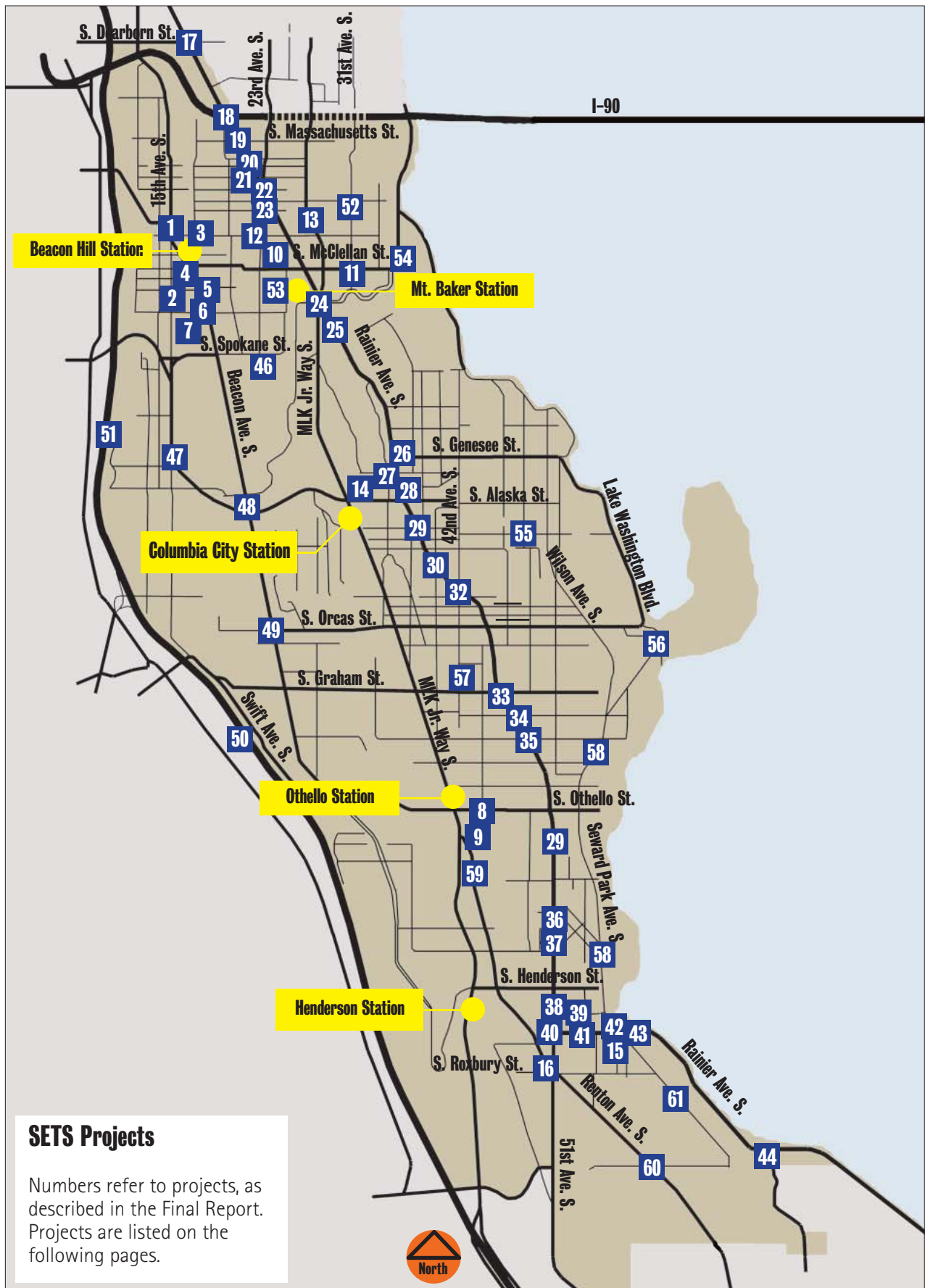
The recommendations in this plan will become part of SDOT's work program through the Capital Improvement Program (CIP) adoption process and individual program implementation strategies, such as the Pedestrian and Bicycle Program, Traffic Signals, Neighborhood Traffic Calming, Arterial Traffic Operations and Parking Management.

Ultimately, revenue streams available for these and Seattle's other transportation projects are dependent on the health of the national and local economies, renewal of current local levies such as Bridging the Gap, and national and state policies as they affect grant programs. These variable all determine the amount of funding that will ultimately be available to implement SETS-recommended projects in Southeast Seattle.



Improvements in fare payment systems and the boarding and alighting process could reduce the time the buses spend at bus stops.

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SETS Projects

Numbers refer to projects, as described in the Final Report. Projects are listed on the following pages.

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Project #	Location	Project Area/ Project description
1	Beacon Ave. S. & 14th Ave. S.	North Beacon Hill Urban Village Improve safety at intersection
2	15th Ave S. - Beacon Ave. S. to S. Stevens St.	North Beacon Hill Urban Village Calm traffic and add urban design in corridor with High Collision Location
3	Beacon Ave. S. & S. Lander St.	North Beacon Hill Urban Village Modify street to create public plaza and designate one-way street
4	Beacon Ave. S. & S. McClellan St.	North Beacon Hill Urban Village Add missing sidewalk link
5	Beacon Ave. S. & 17th Ave. S.	North Beacon Hill Urban Village Improve safety at intersection
6	Beacon Ave. S. & S. Stevens St.	North Beacon Hill Urban Village Improve safety at High Collision Location
7	Beacon Ave. S: 14th Ave. S. to S. Stevens St.	North Beacon Hill Urban Village Improve streetscape
8	43rd Ave. S. & S. Othello St.	MLK at Holly Urban Village Improve safety at High Collision Location
9	Renton Ave. S. & 43rd Ave S.	MLK at Holly Urban Village Improve safety at intersection and create safe pedestrian/bicycle
10	S. McClellan St: 23rd Ave. S. to Rainier Ave. S.	North Rainier Urban Village Add missing sidewalk link
11	S. McClellan St: Rainier Ave. S. to Mt. Baker Blvd.	North Rainier Urban Village Calm traffic, improve streetscape
12	S. College St: 22nd Ave. S. to Rainier Ave. S.	North Rainier Urban Village Improve safety at two High Collision Locations
13	MLK: S. Massachusetts St. to S. McClellan St.	North Rainier Urban Village Construct non-motorized trail
14	S. Alaska St: MLK to Rainier Ave. S.	Columbia City Urban Village Improve streetscape
15	57th Ave. S. near S. Fletcher St.	Rainier Beach Urban Village Improve safety and calm traffic at intersection
16	Renton Ave. S. & S. Roxbury St. / 51st Ave. S.	Rainier Beach Urban Village Construct roundabout at High Collision Location
17	Rainier Ave. S. & S. Dearborn St.	Rainier Reduce delay, improve safety and add bicycle/pedestrian access at congested High Collision Location

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Project #	Location	Project Area/ Project description
18	Rainier Ave. S. & I-90 ramps	Rainier Improve safety at freeway access ramps
19	Rainier Ave. S. & S. Massachusetts St.	Rainier Improve safety at intersection
20	Rainier Ave. S. & 21st Ave. S., S. State St. and S. Grand St.	Rainier Improve safety at intersection
21	Rainier Ave. S. & 22nd Ave. S., S. Holgate St. and S. Plum St.	Rainier Improve safety, reduce turning speeds at intersection
22	Rainier Ave. S. & 23rd Ave. S.	Rainier Improve safety at High Collision Location
23	Rainier Ave. S. & S. Walker St.	Rainier Improve safety, reduce pavement and add landscaping at intersection
24	Rainier Ave. S. & Martin Luther King Jr. Way S.	Rainier Improve safety at intersection
25	Rainier Ave. S. & S. Walden St.	Rainier Add pedestrian lead to signal at High Collision Location
26	Rainier Ave. S. & S. Genesee St.	Rainier Improve safety at High Collision Location
27	Rainier Ave. S. & S. Oregon St.	Rainier Add pedestrian signal at High Collision Location
28	Rainier Ave. S: S. Genesee St. to S. Alaska St.	Rainier Reconfigure traffic lanes for on-street parking
29	Rainier Ave. S: S. Alaska St. to S. Cloverdale St.	Rainier Consider long-range conversion from four-lanes to three-lanes; improve transit speed and reliability
30	Rainier Ave. S. & 39th Ave. S.	Rainier Add pedestrian signal at High Collision Location
31	Rainier Ave. S. & 42nd Ave. S. / S. Brandon St.	Rainier Realign intersection
32	Rainier Ave. S: S. Lucille St. to S. Mead St. (Hillman City)	Rainier Add urban design features and improve pedestrian safety in business district
33	Rainier Ave. S. & S. Graham St. / 46th Ave. S.	Rainier Improve safety at High Collision Location
34	Rainier Ave. S. & S. Morgan St. / 47th Ave. S	Rainier Improve safety at intersection

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Project #	Location	Project Area/ Project description
35	Rainier Ave. S. & S. Holly St.	Rainier Improve crossing conditions at intersection with high use by elderly
36	Rainier Ave. S. & S. Rose St. / Wabash Ave. S.	Rainier Improve safety at intersection
37	Rainier Ave. S. & S. Thistle St. / Rainier Pl. S.	Rainier Improve safety at intersection
38	Rainier Ave. S. & Fisher Pl. S.	Rainier Extend and improve pedestrian connection in urban village
39	Rainier Ave. S. & 52nd Ave. S. / Mapes Walkway	Rainier Extend and improve pedestrian connection in urban village
40	Rainier Ave. S. & 51st Ave. S. / Sturtevant Ave. S.	Rainier Improve safety at High Collision Location
41	Rainier Ave. S: 52nd Ave. S. to Ithaca Pl. S.	Rainier Improve safety and accessibility in urban village corridor
42	Rainier Ave. S. & Seward Park Ave. S.	Rainier Improve safety at intersection
43	Rainier Ave. S. & 57th Ave. S.	Rainier Improve safety at intersection
44	Rainier Ave. S. & Cornell Ave. S.	Rainier Improve safety at intersection
45	Pedestrian lighting along Rainier Ave. S.	Rainier Improve safety with pedestrian lighting along corridor
46	S. Spokane St: S. Columbian Way to 23rd Ave. S.	Beacon Hill Address delays in congested corridor
47	S. Oregon St. & S. Columbian Way / 15th Ave. S.	Beacon Hill Improve safety at High Collision Location
48	Beacon Ave. S. & S. Columbian Way	Beacon Hill Improve safety at High Collision Location
49	Beacon Ave. S. & S. Orcas St.	Beacon Hill Improve safety at High Collision Location
50	Swift Ave. S: 15th Ave. S. to S. Warsaw St.	Beacon Hill Reconfigure intersections and provide bicycle access across I-5
51	Bicycle access across I-5	Beacon Hill Connect Chief Sealth Trail across I-5, connect to I-90 Trail
52	31st Ave. S: Yesler Way to S. McClellan St.	North Rainier Valley Slow traffic and improve safety on arterial
53	23rd Ave S: S. Waite St. to S. College St.	North Rainier Valley Provide safe pedestrian route

Southeast Transportation Study Executive Summary

Project #	Location	Project Area/ Project description
54	S. McClellan St. & Mt. Baker Blvd.	North Rainier Valley Improve safety at intersection and add bicycle lanes
55	Wilson Ave. S. & S. Dawson St.	North Rainier Valley Construct roundabout
56	Seward Park Ave. S. & S. Juneau St.	North Rainier Valley Calm traffic and improve safety near park entrance
57	S. Graham St. & 39th Ave. S, 42nd Ave. S, 44th Ave. S.	North Rainier Valley Improve safety along arterial street with High Collision Location
58	Seward Park Ave. S: S. Dawson St. to Rainier Ave. S.	South Rainier Valley Improve bicycle route
59	Renton Ave. S. & 44th Ave. S. / S. Thistle St.	South Rainier Valley Improve safety by closing sharply angled street end at intersection
60	Renton Ave. S. & S. Ryan St.	South Rainier Valley Improve pedestrian safety
61	Waters Ave. S: 57th Ave. S. to S. Ryan St.	South Rainier Valley Improve pedestrian safety
T62	Rainier Ave. S: Bus signal priority and Complete Streets	Improve transit speed and reliability
T63	Study area: Bus stop location and consolidation	Improve transit speed and reliability
T64	Rainier Ave. S. & Martin Luther King Jr. Way S: Bus queue jump	Improve transit speed and reliability
T65	Study area: Fare payment methods and boardings	Improve transit speed and reliability
T66	Study area: Help buses merge into traffic	Improve transit speed and reliability
T67	Study area: Better bus stops	Improve transit speed and reliability
T68	Rainier Beach: Bus connections to Henderson Station	Provide convenient access to Link light rail
T69	S. Graham St: East - west bus corridor	Preserve transit corridors for future growth
T70	Rainier Ave. S. & 23rd Ave. S: Preserve street car corridors	Preserve transit corridors for future growth
ST71	Study area: Street types, overlays and designations	Develop consistent street designation program
ST72	Study area: SEA Streets	Develop and implement SEA Streets Plan



1. Introduction

1. INTRODUCTION

Study Background

Southeast Seattle: A crossroads of the world, at the center of the region

The people of Southeast Seattle come from every corner of the globe, bringing their cultures, languages, food, and a shared determination to succeed in their new home.

In 2009, Sound Transit's Link light rail will help make this crossroads of the world one of the most accessible places in the Puget Sound region.

Looking even further ahead, by 2030 light rail will likely extend north to Capitol Hill, the University District, Northgate and into Snohomish County, east to Bellevue, Overlake and Redmond, and south to Federal Way and Tacoma. Southeast Seattle residents will have fast reliable connections to the region's employment — over a million jobs will be accessible by transit — as well as schools and colleges, health care, retail and recreation. At the same time, people throughout the region will have easy access to Southeast Seattle and all it has to offer.

Change is already happening

Already, along Martin Luther King Jr. Way S, New-Holly and Rainier Vista have nearly finished replacing World War II era temporary housing with a mix of 2,400 new apartments, townhouses and single-family homes, adding density and connecting street grids.

In Columbia City and Hillman City old buildings are being refurbished, new entrepreneurs are trying their hands, and delighted customers are strolling up and down Rainier Ave. S. On Beacon Hill the new public library serves as a meeting place for longtime residents and neighborhood newcomers, young and old. In Rainier Beach homeowners and developers are refurbishing existing homes and building new housing near the light rail station.

Building the future

While a great deal has happened already, the changes over the next twenty years may be even more dramatic. Transportation will both shape and serve these changes. This study, building on past efforts, offers a set of recommended projects, programs and policies designed to offer choices to the residents of Southeast Seattle, in places to go and ways to travel; to support and strengthen neighborhood business districts; to allow the area's freight-dependent commercial businesses to continue to thrive; and to meet the city's broader goals of livability and sustainability.



Building on a firm foundation

Over a decade of political foresight, neighborhood activism and thoughtful planning have resulted in the changes taking place in Southeast Seattle today.

The Link light rail investment and the Mayor's Southeast Seattle Action Agenda create a rare opportunity to achieve the goals of the City's Comprehensive and Transportation Strategic Plans and to implement the visions captured in the Neighborhood and Station Area Plans.

From Planning to Action

Seattle's *Comprehensive Plan, Toward a Sustainable Seattle*, has been updated regularly since its initial adoption in 1994, as has the *Transportation Strategic Plan* originally adopted in 1998. Southeast Seattle's Neighborhood Plans and Station Area Plans, however, were completed before final decisions had been made about the light rail alignment. Many of the changes in Southeast Seattle are the results of these plans, which have worked both as visions and as blueprints. Also, there are areas in Southeast Seattle that are not covered in the Neighborhood Plans and Station Area Plans that are now incorporated into the Southeast Transportation Study.

With Link light rail scheduled to begin operating in 2009, now is a critical time to consolidate past work, determine what modifications are needed to reflect recent actions and changes, and to detail a set of projects to transform shared visions into reality.

The Southeast Transportation Study is a set of project, program and policy recommendations designed to do just that.

Goals

With the help of community leaders, the following goals were developed to guide the work of this study:

- Improve mobility and safety for the diverse needs of Southeast Seattle.
- Improve the transportation network with a particular focus on connections to the new light rail system.
- Support the growth to enhance neighborhood livability.
- Make cost-effective investments to maintain existing roads and build on other existing efforts.
- Prioritize transportation improvements that support the City's Comprehensive Plan as well as the strategies and actions defined in the Seattle Transportation Strategic Plan Update.

Transportation Choices for Today and 2030

This study developed over 70 recommendations, which, taken together, have the potential to:

- Greatly improve safety for all travelers, reduce collisions and reduce the human toll of injuries and fatalities.
- Strengthen neighborhood business districts so that surrounding residents can meet more of their daily needs within walking distance of their homes.
- Make walking, bicycling and transit safe and convenient.
- Maintain current capacity to meet today's needs, and reduce delays at critical intersections, while meeting the challenges of growth primarily by strengthening opportunities to walk, bicycle and take transit.

1. INTRODUCTION

Study Background

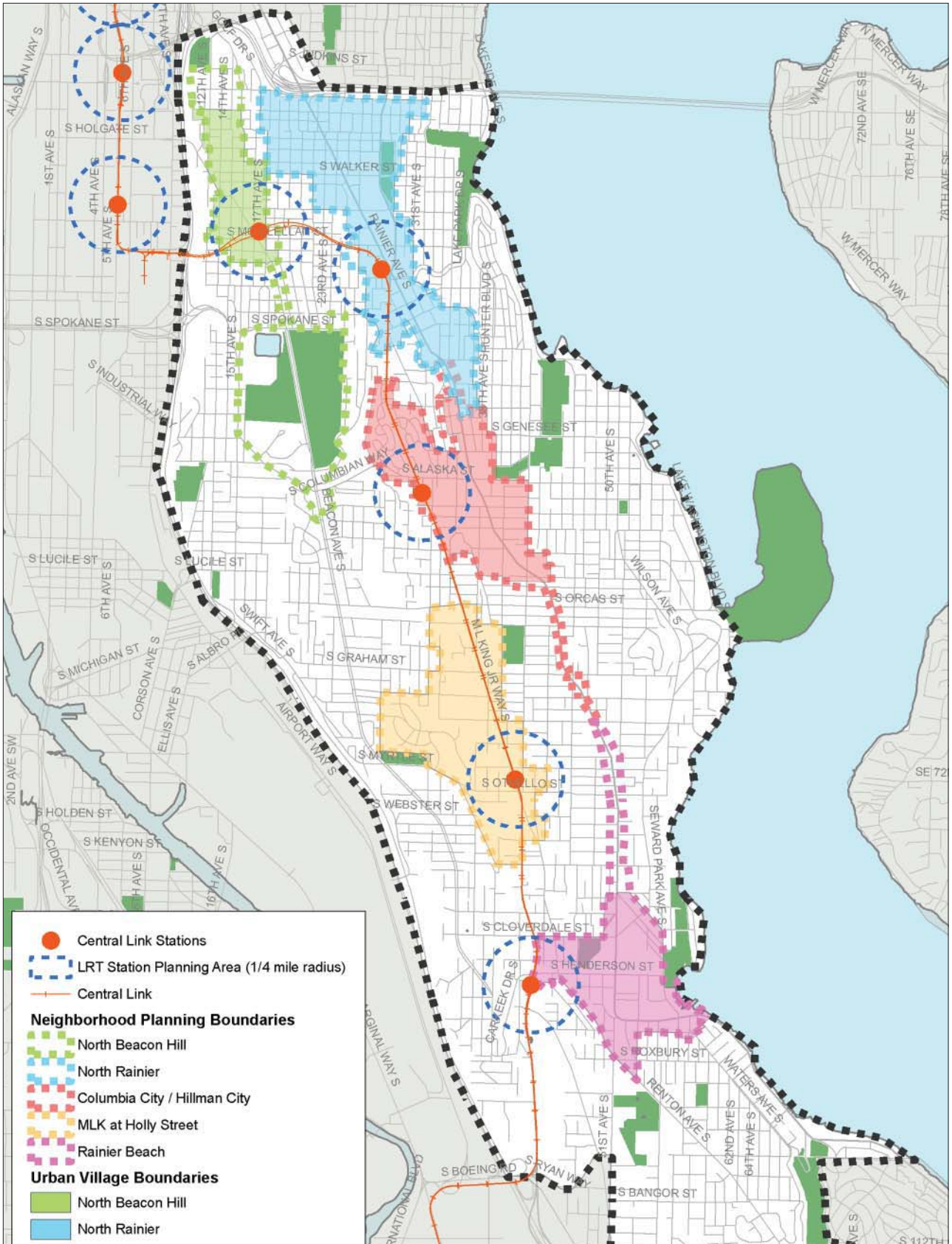


Figure 1: Urban Village and Neighborhood Planning Boundaries in Study Area
Source: PB America

Southeast Seattle

Southeast Seattle is a diverse area with a rich history and a strong sense of community. Change is now happening so fast that it is challenging to pin down facts and figures about the people who live here and the place they inhabit. However, in order to understand what kinds of actions are going to be most appropriate to serve the people and places of Southeast Seattle, it's important to understand who and what they are. Following is a brief summary of some of the demographic and development patterns that make this place unique.



Many newcomers to Seattle grow foods from home in the area's popular pea-patches.

Southeast Seattle at a glance

14% of Seattle's people live in the SETS area

17% of Seattle's land area is in the area

11% of Seattle's housing units are in the area

By 2030 projections are for:

4,250 more jobs

11,000 more housing units

People

Data from the 2000 Census is now eight years old, but it creates a fairly accurate picture of the people of Southeast Seattle, which includes Beacon Hill and Rainier Valley:

- **Households are large**, 2.86 people on average compared with 2.08 city-wide.
- **Home ownership is high**, 62 percent versus a city-wide average of 48 percent.
- **Car ownership is low**. Within the urban villages about 23-30 percent of households have no vehicle, about twice the rate for the city as a whole.
- **The median income is average**, \$44,700, comparable to the city-wide median of \$45,700. Rainier Valley, however, is considerably lower with a median income of \$38,731. The overall poverty level, 13 percent, is about the same as the city-wide level but Rainier Valley's poverty level at 18 percent is 50 percent higher than the city-wide average of 12 percent.
- **People are young** with 24 percent of the population under 18 years old, compared to 15 percent city-wide. Areas zoned multi-family have even higher youth populations.
- **The whole world is represented**, with 35 percent of the population foreign-born, about twice as many as for the city as a whole.
- **Over 40 different languages are spoken**, among them: Chinese, Tagalog, Vietnamese, Spanish, Japanese, Monkhmer/Cambodian, Laotian, and a variety of African and Pacific Island languages.
- **Educational attainment is lower** than the city-wide average: nearly 25 percent of adult residents have not finished high school, compared to just over 10 percent city-wide.
- **The population over 65 is average**, at 13 percent, about the same as the city-wide average. Most of the elderly live in areas zoned single-family and along the Lake Washington waterfront.

Land use

Perched atop the crest of Beacon Hill and spread across the lowlands of Rainier Valley, Southeast Seattle is a predominantly residential area, with neighborhood commercial development along a former street car line, Rainier Ave. S, and commercial and industrial development along the former state highway, Martin Luther King Jr. Way S. The north end of Rainier is flanked by a fair-sized commercial/industrial area.

Business districts range from the larger Columbia City and North Rainier Town Center to single commercial sites tailored to specific markets such as the Polynesian Grocery at MLK and S. Henderson St. Some commercial nodes draw people from a broad geographic area. For example, King Plaza at MLK and S. Myrtle St. draws shoppers from throughout the region, and even as far away as Oregon and British Columbia, who come for hard-to-find specialty products.

Residential development is also diverse. Pockets of residential areas with large lots, no curbs, gutters, or sidewalks and often sub-standard road conditions, most likely reflect remnants of a once-strong, near-rural truck farming community. In other areas homes on large lots enjoy views of Lake Washington and Mt. Rainier. Some streets are built on a traditional grid, while other roads curve up and down hillsides.

Multi-family zoning is located predominantly along the north-south corridors; newly constructed multi-family units are increasing density in those areas.

In 2006, Southeast Seattle became the first area in Seattle to allow detached backyard cottages, which could create new rental housing, increase density and make home ownership affordable to more families.

Transportation

With topographic challenges similar to the rest of the city, Southeast Seattle is less than three miles wide at its widest point, constrained by water, the I-5 freeway, and a series of large and small ridges that limit east-west travel. Only three streets run the length of the study area: Beacon Ave. S, MLK and Rainier. East-west travel is similarly constricted with no continuous arterial streets running from Lake Washington all the way to I-5.

These constraints naturally lead to an approach to transportation that calls for designing streets that work for all users, from people on foot to freight haulers. Without parallel streets that can be assigned to different users, everyone needs to share the road.

Improving transportation safety is also a major challenge in Southeast Seattle. Rainier averages 600 collisions a year in an seven-and-a-half mile stretch. Fifty-four locations in the study area were High Collision Locations (HCLs); 32 of these were on Rainier and 22 were elsewhere; eight of these locations were Pedestrian High Collision Locations. Solutions need to incorporate physical modifications – engineering – as well as changes in traveler behavior through education and enforcement.

Transit is what most strongly sets Southeast Seattle apart from anywhere else in Seattle with regards to transportation. At least for the next decade or so it is the only area with light rail. Southeast Seattle already has the highest ridership bus route in the region, and two of the top five routes. When Link light rail opens in 2009 it will provide tremendous opportunities for the residents and businesses of Southeast Seattle; being ready to take advantage of those opportunities is a major focus of this study.



This sign on a grocery on Beacon Hill directs shoppers to one store with three names, representing just a few of the languages spoken by its diverse customers. Inside are foods from around the world.

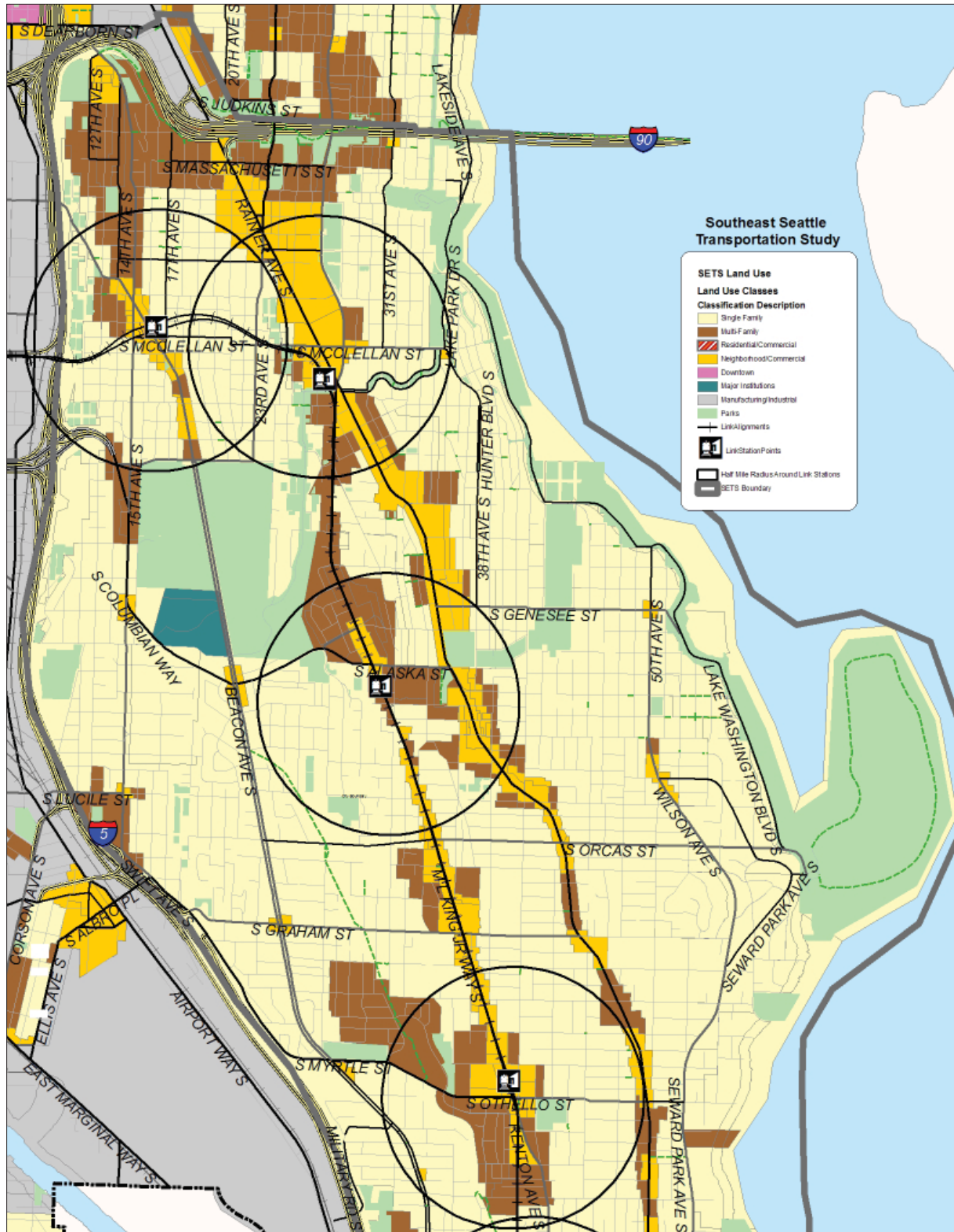


Figure 2: Southeast Seattle Land Use Map - North Study Area
Source: City of Seattle

1. INTRODUCTION
Study Background

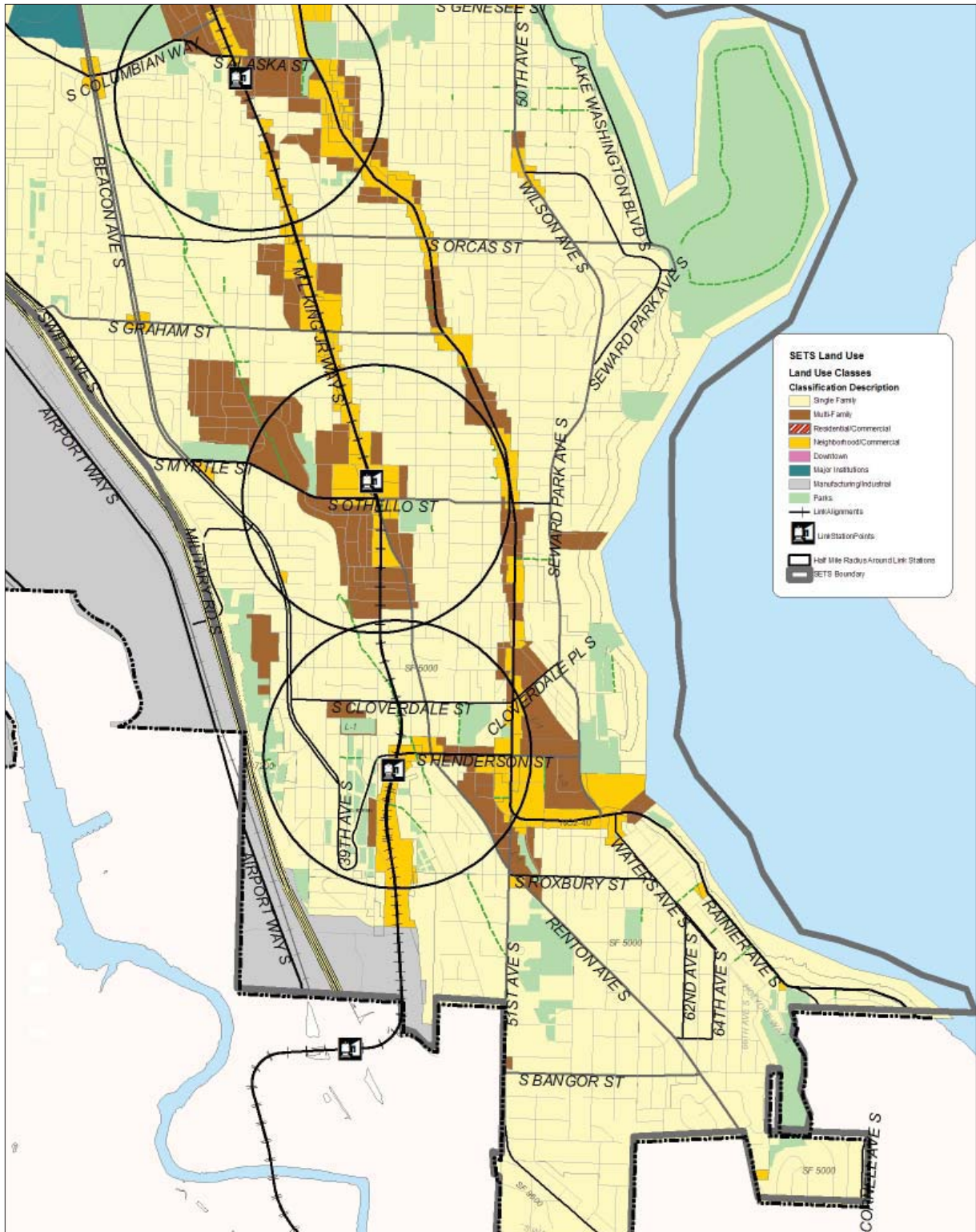


Figure 3: Southeast Seattle Land Use Map – South Study Area
 Source: City of Seattle

How the Study was Done

Following is a brief summary of how the Southeast Transportation Study (SETS) was prepared, from assessing and documenting "Existing Conditions" through completion of the final recommendations.

Establishing a starting point

To begin the study, the SETS project team:

- Reviewed over 20 past plans and studies.
- Collected existing transportation data.
- Analyzed census data on demographics and travel.
- Collected 2005 SDOT planned but unfunded maintenance and roadway improvements needs.
- Reviewed City policies, including the most recent updates of the *Comprehensive Plan* and *Transportation Strategic Plan*.

This data was collected in an *Existing Conditions Report*, and used to develop a summary of themes and needs to guide project development.

Working with the Core Community Team

To guide the study, a Core Community Team (CCT) was established, with individuals representing 25 community, business, ethnic and transportation organizations and advocacy groups. The CCT has been involved in SETS from inception to completion, meeting regularly as a large group and taking project materials back to the groups they represent for additional review and comment. The work of the CCT is detailed in the Community Involvement section of this report.

Geographic focus

In cooperation with the CCT, it was decided that the primary geographic focus of SETS would be:

- Areas within 1/2 mile of Link light rail stations
- Major east-west streets
- Major commercial/residential hubs
- Major north-south streets, with the exception of Martin Luther King Jr. Way S, which has already been improved as a part of the Link light rail project.

Projecting traffic growth

Current (2005) traffic counts were collected and future (2030) projections were prepared for major streets and 47 intersections. Overall, traffic volumes are expected to grow moderately between now and 2030, but about 15 of the intersections studied are likely to be highly congested unless improvements are made. Congested intersections are discussed in the Modes section of this report.

Developing projects

Based on past studies and current work, the project staff and community members identified over 500 potential actions in the SETS area. These have now been distilled to over 70 projects and actions detailed in this report.

Measuring results

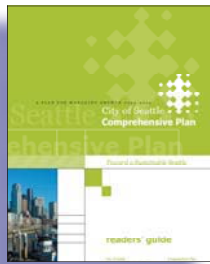
Ultimately, the results of the SETS actions will be reflected in the quality of life of Southeast Seattle's citizens. As a practical matter, SETS projects will be measured against established targets in the Transportation Strategic Plan and related plans and initiatives including the Seattle Transit Plan, the Seattle Bicycle Master Plan, the forthcoming Seattle Pedestrian Master Plan, the Seattle Climate Action Plan and other city initiatives.

Report organization

This report is organized to work for readers with different levels of interests. Some readers may want only a broad overview of the study findings and recommendations for a certain geographic area or mode of travel (such as biking, walking, driving or freight). Others may want detailed information on a handful of recommended projects. After the introduction, the report summarizes study recommendations by mode, and then by location, followed by detailed project sheets for each recommendation. The remaining sections of the report detail the technical work and analysis, including project evaluation, funding, traffic modeling, land use and growth projections and cost methodology.

Implementing Plans and Policies

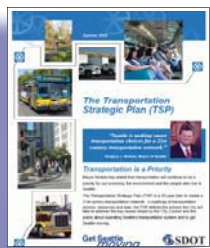
The Southeast Transportation Study builds on Seattle's adopted plans, policies and initiatives. Following is a brief summary of this prior work, which is available on the City's website.



Seattle Comprehensive Plan

Seattle's Comprehensive Plan, *Toward a Sustainable Seattle*, articulates a vision for how Seattle will grow over the next 20 years, while promoting the values of its citizens, a vibrant economy and livable neighborhoods. The

Plan does this by encouraging most new growth to locate in places it designates as either urban centers or urban villages. It contains population and employment growth targets for each urban center and urban village to indicate the amount of growth the City is planning for between 1994 and 2024. The Plan also includes policies that describe how the City intends to serve this growth with transportation and other infrastructure.



Transportation Strategic Plan (TSP)

Originally adopted in 1998 and substantially updated in 2005, the TSP describes the actions, projects and programs that SDOT will take to promote economic growth in Seattle and

the region, support livable neighborhoods, improve the environment, and address the many demands of the traveling public. Performance goals are included that track progress in the following areas:

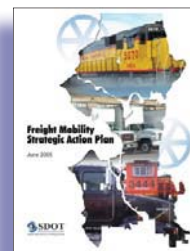
- improving safety
- preserving and maintaining infrastructure
- increasing mobility and access through transportation choices



Seattle Transit Plan

The Seattle Transit Plan defines a city-wide Urban Village Transit Network (UVTN) that is intended to connect all of the city's urban villages with fast, frequent and reliable transit by 2030. This will be achieved in partnership with King County Metro and Sound

Transit, and means managing Seattle's streets so that in combination, buses, light rail, and streetcars provide service at least every 15 minutes, 18 hours a day, seven days a week. It is a goal of the Plan to have most of Seattle living, working and playing within a quarter mile of high quality transit service. In addition to street improvements to keep buses from getting caught in traffic, Seattle is partnering with King County Metro to buy additional service hours and to build street improvements to move buses more quickly and reliably.



Freight Mobility Action Plan

The Freight Mobility Action Plan is a city-wide plan to implement the freight components of the Comprehensive Plan and the Transportation Strategic Plan. The Plan also designates the City's Major Truck Routes. In Southeast

Seattle there is one Major Truck Route, which begins at the north end of Rainier Avenue S. and then, at the intersection of Rainier and Martin Luther King Jr. Way S. transitions to MLK where it continues to the south city limits.



Seattle Bicycle Master Plan

The Seattle Bicycle Master Plan defines a set of actions, to be completed within ten years, to make Seattle the best community for bicycling in the United States. The Plan was created to achieve two goals: 1) Increase use of

bicycling in Seattle for all trip purposes. Triple the amount of bicycling in Seattle between 2007 and 2017; and 2) Improve safety of bicyclists throughout Seattle and reduce the rate of bicycle collisions by one-third between 2007 and 2017.

Seattle Pedestrian Master Plan

Work on the Seattle Pedestrian Master Plan is underway and is intended to define the actions needed to make Seattle the most walkable city in the nation. Working goals of the plan are: Get more people walking; reduce the number and severity of collisions involving pedestrians; and engage all of Seattle in a meaningful dialogue about what's needed to create and connect walkable urban villages and important destinations.



Seattle Climate Action Plan

The Seattle Climate Action Plan is the way Seattle will meet international goals and reduce greenhouse gas emissions

as a city to seven percent below 1990 levels by 2012. Actions to reduce dependence on cars include investing \$1.5 million annually to increase transit service in Seattle; investing \$3 million for transit corridor and reliability improvements; doubling the existing 25 miles of marked and striped bicycle lanes; making walking more attractive by installing new pedestrian curb ramps and upgrading marked crosswalks; implementing a commercial parking tax; and working with regional partners to analyze and develop road pricing scenarios.



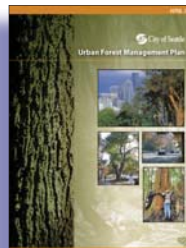
Mayor's Southeast Seattle Action Agenda

The Mayor's Southeast Seattle Action Agenda is a plan to maximize new investment in the area, while at the same time avoiding the displacement that is a common result of revitalization.

The five goals of the Action Agenda are: 1) create jobs and encourage business; 2) build affordable places to live, work and play; 3) improve education, training and human services; 4) strengthen public safety and community relations and 5) promote arts, culture and parks.

Complete Streets Policy

Seattle adopted the Complete Streets ordinance (122386) in 2007, joining a national movement to ensure that streets work for all users. The guiding principle of Seattle's policy is, "To design and maintain Seattle's streets to promote safe and convenient access and travel for all users: pedestrians, bicyclists, transit riders, and disabled users, as well as cars and trucks." Complete Streets principles are applied to all street improvement projects, other than routine maintenance and repair and, unless the SDOT director issues an exception.



Urban Forestry Management Plan

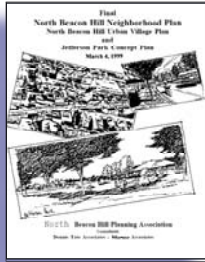
With the Urban Forestry Management (FMP) Plan, the City of Seattle embarked on its first ever comprehensive plan for the future of Seattle's urban forest.

The vision is to create a thriving and sustainable mix of tree

species and ages that creates a contiguous and healthy ecosystem that is valued and cared for by the City and all of its citizens as an essential environmental, economic, and community asset. The Urban FMP is a 30-year plan intended to guide a broad range of short, mid- and long-term actions that will achieve this vision.

1. INTRODUCTION

Adopted Plan and Policies



Neighborhood Plans

After the Comprehensive Plan established the city's urban village boundaries, each of the 38 urban villages completed a Neighborhood Plan laying out strategies to accommodate future growth, including land use, transportation, parks, and

economic development. The Plans are more than simply visions and ideas, they contain specific projects designed to help achieve the goals and objectives of the plan. The five urban villages in Southeast Seattle are: North Beacon Hill, Columbia City/Hillman City, MLK at Holly, and Rainier Beach, all of which are Residential Urban Villages, and North Rainier which is a Hub Urban Village. The Neighborhood Plans for these five urban villages provided key input to this study. While many of the projects have been completed, not everything has been accomplished and several of the SETS recommendations are projects from Neighborhood Planning that remain to be done. The City will be working with neighborhoods to be updating their plans in the next several years.



Station Area Plans

A year after the adoption of the Neighborhood Plans, Seattle and Sound Transit completed Station Area Plans for every light rail station area in Seattle. The hundreds of citizens who participated in this effort represented a considerable overlap

from the neighborhood planning work, and the station area plans generally build on the earlier effort, refining it in many cases where the location of the station had not been nailed down in the earlier work. The Station Area Plans have also been a key input to the work of this study.

Station Area Overlay Districts

As an outcome of the Station Area Planning process, the City established Station Area Overlay Districts and rezoned the areas around each station in 2001. The Station Overlay District designation was added to the Land Use Code by Council Ordinance 120452, which defines its function as follows: "To preserve or encourage a diverse, mixed-use community with a pedestrian orientation around proposed light rail stations or access to other high capacity transit, where incompatible automobile-oriented uses are discouraged and transit-oriented use and development is encouraged."



The next generation enjoying basketball at Bradner Gardens park.

Community Involvement

The study's community involvement strategy was based on several principles:

- To support broad-based and meaningful participation in the planning and decision making process.
- To conduct a community involvement process that was accessible, efficient and appropriate for the diverse communities of Southeast Seattle.
- To reach community groups that do not typically engage in public process, including non-English speaking groups and seniors, in a way and using methods that were appropriate to the unique needs of each group.
- To ensure that key stakeholders and others in the study area were well informed about the Southeast Transportation Study (SETS).
- To provide an opportunity for community dialogue and consensus-building around transportation issues.

Given the diversity of Southeast Seattle, a variety of community involvement strategies were used during this study. Deliberate decisions were made to determine what strategy or technique would best meet the study needs and best serve the community.

Broad community outreach

Broad community outreach formed the first step of public involvement. Information provided at this level focused on highlighting key aspects of the study; distribution was primarily through SDOT's website. Using the web provides many advantages including the ability to provide up-to-date, consistent information and the ability of interested people to view the information at their leisure.

The project team also attended existing community meetings and provided project updates. The advantage of this approach is that community members get the information at their regularly scheduled meetings, instead of adding another event to peoples' schedules.

Parallel targeted outreach

Parallel targeted outreach was the second community involvement step. It included activities such as cooperating with parallel efforts like the Rainier Traffic Safety Project, which worked to identify problems and develop solutions to safety issues along the Rainier corridor.

One-on-one meetings with key community leaders representing a variety of organizations were also conducted, providing depth and detail to the study. All information collected during these meetings was consolidated into the project team's work. Finally, the project team attended City-related organizational meetings such as the Seattle Freight Mobility Advisory Committee, the Seattle Pedestrian Advisory Board, the Seattle Bicycle Advisory Board, and the Seattle Planning Commission. Each group received a presentation at strategic times during the study process. Comments and recommendations were then brought back to the larger team and incorporated into the study.

Core Community Team

The Core Community Team (CCT) formed the third step of the outreach process. This group was comprised of people from 25 organizations representing a cross-section of Southeast Seattle. The CCT served as the key community advisory body for the study providing critical ongoing feedback to the project team, as well as serving as a channel back to the groups they represented and communicating information between the project team and the broader community. The CCT was intensively engaged in the study and reviewed information provided at a high level of detail.



Core Community Team members devoted hundreds of hours of volunteer time to help shape project recommendations.

1. INTRODUCTION

Community Involvement

The Core Community Team met periodically during the course of the study, beginning with a kickoff meeting on May 25, 2005. Each meeting was staffed by SDOT and project consultants who provided technical updates and study materials. CCT members assisted the team with developing needs and opportunities for the study area and then identifying and validating projects that met the goals of SETS. The CCT reviewed the study recommendations, provided comments, and ranked the recommendations. A summary of the Core Community Team's project evaluation is found in the Evaluation section of this report.

Public Comments on Draft Study

SDOT received 110 e-mails, letters or phone calls on the Draft study, many of which addressed more than one project recommendation. SDOT reviewed the comments and, where possible, incorporated these ideas into the Final Report. An example includes:

Project #56 – Seward Park Ave. S. and S. Juneau St:

(As written in the draft):

Proposed, text #2 – Install sharrows and stripe parking lane, reminding drivers there are other users on the street.

(Comment received from a resident):

Provide an uphill climbing lane on Juneau (with sharrows on the downhill side), especially since this is a commonly used bicycle route and it is a steep hill.

*(Response from SDOT- edited text in the final report):
A field check was conducted and found that the roadway width of Juneau was 40', thus the recommended project has been altered to create a westbound climbing lane and an eastbound sharrow, while keeping the parking necessary for those using the adjacent park facilities.*

Where SDOT could take immediate action rather than wait for the plan to be completed, the department did. Examples include:

- Project #16 – Renton Ave. S. & S. Roxbury St./51st Ave. S: this project is currently in design phase with construction estimated to begin in 2010.
- Project #3 – Beacon Ave. S. & S. Lander St: the design phase is nearly complete for the festival street/pedestrian plaza.
- Project #29 – Rainier Ave. S: S. Alaska St. to S. Cloverdale St: as recommended in the Draft report, SDOT has begun an in-depth analysis of the impacts of the conversion of Rainier to 3 lanes, looking specifically at its effects upon

traffic congestion, transit speed and reliability, pedestrian and bicycle safety and mobility, parking and business vitality. When this analysis has been completed, SDOT will brief community stakeholders on the results and discuss next steps.

CCT Representation

The following guidelines informed the selection of participants for the CCT:

Group size: The target group size was between 20 and 25 participants, an optimal group size for effective group discussion.

Representation: Participants were selected to represent a cross-section of geographic areas and interest groups within Southeast Seattle, including: southeast-wide stakeholders, businesses, residents, functional interests (such as pedestrians, bicyclists, schools) and ethnic communities.

Broad vs. narrow focus: SDOT aimed to match different levels of community interest with the most appropriate level of involvement. Because the CCT was intended to focus on area-wide issues and major neighborhood issues that link to other neighborhoods, emphasis was placed on groups that either 1) have a scope of interest that spans Southeast Seattle, or 2) have a more focused mission but can contribute insights about broader transportation issues. Organizations that have a very specific transportation issue or interest were involved through one-on-one and/or targeted outreach.

Representative groups: Where possible, SDOT consolidated representation in order to keep the CCT to a manageable size. For example, if one neighborhood had three overlapping resident councils, one organization was selected to participate in the CCT.

Ethnic communities: Participants invited to serve on the CCT included representatives of refugee and immigrant communities in Southeast Seattle. However, past experience has shown that often, rather than members of the communities participating in a community-wide committee such as the CCT, the most effective method is to offer targeted discussions within (and sometimes organized by) the communities themselves. The project team was mindful of this and worked with the communities to determine the most effective method for meaningful involvement.

CCT Members

The following individuals were appointed to the Core Community Team, representing the organizations listed:

Pete Lamb, Columbia City Business Association
Joseph Ayele, Ethiopian Business Association
Mar Murillo, Filipino Community of Seattle
Denise Gloster, Hillman City Business Association
Nancy Dulaney, Hillman City Business Association
Pamela Wrenn, Hillman City Neighborhood Alliance
Sara Valenta, HomeSight
Richard Ranhofer, Lakewood Seward Park Neighborhood Association
Pat Murakami, Mt. Baker Community Club
Dick Burkhart, Othello Station Community Advisory Board
Gregory Davis, Rainier Beach Coalition for Community Empowerment
Dawn Tryborn, Rainier Beach Merchants Association
Seanna Jordon, Rainier Beach Neighborhood 2014
Jeremy Valenta, Rainier/Othello Safety Association
Rob Mohn, Rainier Valley Chamber of Commerce
Thao Tran, Rainier Valley Community Development Fund
Someireh Amirfaiz, Refugee Women's Alliance
Rodney Rutherford, Seattle Bicycle Advisory Board
Ed Rose, Seattle Housing Authority
Molly McCarthy, Seattle Pedestrian Advisory Board
Ahmed Jama, Somali Community Services Coalition
Warren Yee, South Beacon Hill Neighborhood Association
Eric Steinwinder, South Lake Improvement Group
Leslie Miller, Southeast District Council
Scott Barkan, Southeast Effective Development
Cherie Sigrist, Southeast Seattle Senior Center
Quang H. Nguyen, Vietnamese American Economic Development Association

2. Modes



Balancing the needs of all travelers

The recommendations included in this plan are designed to balance the needs of drivers, including freight, transit riders, walkers and bicyclists. The projects make walking and bicycling a safer and more convenient choice, particularly for shorter trips. Additionally, the projects focus on improving transit, including the speed and reliability of bus service, and access to and from bus stops and light rail stations.

Over four million trips a day

Over four million times a day, a Seattle resident takes a trip. About 70 percent of these trips are by car, driving alone or with others, about one in ten are by bus, and one in five are on foot or by bicycle. About two percent are by "other modes," a surprising number for a category that includes skateboards, scooters and kayaks.

Only ferry trips average more than ten miles. Not surprisingly walking and bicycling trips are the shortest, at just under a mile, with the remainder averaging around five miles.

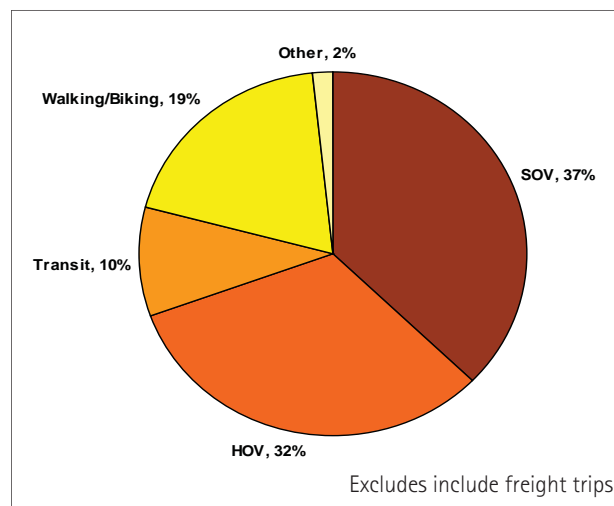


Figure 4: How People in Seattle Travel
Source: PSRC 2006 Household Survey

How Southeast Seattle travels

Trip patterns may be slightly different in Southeast Seattle, where about one in four families do not own a car, about 75 percent work inside the Seattle city limits and about 25-30 percent of workers commute by bus.

In 2005, Seattle's Comprehensive Plan update established mode choice goals for trips made by city residents. The 2020 goal for "all other" trips -- that is non-drive-alone modes such as walking, bicycling, carpools and transit -- is 60 percent. Interestingly, the Puget Sound Regional Council's travel diary study completed in 2007 found that 63 percent of all trips by city residents are now by a mode other than drive alone. That 63 percent was measured slightly differently than the Comprehensive Plan goal and so cannot be directly compared. However, the survey still indicates that Seattle residents are making exciting progress in choosing different ways to travel.

The success of moving people from driving alone to other ways of travel suggests that as other modes are made even safer, more pleasant and more convenient, more people will choose to leave their cars parked, or to forgo the expense of car ownership altogether, and take to feet, bicycle, bus and trains as they travel around the city and the region. If they do so, the benefits to urban livability, human health, and the environment will continue to accrue.



Friends on the Chief Sealth Trail enjoy both the health and companionship benefits of walking.

Walking

Seattle's Transportation Strategic Plan defines a set of pedestrian strategies which SETS will implement in Southeast Seattle.

SETS pedestrian recommendations are designed to:

- Improve safety
- Encourage walking, particularly for short local trips
- Connect pedestrians to bus stops and light rail stations

Bicycling

The recently completed Seattle Bicycle Master Plan calls for tripling bicycle trips in the city over the next ten years, while reducing the rate of collisions by one-third.

SETS bicycle recommendations are designed to:

- Improve safety
- Provide a comprehensive network of routes for commuters, local trips and recreational bicyclists
- Encourage bicycling as an alternative to driving
- Connect bicyclists to transit

Transit

Seattle's Transit Plan designates an Urban Village Transit Network that creates a city-wide network of fast, frequent and reliable bus service. Sound Transit is finishing construction of the region's first light rail line which will connect five stations in Southeast Seattle with downtown, SeaTac Airport, and eventually major centers throughout the region.

SETS transit recommendations to reinforce these investments are designed to:

- Maintain speed and reliability for buses operating on arterial streets in mixed traffic
- Improve access to and from bus stops and light rail stations for walkers, bicyclists and kiss-and-riders
- Preserve future transit corridors for bus and/or streetcar service

Vehicles

Between 2007 and 2030 vehicle volumes in Southeast Seattle are expected to grow moderately. A number of already congested and/or high collision intersections will worsen unless improvements are made.

SETS recommendations maintain existing capacity for drivers and will:

- Improve safety
- Reduce delays at selected intersections
- Maintain arterial street capacity
- Calm traffic in high pedestrian areas



Buses can help bicyclists master Seattle's hills.

Freight

Southeast Seattle contains one Major Truck Route, on Martin Luther King Jr. Way S. and Rainier Ave. S, providing arterial street connectivity to I-5 and I-90. It is home to freight-dependent businesses, particularly along Rainier between Dearborn and MLK. In addition, businesses throughout the area depend on freight deliveries to bring the goods they sell to their customers.

SETS recommendations focus on freight needs to:

- Improve safety
- Maintain access and circulation in the North Rainier commercial zone and for freight dependent businesses elsewhere
- Support freight deliveries to businesses including loading areas and the street geometry needed for truck access
- Maintain the Major Truck Route on MLK and Rainier



A future pedestrian at Columbia City Bakery ponders how it's done.

2. MODES

Walking

Seattle already walks

Walking is convenient, inexpensive, healthy and satisfying. In Seattle, people make trips on foot nearly 750,000 times a day, walking, on average, about three-quarters of a mile. In 2007, *Prevention Magazine* ranked Seattle as the fifth best walking city in the country.

Why walk more

Walking is pollution-free and strengthens neighborhoods and business districts. For short trips, it's a practical alternative to driving; for longer trips jumping on the bus or train for part of the way extends the range that can be covered by legs and feet. Almost everyone walks, some a little, some a lot. The added benefits from walking also can improve individual health and the health of the community as well.

Most important: Places to go

A recent study (cited in the *American Journal of Public Health March, 2007*) found that older people in Seattle are more likely to walk when there are active neighborhoods with multiple places to go close to their homes. People near parks and walking trails, but far from stores, walk less, while even Seattle's hills don't keep seniors from walking where there are places to go.

What's true for seniors, is true for everyone. Getting people on their feet is about more than making sure there is a good sidewalk and a safe way to cross the street. It's about having a destination, ideally one where people go most frequently, to run out and get a carton of milk, to fill a prescription, to mail a letter, or to have a meal out. When these opportunities are within walking distance of people's homes, they're more likely to leave the car parked — if they own one at all — and walk.

Supporting and encouraging walking

Of the recommended projects in SETS, over 80 percent help pedestrians by improving safety, mobility, and the overall environment for people on foot. This, in turn, has the potential to increase the numbers of people shopping locally, to make transit a more frequent choice, and to benefit the environment by encouraging walking as a first choice, particularly for trips within neighborhoods.

Putting diners on the sidewalk is one of the most effective ways to create interesting, inviting, safe streets — places where people want to walk. This restaurant in Columbia City contributes to the kind of streetscape that make walking a joy.

Walking to shop

Why does it matter if people can walk to the store?

There are many reasons, not the least of which is that it's a nice way to live. When people talk about the appeal of in-city living, less driving is usually high on the list of desirable attributes. Walking feels good, you can stop and talk to your neighbors, and busy sidewalks are interesting and safe.

Neighborhood businesses depend upon it

Neighborhood businesses compete by the nature of their location, adjacent to where people want to live. Certainly, small businesses depend on customers being able to come by car and transit, as well as foot and bicycle. But above all, they depend on their customers, whether they've walked from home and driven and parked, being able to walk comfortably within the business district, between establishments, and enjoy the experience of being in an urban place.

Shopping is a third of all travel

The Puget Sound Regional Council estimates that about a third of all miles traveled are for shopping and personal business; region-wide, almost 90 percent of these trips are made in cars. Walking to a local store, instead of driving to one further away, saves energy, reduces emissions, and reduces all the other effects of traffic including noise and collisions.

When residential densities exceed 18 people per acre, walking for shopping and personal trips skyrockets. This is simply because at higher densities there are enough people to support a wide variety of retail and services within walking distance. Urban villages in Southeast Seattle range from about 10-21 people per acre.



Walking as a safe choice

A 2003 report by the National Highway Traffic Safety Administration found that Seattle had the lowest pedestrian fatality rate per 100,000 people for all cities in the United States over 500,000. While Seattle is clearly doing well in relation to its peer cities, even one pedestrian fatality is too many.

The feeling of insecurity while walking induced by wide crossings with no refuge, fast-moving traffic, long distances between intersections and poor quality or missing sidewalks also often discourages people from walking.

We need to “provide roadway, sidewalk and streetscape improvements that help promote safe, walkable commercial districts that invite people to shop, eat, do their errands, and interact with their neighbors, and that encourage people to visit and linger.”

Core Community Team Member

Walking Recommendations

There are both natural and man-made barriers to walking: steep hills, missing sidewalks, lack of crossings, traffic and others. Many of these can be addressed with physical improvements. Recommended projects fall into four key areas:

Calm Traffic: Protect pedestrians from moving vehicles; use design to signal presence of pedestrians.

Crossing the Street: Narrow intersections; add curb extensions; add mid-block crossings; make pedestrians more visible to drivers; add signals; add pedestrian medians; slow turning vehicles.

Complete Sidewalks: Add sidewalks; maintain sidewalks; establish curb lines; consolidate, narrow and/or move driveways.

Define Pedestrian Places: Improve business districts to support a wider range of retail and services; put front doors on the sidewalk and move parking to the side or back; add pedestrian-scale lighting, signs and wayfinding, trees and landscaping, and street furniture such as kiosks and benches.



A “Walking School Bus” on Beacon Avenue. Children get to and from school safely and no one has to drive them.

2. MODES

Bicycling

A Great City for Bicycling

Despite the rain and terrain, **Seattle consistently rates as among the best cities for bicycling in the United States.** Like walking, bicycling is pollution free, inexpensive, healthy and satisfying. Over half of the SETS projects improve conditions for bicyclists.

Implementing the Seattle Bicycle Master Plan

Many of the projects in this study incorporate recommendations from the Seattle Bicycle Master Plan. Recommendations range from adding sharrows on streets to construction of a bicycle/pedestrian bridge over I-5.

In most instances the SETS recommendations are consistent with the Seattle Bicycle Master Plan. However, there are a few exceptions including: bicycle facilities on Seward Park Avenue S., traffic signals, and Rainier Ave. S. recommendations.

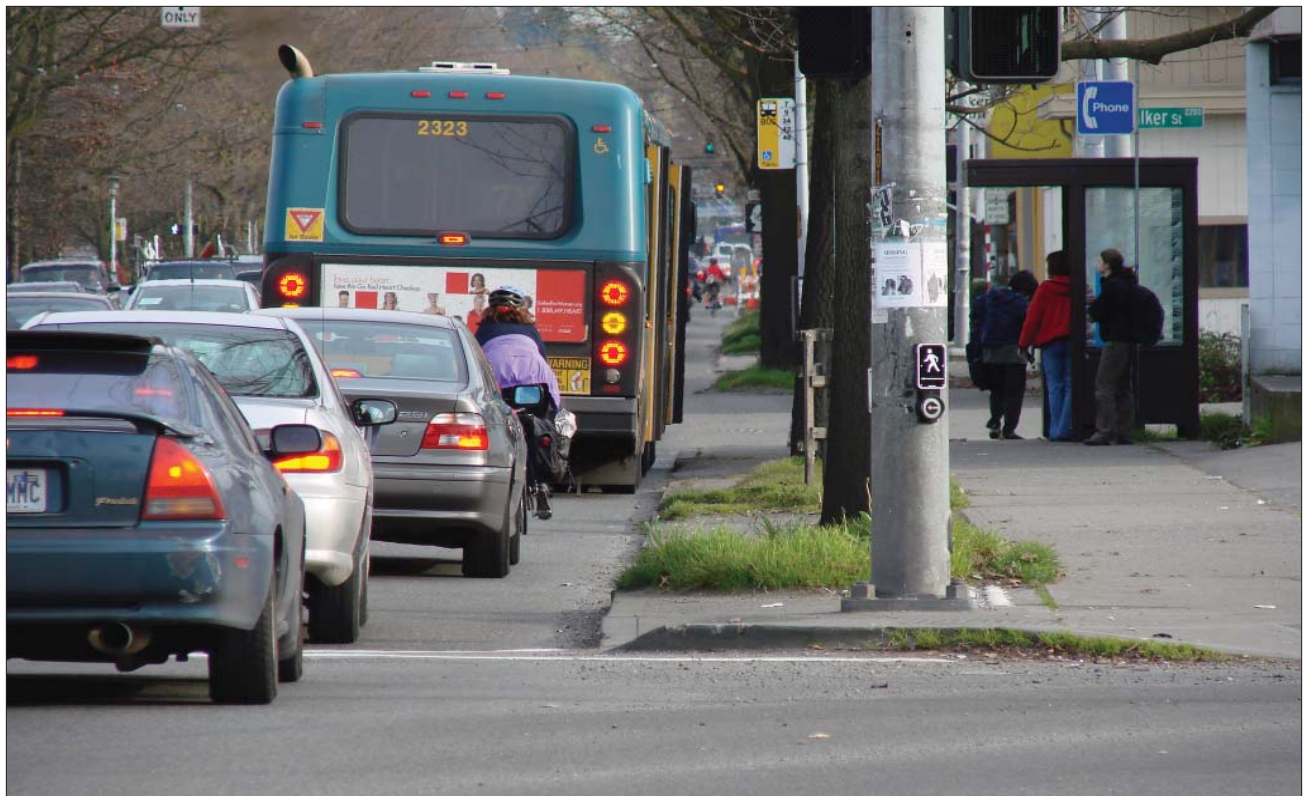
As the Seattle Bicycle Master Plan states, all improvements will be reviewed and analyzed prior to implementation.

Bicycling as a Safe Choice

Between 1998 and 2003 there were 47 bicycle/vehicle collisions reported in Southeast Seattle. Thirty-six of these were reported along just five arterial streets: Seward, Renton Ave. S, Martin Luther King Jr. Way S, Beacon Ave S. and Rainier. None of these collisions resulted in a fatality. These collisions include only those reported to the city. It's likely that the majority of collisions, particularly those that do not involve serious injury, are never reported.

Safer bicycling means safer driving

A 2006 study by the University of Texas found that the one of the greatest safety benefits of providing bicycle lanes is safety for drivers. Without the lane markings, drivers tend to veer into oncoming traffic to avoid bicyclists. With the lane markings, everyone stays safely in their own lane. The same study reported that only 2.2 percent of bicycle/vehicle collisions occurred in a bicycle lane, and these collisions were less severe, with fewer injuries and fatalities.



Bicyclists looking for a fast, direct route compete with cars, trucks and buses for limited space on the road.

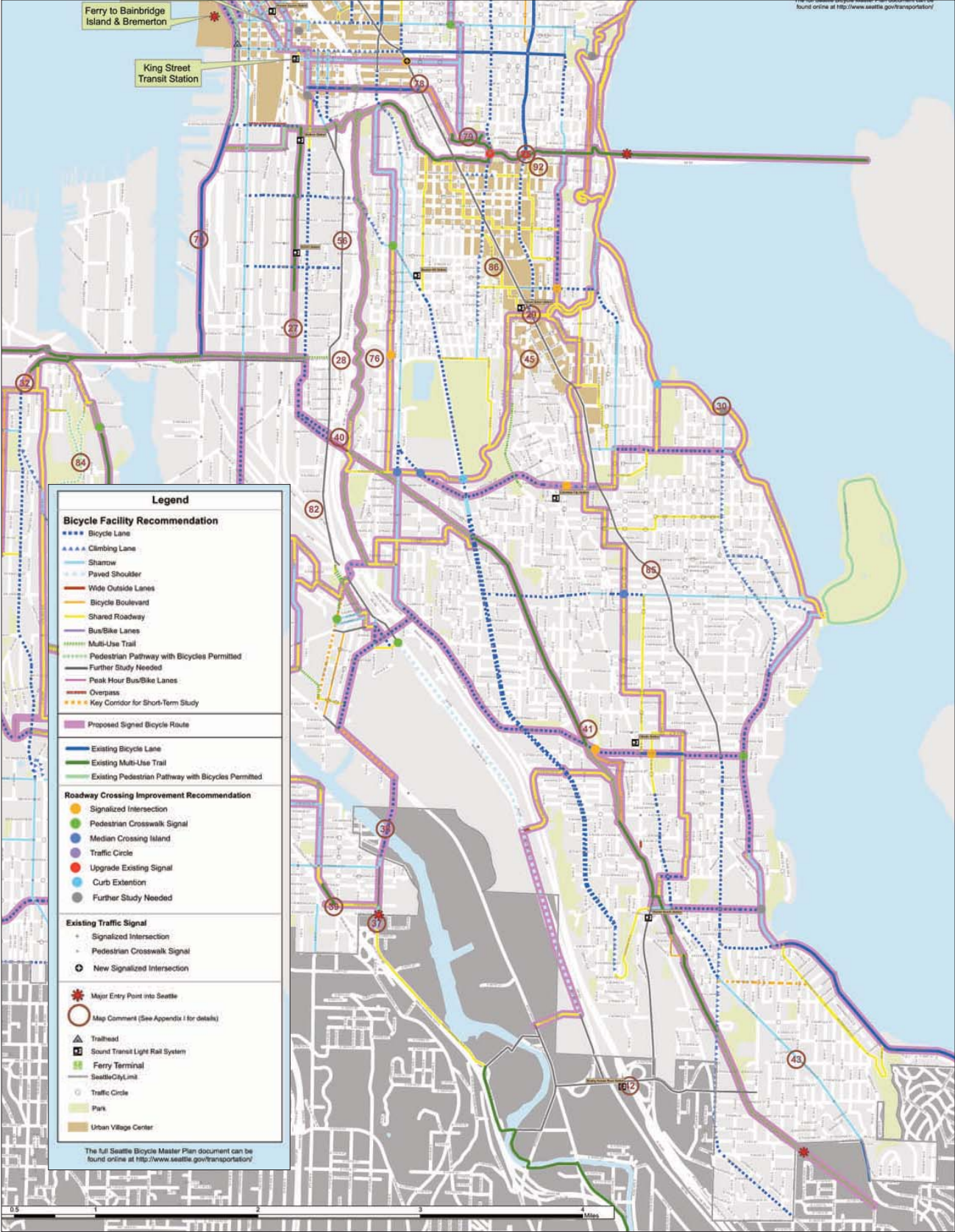


Figure 5: Seattle Bicycle Master Plan, Southeast Seattle
Source: SDOT 2007

2. MODES
Bicycling

Table 1: Seattle Bicycle Master Plan Recommendations within Study Area
 Source: SDOT 2007

Recommended Bicycle Lanes & Sharrows	Recommended Full Crossing Traffic Signals
12th Ave. S.	S. McClellan St. and 31st Ave. S.
14th Ave. S.	S. Spokane St. and 14th Ave. S.
15th Ave. S.	S. Alaska St. and 33rd Ave. S.
S. Holgate St.	S. Myrtle St. and 36th Ave. S.
Golf Dr. S.	S. Othello St. and 43rd Ave. S.
Beacon Ave. S.	
S. Columbian Way	
Swift Ave. S.	
Martin Luther King Jr. Way S.	
23rd Ave. S.	
31st Ave. S.	
S. McClellan St.	
S. Orcas St.	
S. Alaska St.	
S. Genesee St.	
S. Massachusetts St.	
Rainier Ave S. (south of Othello)	
Lake Park Dr. S.	
Mt. Baker Dr. S. / Hunter Blvd.	
Wilson Ave. S.	
Seward Park Ave. S.*	
Renton Ave. S.	
51st Ave. S.	
S. Henderson St.	
S. Cloverdale St.	
S. Othello St.	
Recommended I-5 Crossings	Recommended Pedestrian Crossing Signals
Chief Sealth Trail crossing of I-5	Beacon Ave. S. and 14th Ave. S.
Albro Pl. S.	S. Othello St. and Seward Park Ave. S.
Recommended Corridor Studies	Recommended Curb Extensions
S. Roxbury St.	Lake Washington Blvd. S. and 43rd Ave. S.
45th Ave. S. / S. Fletcher St.	S. Alaska St. and Beacon Ave. S.
Lake Washington Blvd.	
39th Ave. S. / S. Holly Park Dr. S.	
Rainier Ave. S.	
Recommended Multi-Use Trails	Recommended Median Crossing Islands
Morse Ave. S.	S. Snoqualmie St. and 15th Ave. S.
Seattle City Light ROW - Beacon Ave. S. to I-5	S. Snoqualmie St. and S. Columbian Way
Beacon Trail	S. Orcas St. and 39th Ave. S.
	Recommended for Further Study
	Lake Washington Blvd. and 50th Ave. S.
	Seward Park Ave. S. and S. Henderson St.
	Recommended Traffic Signal Upgrade
	23rd Ave. S. and I-90
	Martin Luther King Jr Way S. and I-90
	Other Recommendations
	Repaving and drainage improvements on Lake Washington Blvd. and Lakeside Ave.
	When overpass at Rainier and MLK is reconstructed, ensure adequate width for pedestrians and bicyclists.
	Eliminate concrete joint on Renton Ave. S.
	Develop sidepath on east side of MLK between Renton Ave. S. and S. Walden St. to create route from York Park and Mt. Baker Station.
	Consider trough beside stairs between S. Spokane St. and Airport Way S. and Beacon Hill.
	Conduct engineering to determine feasibility of multi-use trail between 24th Ave. S./S. Bayview and S. McClellan/26th Ave. S.

Adding bicycle lanes and sharrows on Rainier

The Seattle Bicycle Master Plan identifies Rainier Ave. S. as a bicycle corridor that needs more study.

SETS recommends a commitment to establishing bicycle facilities on Rainier south of Alaska. Implementation will require detailed engineering and design work.

Bicycling Recommendations

The key focus in SETS is to reinforce the strategies in the Seattle Bicycle Master Plan by seconding the plan recommendations and by implementing other spot improvements that will improve conditions for bicyclists. In addition, SETS recommends a conversion from four lanes to three lanes on Rainier Ave. S. between S. Alaska St. and S. Cloverdale St. Among other benefits, this would create more room for bicycles.

Recommended projects fall into four key areas:

Complete Streets: Use design to signal presence of bicyclists; create bicycle lanes or use pavement markings to accommodate bicyclists.

Improve Crossings: Reduce crossing distances for bicyclists; rechannel traffic lanes to improve sight distances for drivers turning onto and off of arterial streets.

Missing Links: Improve bicycle network connectivity at overpasses and bridges; connect existing bicycle facilities to each other.

Improve Wayfinding: Add signage to direct bicyclists to destinations and to bicycle routes.



These recreational bicyclists on Seward Park Ave S. on Sunday may well be bicycle commuters on Monday.

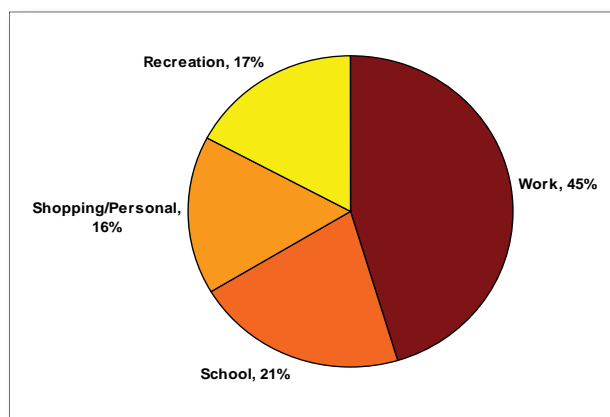


Figure 6: Where People go on Bicycles - Central Puget Sound
Source: PSRC 2006

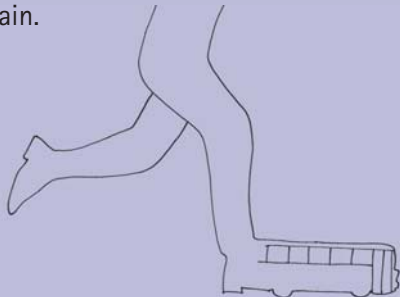
The Urban Village Transit Network

Seattle's Transit Plan defines an Urban Village Transit Network (UVTN) that, by 2030, will connect all of the city's Urban Villages with buses, light rail and/or streetcars that operate at least every 15 minutes, 18 hours a day, seven days a week.

With two of the highest ridership routes in the region, and about a dozen other routes serving the study area, Southeast Seattle already enjoys all-day frequent service between all of its urban villages. It also has two of the highest ridership routes in the region: Route 7, with 3.4 million riders a year and Route 36 serves another 2.5 million people a year. These two routes alone carry almost 20,000 passengers a day.

Transit: An extension of the foot

In a suburban environment, transit is most commonly designed to be an alternative to the car for people commuting to work. But in a city where driving is inconvenient, parking is scarce and expensive, and even owning a car can be a hassle, transit needs to be designed to be an extension of the foot. Whether starting out on foot or on a bicycle, transit extends the distance you can travel under your own steam, without two tons of metal hanging off you like a ball and chain.



The City's role in transit

Seattle does not run the buses, but it does own the right-of-way they travel on and so, in large measure, has the ability to influence the speed and reliability of bus service.

Seattle has engaged in partnerships with King County Metro for decades; one example is making up the fare revenue foregone in the downtown free ride zone, to encourage people to leave their cars at home when coming downtown. Now, with the success in 2006 of Seattle's Bridging the Gap funding initiative and King County's Transit Now initiative, there are new opportunities for partnerships to improve bus service.

The challenge for Seattle is to balance the needs of buses, cars, trucks, pedestrians and bicyclists — along with those who live and work along our streets. Projects designed to calm traffic, improve safety, add bicycle facilities and support walkable, pedestrian-oriented urban villages, also need to be designed to keep buses moving. If transit speeds are slowed in some areas to support urban village environments, then increased measures to ensure speed and reliability need to be applied in corridors outside of urban villages.



With the passenger loads on the Route 7, getting people on and off at stops can take a long time. Faster boarding would improve speed and reliability, reduce operating costs and attract more riders.

Linking to Link light rail

Among the major reasons for undertaking the Southeast Transportation Study at this time is to be prepared to take full advantage of the light rail investment now being built in Southeast Seattle. Sound Transit is investing over two billion dollars in its initial light rail line and the payoff will be enjoyed in Southeast Seattle for generations to come.

Starting in 2009, Southeast Seattle's five Link light rail stations will bring thousands of people a day to the area's five urban villages. In the case of Columbia City and Rainier Beach, the stations are a few blocks from core business districts, and street improvements now being constructed will help connect riders from the stations to nearby community services and retail centers. At all five stations, recommended projects focus on ensuring that people can arrive easily and safely by foot, bicycle and bus, and that the station areas are developed as vibrant, pedestrian-oriented destinations.

Good bus service will be even more critical

When Link light rail begins operating, buses will be even more important in Southeast Seattle than they are today. With high frequency, high capacity rail service along a central spine, people will be more likely to depend on transit to get them where they want to go. This means that in the region's built-up central cities, people will increasingly rely on transit for more and more of their trips, many of which will most conveniently be served by local buses or streetcars.

Experience in other cities suggest that while bus routes exactly parallel to a new light rail line lose riders, demand on other routes increases, both to get people to and from rail stations and for other trips.



Laying track for Link light rail on Martin Luther King Jr. Way S. at S. Graham St.

Transit Recommendations

SETS includes nine transit-specific project recommendations that fall into three key areas:

Speed and reliability: Make changes that improve the operation of existing bus routes to provide better service for riders and to make the best use of available resources.

Access: Get riders to and from light rail stations.

Future corridors: Preserve future corridors for possible new bus routes and/or streetcars.

None of these recommendations can be implemented by the City alone, although the City can cooperate, assist, and in some cases help pay for improvements.



This streetcar in The Hague operates in the median of a street similar to Beacon Ave. S. where it is a boulevard.

2. MODES

Vehicles

Driving in Southeast Seattle

In looking at how the transportation network in Southeast Seattle works for freight and passenger vehicles, this study focuses first on safety. The study also looks at traffic volumes and how intersections are working, and includes recommendations to reduce delays at the most congested locations.

Driving as a safe choice

On a percentage basis, few of the vehicle collisions that occur on city streets result in serious injuries or fatalities, either to the occupants of the vehicles, or to pedestrians or bicyclists. But unfortunately, a huge number of collisions happen each year and even a small percentage means that many people are injured and some are killed. Additionally, even minor collisions often result in significant property damage, and in delays for other drivers. Safety for all travelers is the primary focus of SETS; nothing is more important than saving lives.

Balancing Conflicting Needs

All streets have two basic functions: to provide mobility and to provide accessibility. These functions may be incompatible since high, uninterrupted speeds are desirable for vehicle mobility, while low speeds with interruptions are desirable for access, and for bicycle and pedestrian mobility.

There is also the strong realization that, for environmental reasons, we cannot continue to travel as we do now and for that reason alone, we must be very serious about the focus on making the best use of what we have. The Comprehensive Plan and the Transportation Strategic Plan make it clear, in their goals, policies and objectives, that the emphasis now has to be on moving people and goods.

Realistically, no new major arterials are going to be constructed and no existing streets are going to undergo major widening. More land for moving vehicles could only come at the expense of tearing down buildings. Thus, while traffic can and likely will continue to grow, there's a finite limit to vehicle capacity in major corridors.

Improving safety and mobility

SETS recommendations focus on long term solutions that are intended to reduce conflicts by slowing traffic, redesigning streets and intersections, adding roundabouts and traffic signals, and separating pedestrians and bicyclists from moving traffic.

Recommendations

SETS includes vehicle-related project recommendations that fall into four key areas:

Improve Safety: Lower and enforce speed limits; re-design streets and intersections to separate vehicles, pedestrians, and bicyclists.

Reduce Delays: Redesign intersections, modify signal operations and add roundabouts.

Maintain Arterial Street Capacity: Keep traffic on arterial streets and off neighborhood streets by designing streets and traffic control systems to accommodate current volumes and anticipated growth.

Maintain Freight Access and Circulation: During project design ensure that street geometries will accommodate freight circulation; maintain access to existing freight loading facilities and zones and add new zones where necessary; preserve Major Truck Route.



Handing out zipper pulls to remind kids about safety.

High Collision Locations

The SETS project team looked at the record of collisions in the study area going back to 1998, to determine which locations needed to be evaluated for safety improvements.

A Vehicular High Collision Location (HCL) is determined by the number of collisions per year, as follows:

- A signalized intersection with ten or more.
- A stop sign intersection with five or more.
- A mid-block location with two or more.

A Pedestrian or Bicycle High Collision Location is a location with four or more collisions in six years.

Since 1998, 39 intersections and 14 mid-block locations in the study area have qualified as HCLs in at least one year. The study has addressed many of these locations and developed projects to improve safety and reduce collisions.

Table 2: High Collision Locations 1998–2006

Intersection		Signalized	Vehicular HCL	Pedestrian HCL	SETS Project
Street	Cross Street				
Beacon Ave. S.	S. Orcas St.		•		49
	S. Stevens St.		•		6
	S. Eddy St.		•		--
S. Columbian Way	S. Oregon St.		•		47
MLK Jr. Way S. *	S. McClellan St.	•	•		--
	* S. Alaska St.			•	--
	* S. Juneau St.		•		--
	* S. Graham St.	•		•	--
	* S. Othello St.	•	•	•	--
	* Renton Ave. S.		•		--
	* S. Thistle St.		•		--
Rainier Ave. S.	S. Dearborn St.	•	•		17
	** S. Massachusetts St.	•	•		19
	23rd Ave. S.	•	•		22
	** S. Bayview St.	•		•	--

* MLK Jr. Way S. south of Rainier Ave. S. is under construction for light rail and improvements are part of that project. Henderson improvements are part of that project.

** Has received some improvements through the Rainier Traffic Safety Project.

Intersection		Signalized	Vehicular HCL	Pedestrian HCL	SETS Project
Street	Cross Street				
Rainier Ave. S.	S. Stevens St.		•		--
	MLK Jr. Way S.	•	•		24
	S. Walden St.			•	25
	S. Genesee St.	•	•		26
	S. Oregon St.		•		27
	39th Ave. S.		•		30
	42nd Ave. S.		•		31
	** S. Orcas St.	•	•	•	32
	S. Juneau St.		•		32
	S. Graham St.	•		•	33
	S. Garden St.		•		--
	* S. Henderson St.	•		•	--
	51st Ave. S.		•		40
Renton Ave. S.	51st Ave. S.		•		16
15th Ave. S.	S. Dakota St.		•		--
	S. McClellan St.		•		2
22nd Ave. S.	S. College St.		•		12
23rd Ave. S.	S. College St.		•		12
	S. Walker St.		•		--
37th Ave. S.	S. Genesee St.		•		--
	S. Orcas St.		•		--
39th Ave. S.	S. Graham St.		•		--
	S. Orcas St.		•		--
42nd Ave. S.	S. Graham St.		•		57
Mid-Block Vehicular HCLs					
Rainier Ave. S.	Dearborn/Charles				--
	Bayview/McClellan				--
	McClellan/Forest				--
	Charlestown/Andover				--
	Adams/Genesee				--
	Oregon/Alaska				28
	Edmunds/Ferdinand				29
	Hudson/39th				29, 30
	Holly/Willow				29
	Othello/Fontanelle				29
	Cloverdale/Henderson				--
	Henderson/Director				--
	54th/Seward Park				41
35th Ave. S.	Myrtle/Othello				--

Congested Intersections

Deciding whether and how to address highly congested intersections is a complex decision. In an already built-up city, the options to move traffic more quickly are usually severely limited. There is rarely room in the existing right-of-way to widen or add lanes without affecting planting strips, sidewalks, and even taking private property. Reducing delays at one location may simply send more traffic to the next bottleneck, creating a new problem down the road. Finally, improvements for drivers may make conditions worse for everyone else, including the drivers themselves once they leave their cars. Creating conditions for more traffic to move more quickly may make it more difficult for people walking and biking, and may create an unpleasant environment for people who live and work along the street.

This study analyzed 47 intersections in the study area, based on a judgment of how likely they were to be congested as defined by delay. Intersection "Level of Service" was measured for each intersection based on conditions in 2004 and projected conditions for 2030. The 2030 projections did not assume implementation of SETS or other improvements.

The thirteen most congested intersections of those analyzed are listed here starting with the longest delay. Unless noted, the intersections are signalized.

Table 3: Congested Intersections Analyzed in Study Area
Source: Mirai

Intersections	LOS		Project
	2004	2030	
Beacon Ave. S & S. Columbian Way	F	F	48
Rainier Ave. S & S. Dearborn	F	F	17
Swift Ave. S & I-5 NB Off-Ramp	F	F	50
15th Ave. S & McClellan (stop sign)	F	F	2
51st Ave. S. & Renton (stop sign)	F	F	16
Beacon Ave. S & S. Spokane	F	F	46
S. Columbian Way & S. Spokane	C	F	46
Swift Ave. S. & S. Graham	D	E	50
Rainier Ave. S. & S. Alaska	D	E	--
Rainier Ave. S. & 23rd Ave. S.	D	E	22
Renton Ave. S. & S. Henderson	D	E	*
Beacon Ave. S. & Orcas (stop sign)	D	F	49
Wilson Ave. & Dawson (stop sign)	D	E	55

* As part of the Sound Transit light rail project, this intersection has been addressed.

What is "Level of Service"

Level of Service (LOS) is a set of standard measures used by traffic engineers to describe traffic conditions, from free flowing (LOS A), to severe delay (LOS F). Arterial street intersection LOS is measured differently for signalized and unsignalized intersections, based on the assumption that drivers do not expect to wait as long at a stop sign as they might at a traffic light.

Traffic will grow moderately by 2030

Currently only two streets exceed 30,000 vehicles per day: Rainier Ave. S. north of Martin Luther King Jr. Way S. and MLK south of S. Graham St. Looking ahead to 2030, traffic is expected to grow less than 2 percent a year, with overall volumes on arterial streets increasing over 2004 counts from about 12 percent to as much as 37 percent.

Table 4: Traffic Volumes Analyzed in Study Area
Source: Mirai

Average Weekday Volumes	2004	2030 Proj.
Rainier N of MLK	37,880	41,670
Rainier N of Alaska	25,040	31,050
Rainier N of Henderson	19,350	23,220
Beacon at Jefferson Park	13,150	14,470
15th Ave S of Columbian	26,760	33,450
Columbian W of Beacon	17,370	21,710
MLK N of Columbian	22,500	25,880
MLK S of Graham	31,860	36,640
Henderson E of Renton	10,250	13,070
Rainier N of Henderson	19,350	23,220

What is "split-phase"

Split-phase is a term describing how a traffic signal operates. A split-phase traffic signal serves one direction of the mainstream traffic to accommodate left turns. No separate turn lanes are needed.

Freight

A designated Major Truck Route runs through Southeast Seattle, starting in the south at Martin Luther King Jr. Way S. and I-5, and continuing north to the intersection of MLK and Rainier Ave. S. It then shifts to Rainier and continues north to S. Dearborn St. The area along Rainier between S. McClellan St. and Dearborn is zoned commercial south of I-90 and industrial/commercial north of I-90. Businesses in this area depend on good freight access.

Other freight-dependent businesses are located throughout Southeast Seattle, including a concentration at the southern end of MLK where there is good direct access to I-5. In addition to freight dependent businesses, large trucks operate throughout the study area bringing groceries to supermarkets and deliveries of all kinds to stores, businesses and homes. Larger trucks need to be able to navigate intersections and turns into and out of businesses, and all trucks need loading zones.

Freight Recommendations

Freight project recommendations for SETS fall into three key areas:

Access and Circulation: Maintain access and circulation for trucks in the North Rainier commercial Zone and for freight dependent businesses elsewhere in the study area.

Deliveries: Support freight deliveries to businesses, including street geometries for truck access and loading.

Major Truck Route: Maintain the Major Truck Route on MLK and the northern portion of Rainier.



The fact that SETS includes no equestrian projects did not prevent three of Seattle's Finest from stopping for a cup of coffee on Rainier Avenue near the Mt. Baker Station construction site.

Parking

The availability and cost of parking are the largest determinants in a person's decision to drive or choose another travel mode, such as transit or walking. Consequently, the City seeks to provide enough short-term parking to support business customer use while discouraging the use of public parking for long stays, such as by employees.

Although Seattle residents may travel alone in their cars for only 37 percent of all trips, there are still a lot of cars that need to be parked somewhere. About a third of all trips are carpools; this means over two-thirds of the time, travel involves parking a vehicle, and for non-commute trips driving rates are higher. So for drivers, parking is important. Parked cars also have an important function in providing a buffer between pedestrians and moving traffic.

An adequate supply of public parking is essential for small businesses who rely on their customers arriving by every means possible, but who often cannot afford to provide private off-street parking. The need for more parking is one of the most common concerns expressed by neighborhood business associations.

Hide-and-Ride parking management

There is concern in each of the neighborhoods surrounding the Link light rail stations that once light rail begins operating people will drive in and park on local streets and then ride downtown or to the airport. The City and Sound Transit have developed a joint approach to monitor neighborhood parking conditions and respond as necessary to prevent hide-and-ride parking.

Streets for Travel and People

In the hierarchy of streets there is only one classification that is reserved solely for vehicles and that is Freeways. All other streets are shared, some more, some less, by all the people and goods that travel on them and the people who work and live along them. Streets are pathways and they are also front yards.

Classifications, Street Types & Overlays

Seattle addresses the multiple uses of streets through a combination of classifications, street types, designations and overlays.

Classifications define how the street functions as a travel corridor. In Seattle streets are classified from heaviest to lightest traffic use, starting with Interstate Freeways and continuing all the way to alleys.

Street types relate to street use and design features that support adjacent land uses. Examples include Main Streets, Mixed Use Streets, and Neighborhood Green Streets.

There are also **overlays**: Station Area Overlays, for example, restrict new auto-oriented uses surrounding light rail stations; Principal Pedestrian Streets are designed to support shopping districts.

Why it matters

The importance of street classifications, types and overlays is that they define how streets will be built and operated which, in turn, defines the expectations of adjacent land owners, residents and businesses. Along with parcel zoning, street designations also define what can and cannot occur as new projects are built and existing parcels redeveloped. Following are a few examples of street types and overlays that exist or are suitable for different locations in Southeast Seattle.

Overlay: Station Area

The Station Area Overlay was developed during the Station Area Planning process that accompanied the siting and design of the Link light rail line in Seattle. Station Area Overlays exist at all five Link light rail stations in Southeast Seattle and restrict auto-oriented development in the vicinity of the stations, including drive-throughs, gas stations and auto parts stores. Existing businesses were grandfathered in.

Ordinance: Complete Streets

Seattle passed a "Complete Streets" ordinance in 2007 which defines "guiding principles and practices so that transportation improvements are planned, designed and constructed to encourage walking, bicycling and transit use while promoting safe operations for all users." The ordinance specifically recognizes that: "Complete Streets may be achieved through single projects or incrementally through a series of smaller improvements or maintenance activities over time." In practice, any time street work other than routine repairs and maintenance is undertaken, design must include a full evaluation of Complete Streets principles and potential improvements.

What is a "Complete Street"?

"Complete Streets" is a national movement to implement policies to develop streets that work for all travelers of all abilities. This movement reflects the fact that people want the opportunity to walk and bicycle more. National polls indicate that 52 percent of Americans want to bicycle more than they do now and 55 percent would prefer to drive less and walk more. Complete Streets are safe and inviting places for walking and bicycling, they support transit and transit riders, freight and goods movement, and provide safe access for vehicles.

Street Type: Main Street

"Main Streets" — arterial streets within the most pedestrian-oriented sections of neighborhood business districts — are designed to promote walking, cycling and transit use. They have a Pedestrian designation in the land use code which refers to intensely retail and pedestrian-oriented shopping districts where non-auto modes of transportation to and within the district are strongly favored.

Main Streets have a buffer between moving traffic and sidewalks, sidewalks are wide, with space for bus shelters and outdoor seating. They are typically a half mile long or less, but can be longer if warranted.

Pilot Project: SEA Streets

Street Edge Alternative (SEA) Streets is a pilot project developed by Seattle Public Utilities to improve water quality by reducing the amount of paved surfaces and introducing natural drainage. Early projects have reduced stormwater runoff into storm sewers by 99 percent. There are many streets in Southeast Seattle today without curbs and gutters where SEA Streets could be built.

Recommendations

Many of the projects recommended in this study have elements that could be enhanced by applying existing policies or programs. Project recommendations include: reviewing the street types, overlays and designations as they are currently applied to streets in Southeast Seattle and, working with the community, businesses and property owners, developing a consistent program of street types, overlays and designations. Seattle Public Utilities should be asked to prepare a SEA Streets plan for Southeast Seattle and to implement SEA Streets defined in the plan.



This restaurant on Beacon Hill makes the sidewalk an inviting place.

3. Places



3. PLACES

Introduction

What will happen where I live?

This section reviews the proposed projects grouped by place, so that readers can see how the projects work together as a whole, by location and corridor.

The SETS recommendations are presented as individual projects in the project descriptions. The projects are numbered sequentially and are presented in geographic order to make them easier to locate in the document. Someone who lives in the North Beacon Hill Urban Village who wants to see the recommendations in their neighborhood, will find them fairly easily grouped together in the project sheets and labeled accordingly.

Looking at the recommended projects one-by-one, however, does not adequately explain how the projects are meant to work together and what their cumulative effect is meant to be. Installing a pedestrian signal at one intersection, for example, may be an important safety improvement for that location and could help a lot of people cross the street. But adding a series of pedestrian improvements and traffic calming measures in the heart of an urban village may help transform auto-dominated retail to a pedestrian-focused neighborhood business district, with lively interesting sidewalks that invite people to stroll and linger.

Again, taking North Beacon Hill as an example, each proposed project has independent value and is likely to be implemented as a stand-alone investment. But the projects taken as a whole are meant to: strengthen the urban village; make the business district more inviting to people on foot, bike and transit; bring people to the Link light rail station; maintain capacity for vehicles on the arterial streets and discourage drivers from diverting to residential streets; and improve safety for all travelers. Although they may be built separately over many years, the final cumulative impact of all the projects together will be greater than any single project.

This section of the report provides a brief discussion of each set of projects grouped by geographic area, in order to describe the overall intent and anticipated results of the proposed investments taken as a whole.

Urban Villages

There is a section for each urban village:

- North Beacon Hill
- MLK at Holly
- North Rainier
- Columbia City
- Hillman City*
- Rainier Beach

*Although Hillman City is not technically defined as an Urban Village, it is included in this section and separated from Columbia City.

Corridors

The three major north-south corridors in the study area are Rainier Ave. S, Beacon Ave. S and Martin Luther King Jr. Way S. (MLK).

Rainier runs the entire length of the study area, through four of the five urban villages and improvements along Rainier are discussed in each of those urban village discussions. In addition, however, the study evaluated how Rainier operates as a corridor, and is proposing major modifications to the configuration of the street between S. Alaska St. and S. Cloverdale St.

Beacon has been rebuilt for most of its length, with the exception of the portion north of S. Spokane St. through the North Beacon Hill urban village. Thus, with the exception of two improvements proposed at Beacon and S. Orcas St. and Beacon and Columbian Way S, all the Beacon improvements are covered in the North Beacon Hill Urban Village discussion.

Martin Luther King Jr. Way S. south of the intersection with Rainier was not evaluated as part of this study as it has already been rebuilt all the way to the city limits as part of the light rail projects. There is one project on MLK proposed north of Rainier, which is included in the North Rainier Valley section.

Spot Improvements

For convenience, spot improvements have been grouped into three sections:

- Beacon Hill, outside the urban village
- North Rainier Valley
- South Rainier Valley

The recommendations in each of these areas are stand-alone projects and are described at the end of this chapter.

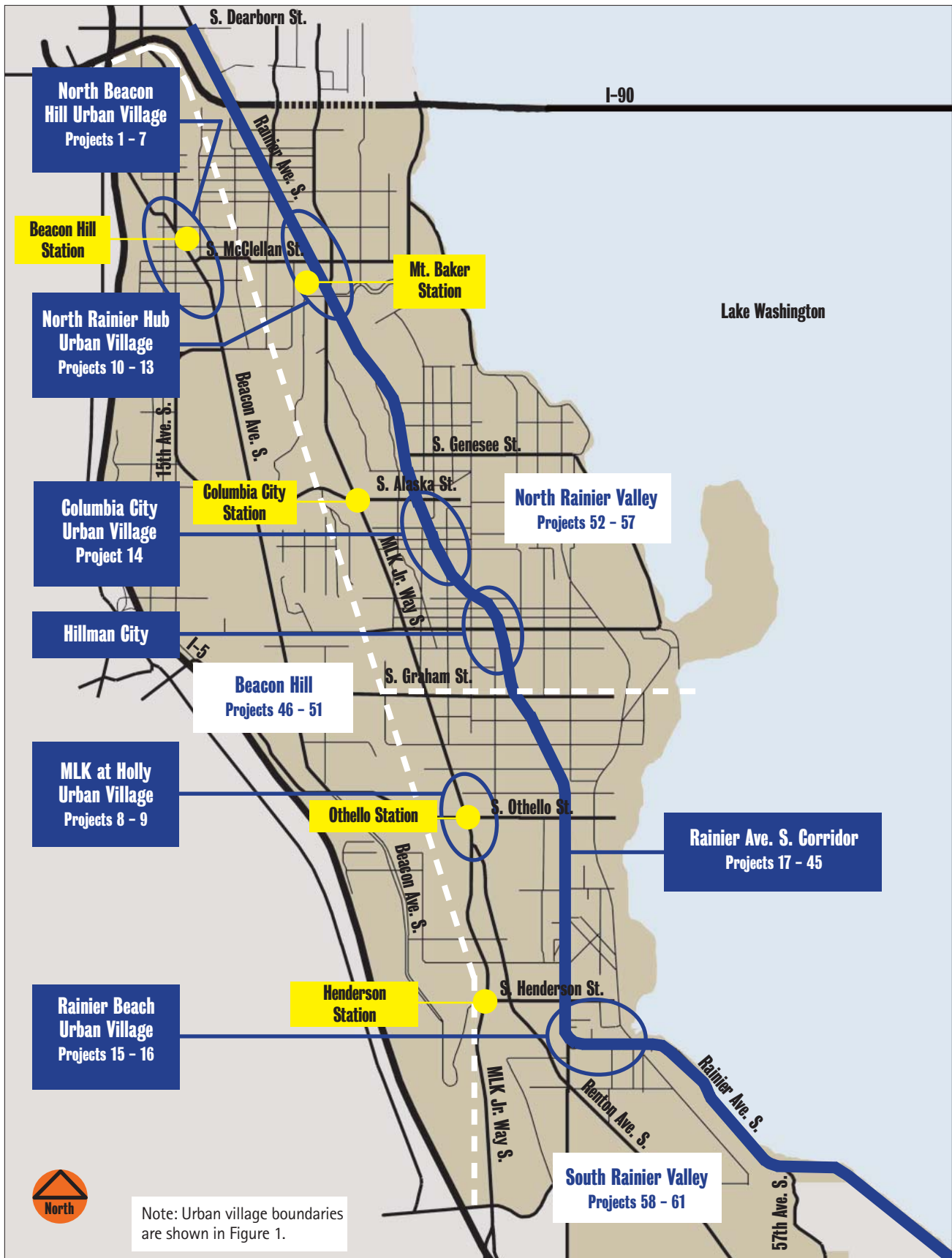


Figure 7:
Map of Study Area Showing how Projects are Grouped by Place

North Beacon Hill Urban Village & Station Area

The North Beacon Hill business district stretches along Beacon Ave. S. from its intersection with 14th Ave. S. almost to S. Spokane St. It sits on the flat top of the hill and is easily and comfortably walkable. Shopping and services include two supermarkets, coffee shops, restaurants, banks, barbers and hair salons, a bakery, gas stations and small retail and services. There are no major employers; Amazon is located to the north and the Veteran's Hospital to the south.

Strong anchors include the new public library and El Centro de la Raza; in 2009 the Beacon Hill Station will open in the heart of the district.

Buildings in the business district include traditional one-story commercial buildings with entrances on the sidewalk, houses converted for business use, and new construction often with entrances set back behind parking lots abutting the sidewalk.

Single-family houses, small and mid-sized apartment buildings and small churches sit around and amid the commercial core.



Delite Bakery welcomes customers to its new building.

Economic development

Between now and 2030 many of the parcels in the urban village will likely redevelop, providing the opportunity to expand the range of goods and services, and possibly add housing on upper floors. This will also be an opportunity to reorient businesses so that pedestrian entrances abut the sidewalk, and parking is to the side or back.



The central intersection of Beacon and Lander is currently dominated on three corners by parking lots.

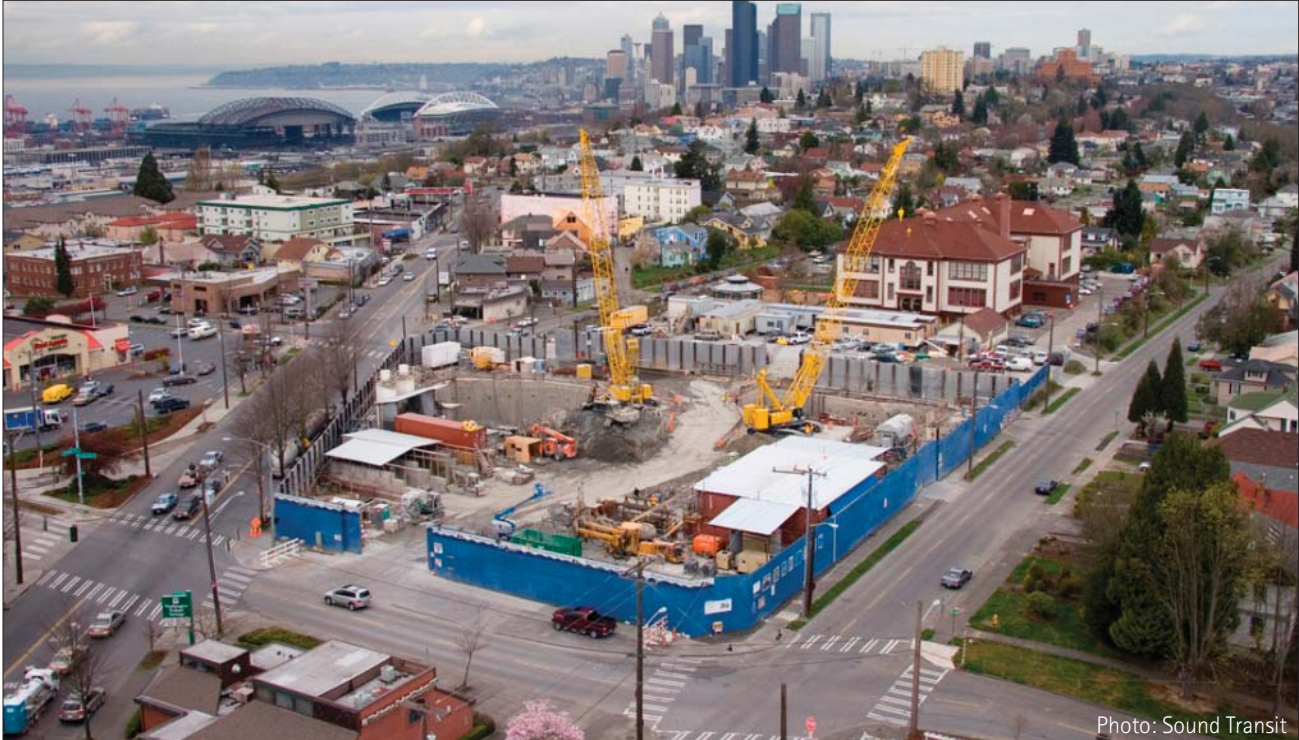


Photo: Sound Transit

The Beacon Hill Station will serve about 3,000 riders a day. These riders will be potential customers for local businesses. The area's enhanced accessibility could be a catalyst for development, including higher density mixed-use projects where allowed by current zoning. A proposed new public plaza between the station and El Centro de la Raza could host an outdoor market, and be a gathering place for festivals and celebrations.

Transportation – what works

- Beacon has right-of-way to accommodate vehicles, transit, bicycles and pedestrians.
- Traffic volumes are moderate.
- Sidewalks are wide enough for today's use, but may need to be improved for future demand.
- Parking is ample, both on- and off-street.
- Existing bus service is frequent and includes some of the most used routes in the region.

Transportation – what doesn't work

- Beacon cuts across the street grid at an angle, creating wide intersections that are difficult for motorists, pedestrians and bicyclists to navigate.
- Some blocks have multiple curb cuts, and parking lots abut corners, creating conflicts between vehicles and people walking and bicycling.
- There are no bicycle lanes or sharrows.
- Traffic on 15th Ave. S. moves quickly through the business district.
- Public schools need safe walking routes.

People

Density	21 people per acre / 2024 est. 30
Demographics	3,250 people 19% under 18; 22% over 65
Auto Ownership	28% of households have no car.
Journey to Work	31% transit; 47% drive alone 85% work in Seattle.
2020 Station Boardings	3,000 a day

Sources: 2000 U.S. Census; Sound Transit

3. PLACES

North Beacon Hill Urban Village

Project Recommendations

The North Beacon Hill business district is likely to redevelop substantially between now and 2030. Already density is higher than anywhere else in Southeast Seattle. A series of small improvements at streets and intersections throughout the business district, coupled with using the opportunities presented by redevelopment projects to align commercial buildings to the sidewalk, could result in a more vibrant, pedestrian-focused neighborhood center.

Objectives

- Make the business district more inviting to people on foot, bicycle and transit; use design to encourage people to walk and linger in public spaces.
- Bring people to the Beacon Hill Station, and encourage those riders to become customers of local businesses.
- Maintain capacity for vehicles on the arterial streets and discourage drivers from diverting to residential streets.
- Improve safety for all travelers.



Increasing walkability in a neighborhood not only brings more people to the street, it also has great health and environmental benefits.

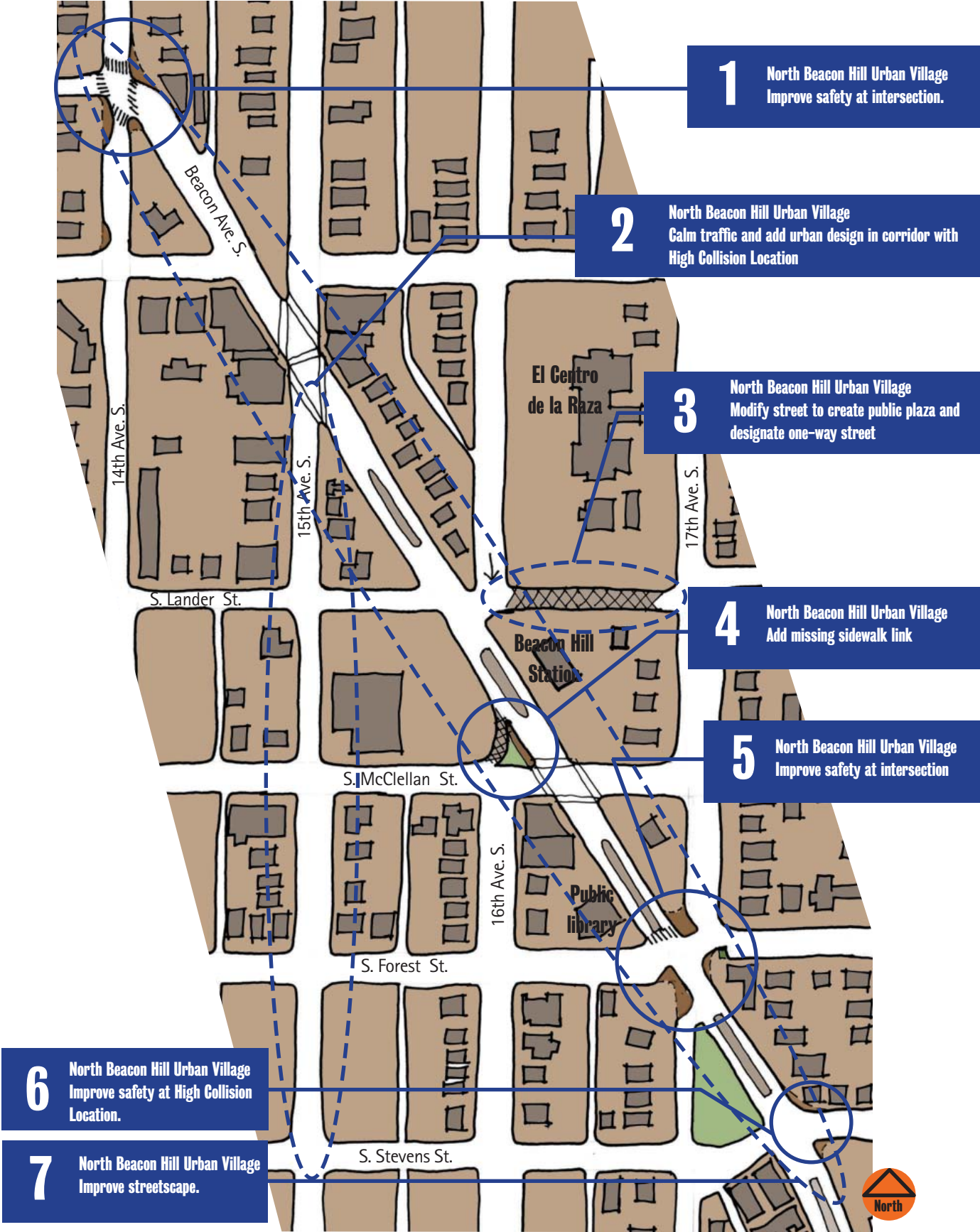


Figure 8:
 North Beacon Hill Urban Village Projects

MLK at Holly Urban Village & Station Area

In the last decade, the MLK at Holly Urban Village and station area has undergone a greater transformation than anywhere else in Southeast Seattle. Holly Park, originally constructed by the Seattle Housing Authority during World War II to house the families of Boeing workers, was designed as a modern "garden community." Its use as defense worker housing continued through the Korean War, after which it was converted to low income housing.

In the late 1990s it became the first of Seattle's three Hope VI projects, designed as a mixed-income and mixed renter- and owner-occupied development. The Housing Authority rebuilt what is now called NewHolly/Othello Station according to traditional neighborhood development principles, with homes set along a newly developed street grid, replacing 871 housing units with 1,450 apartments, townhomes, duplexes and single family homes.

At the same time, Sound Transit has been building the first segment of the region's light rail line along Martin

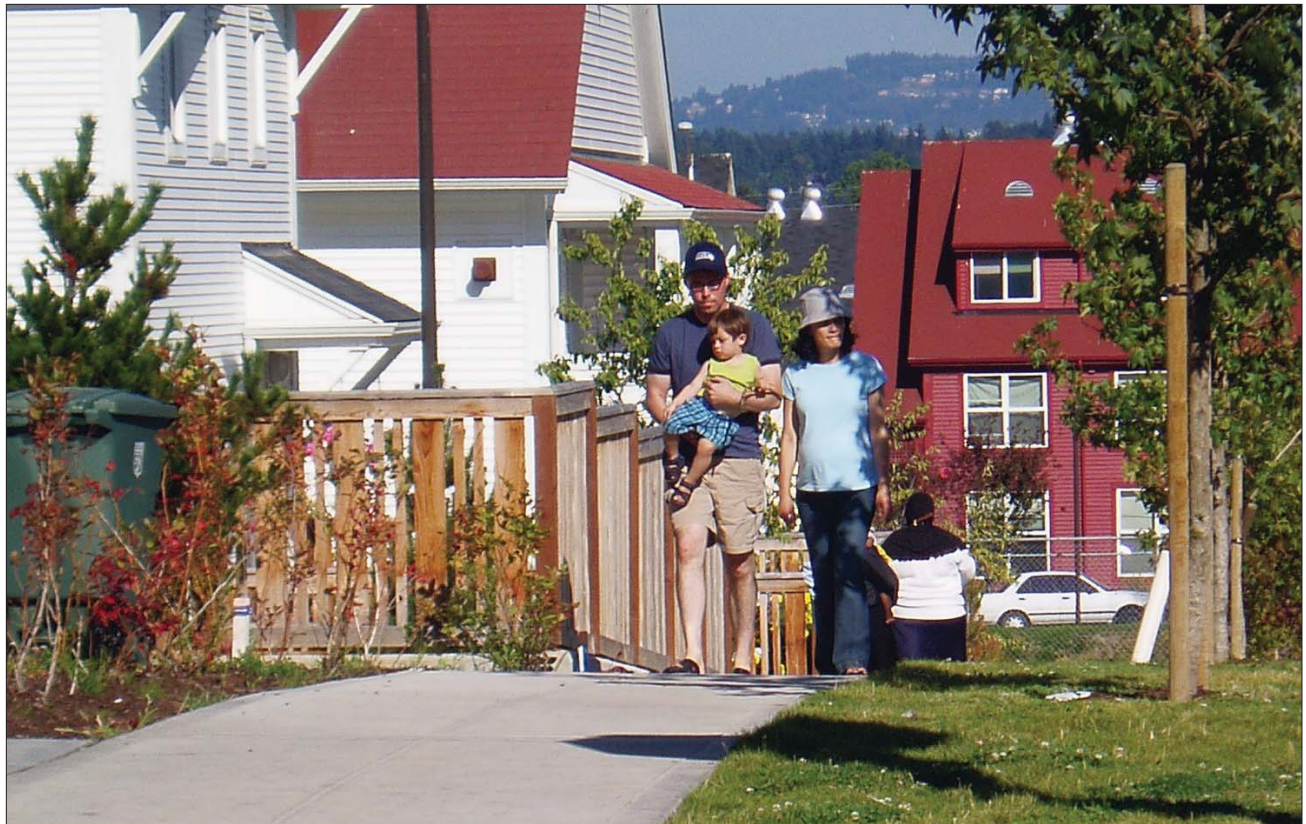
Luther King Jr. Way S, with a new station at the intersection of MLK and S. Othello St. Construction is now nearly complete and the trains are scheduled to start running in 2009.

Economic Development

With NewHolly/Othello Station nearly complete, the number of people living within close walking distance of the business district, and their combined purchasing power, is likely to provide the incentive, over time, for redevelopment and new development of pedestrian oriented shopping, restaurants and services.

SETS and MLK

Because MLK is being completely rebuilt from the intersection with Rainier Ave. S. to the south city limits as part of the light rail project, it would not have been appropriate for this study to revisit the design of the street. For that reason, the analysis done for SETS focused on access to and from the light rail station from adjacent areas. To the west of MLK, changes were undertaken during the course of this study to improve pedestrian crossing conditions with a new signal at S. Myrtle St. and 38th Ave. S. To the east of MLK, SETS includes two project recommendations to improve pedestrian and bicycle safety and access to and from the station area.



38 A young family out for a walk at Othello Station where the sidewalks are well used.



King Plaza, on the west side of MLK, attracts shoppers from as far away as Vancouver, BC and Portland, Oregon.

People

MLK at Holly Residential Urban Village

Density	6 households per acre / 2024 est. 7
Demographics	4,100 people 36% under age 18; 7% over 65
Auto Ownership	23% of households have no car.
Journey to Work	23% on transit; 48% drive alone. 76% work in Seattle.
2020 Station Boardings	1,400 a day

Sources: 2000 US Census; Sound Transit

Transportation – what works

- Circulation within the NewHolly/Othello Station developments, away from the arterials, works well with comfortable sidewalks and narrow streets.
- Multiple Metro routes, with frequent service and high ridership, operate here.
- After Link light rail opens some bus routes will be re-oriented to serve the station.
- The new Chief Sealth Trail connects from this area to Beacon Ave. S.

Transportation – what doesn't work

- When Link light rail opens the area will remain, at least initially, auto-oriented, with parking between the street and most store fronts reflecting MLK's history as a state highway.

Project Recommendations

The combined developments of NewHolly/Othello Station and the new Link light rail line running at grade through this urban village, have given the area extensive new transportation infrastructure. SETS projects address two problem intersections for pedestrians and cyclists, and separating the bicycle/pedestrian route from the main traffic route from the southeast.

Objective

- Improve safety for bicyclists and pedestrians.



A NewHolly home with a front porch on the sidewalk.



The Chief Sealth Trail is a one of the great new assets in the MLK at Holly Urban Village, providing a long distance route for commuters and recreational cyclists as well as walkers.

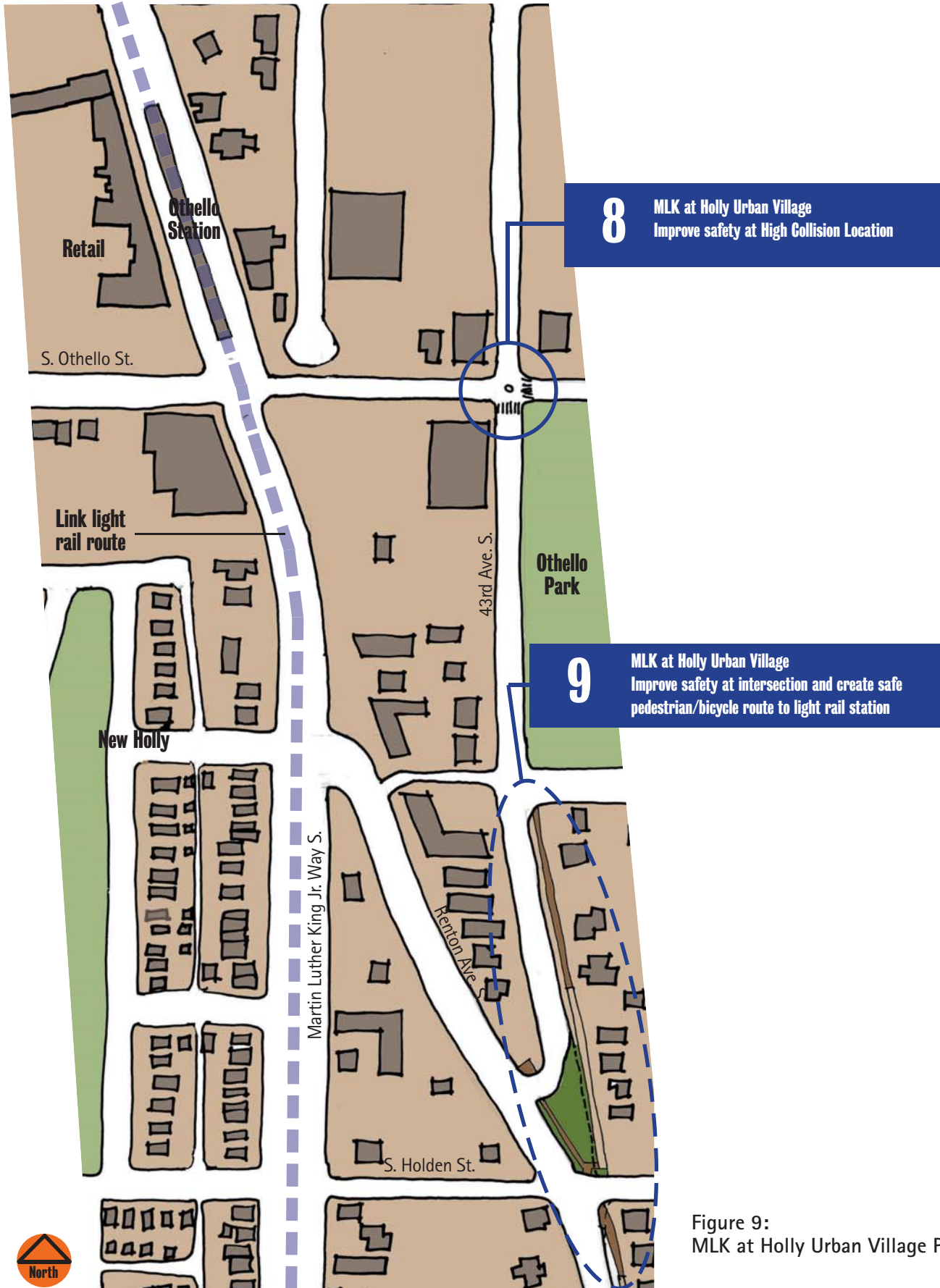


Figure 9:
MLK at Holly Urban Village Projects

3. PLACES

North Rainier Hub Urban Village

North Rainier Hub Urban Village

The North Rainier Hub Urban Village extends from I-90 in the north to S. Dakota St. in the south. The retail core centers around Rainier Ave. S. and S. McClellan St, but the entire length of Rainier through the urban village is home to a variety of commercial, retail, and light industrial development, along with homes and apartments.

Retail businesses along Rainier are auto-oriented with independent stores, both small and large, as well as national chains. Lowes home improvement store occupies the site of Seattle's first baseball stadium, with QFC and Rite-Aid across Rainier to the west. Specialty retail, such as Borrachini's Bakery—selling bread and cakes from the same building since 1923—and the Mutual Fish Company—started in 1947 and now operated by the third generation—attract customers from around the city and even across the region.

North Rainier Urban Village also includes a number of large employers including Pepsi, the University of Washington Laundry, and Darigold.

Education and social services include Franklin High School, at Rainier and MLK, with an enrollment of over 1,400 students, the Lighthouse for the Blind, King County United Way and others.



The only outdoor seating in the area, these tables at Starbucks overlook a parking lot and the intersection of Rainier and MLK. Its popularity is a sign that residents would support a more pedestrian-friendly business district.

Currently, the light industrial areas along the street work well for the businesses there. However, despite the large number of pedestrians who walk to stores from their nearby homes, or who attend Franklin High, or work in the area, there is no place within the commercial core that is truly comfortable for people on foot.

Economic development

The opening of the Link light rail line through Southeast Seattle, and the eventual extension of service north through Seattle to Snohomish County, south to Tacoma, and east to Bellevue and Redmond, is going to connect Southeast Seattle to the region. For now, the Mt. Baker Station sits among service stations and auto supply stores, in one of the most auto-centric corners of an auto-centric area. But changes between now and 2030 are likely to be dramatic.

Even today, thirty percent of the households in the North Rainier Urban Village do not own a car, and many people walk to and from the QFC and Rite-Aid for their daily shopping.

Despite the disruption created by light rail construction, new townhomes have already been built directly overlooking the worksite.

The North Rainier Neighborhood Plan and the Station Area Plan both envision a pedestrian-oriented urban village and the area is designated a Neighborhood Commercial Pedestrian Area.

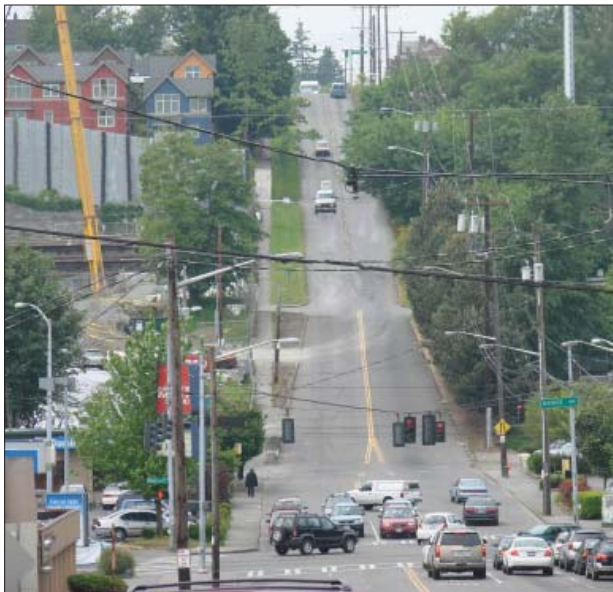
The particular challenge in North Rainier will be to balance the needs of changing land development patterns, and many more people on the sidewalks, with the necessity to maintain capacity on Rainier for high traffic volumes and its use as a major truck route.

Transportation – what works

- Despite the highest traffic volumes in the study area, all of the intersections analyzed in the North Rainier Urban Village operate at Level-of-Service D or better in the PM peak hour, and are projected to do so in 2030.
- North of McClellan, sidewalks on Rainier are wide and well maintained with mature street trees.
- Transit ridership is very high, and will be even higher after light rail opens.

Transportation – what doesn't work

- A number of High Collision Locations need safety improvements.
- The intersection of Rainier and MLK is a High Collision Location for vehicles and can only be crossed by pedestrians at street level on one of four approaches.
- Pedestrian conditions in the urban village could be improved; blocks are long, traffic signals and crosswalks are few; free right turns are frequent; curb cuts are many and wide.
- There are no bicycle lanes or sharrows.



New townhomes overlook the tunnel portal where the Link light rail line emerges from Beacon Hill. People's desire to live and shop close to the station is likely to change this area between now and 2030.



Over the next twenty years land values in the station area are likely to increase and some owners will redevelop their properties to higher density uses. New projects need to bring front doors to the sidewalk along with other changes to create a place that encourages people to walk.

People

Density	10 people per acre / 2024 est. 12
Demographics	4,200 residents 23% under 18; 13% over 65
Auto Ownership	29% of households have no vehicle.
Journey to Work	20% on transit; 55% drive alone. 75% work in Seattle.
2020 Station Boardings	3,500 a day

Sources: 2000 US Census; Sound Transit

3. PLACES

North Rainier Hub Urban Village

Project Recommendations

The transition from highway-style development to a pedestrian-friendly urban village will take time. Traffic volumes will always be high on Rainier because of the arterial street pattern, land uses at the north end of the urban village, and the need to maintain Rainier as a Major Truck Route. That said, there can be significant improvements in creating an urban village that integrates more housing, welcomes people on foot, and makes the most of the concentration of bus and light rail transit in the heart of the area.

Objectives

- Improve safety for all travelers.
- Maintain vehicle capacity on Rainier, and maintain the Major Truck Route designation.
- Support freight accessibility for existing commercial/industrial businesses, and preserve this land use for the future to provide important jobs and services.
- Improve access to transit for bus and light rail riders.
- Improve transit speed and reliability.
- Support the transition of the core business district from an auto-oriented center to a pedestrian friendly urban village.
- Take advantage of redevelopment to implement a better street environment that meets the needs of all users.



Existing businesses are grandfathered in, but no new drive-throughs, such as this one on Rainier near McClellan, can be constructed within the Station Area Overlay District.



Figure 10:
 North Rainier Hub Urban Village and Rainier Ave. S. Projects



Columbia City Urban Village

Columbia City was incorporated in the 1800s and later annexed to Seattle. Its historic core retains many original buildings, with street level retail and apartments above. Looking at its transportation history, Columbia City was served by the Seattle-Renton streetcar line between 1890 and 1937, on a route, Rainier Ave. S, that subsequently became State Highway 167.

Economic development

Columbia City is a thriving business district and attractive residential area. Its renaissance is due in no small part to the Columbia City Business Association's vision for: "First, a pedestrian-friendly, one-stop shopping district that meets the day-to-day needs of the surrounding neighborhoods, and second, a Seattle-wide destination for great food and for stimulating art, entertainment and specialty shops." [Source: *Columbia City Business Association website.*]

In fact, Columbia City has achieved the second part in a just a few short years; it attracts people from Seattle and around the region for its restaurants and shopping. But it is the first part, still a work-in-progress, that is at the center of achieving Seattle's vision for a city of livable neighborhoods, and for helping to realize the goals of the Climate Action Plan.

Walking to shop

Columbia City has all it needs to attract people on foot: a great bakery and butcher shop, a few small or specialty food stores, and a wide variety of retail and restaurants. And these businesses are complemented by a world class farmer's market every Wednesday that sells a broad variety of food for any meal. Founded in 1998, the Columbia City farmers market brings over 40 Washington state farmers and small food vendors to the corner of Rainier and S. Edmunds St. Market days are full of the colors and sounds of shoppers from around the world who live and work in this community. The community is also working on a long-term plan to locate a full-service grocery store in the neighborhood.



Two benches on the sidewalk by the Columbia City Bakery encourage people to relax and visit, no purchase necessary.

Transportation – what works

- The Columbia City Station is just over a quarter mile from the heart of the business district.
- Historic urban design elements have been applied consistently and well. Sidewalks, lighting, curb bulbs, street furniture and plantings are all attractive and functional and create a pedestrian-friendly environment.

Transportation – what doesn't work

- Traffic on Rainier moves quickly through Columbia City.
- There are no bicycle lanes or sharrows on Rainier; bicyclists must ride in limited roadway space or on the sidewalk.
- S. Alaska St. between MLK and Rainier, an important route between Rainier Vista and Columbia City, needs improvements to better serve bus riders, walkers and bicyclists.

People

Density	16 people per acre / 2024 est. 20
Demographics	4,900 residents 30% under 18; 5% over 65
Auto Ownership	27% of households have no vehicle
Journey to Work	24% on transit; 51% drive alone 75% work in Seattle
2020 Station Boardings	2,900 a day

Sources: 2000 US Census; Sound Transit



When there are more pedestrians waiting for the light to change than there are cars, it's a sign that the urban village is working.

Project Recommendations

Columbia City already has many of the transportation improvements that make a great place: wide, well-maintained sidewalks, street furniture, curb bulbs, and pedestrian lighting. But for many hours of the day, Rainier has high volumes and speeding cars. Taming traffic through the business district will have minimal effect on drivers' convenience, and a huge effect on the livability of Columbia City, for both its residents and visitors.

Objectives

- Implement improvements along Rainier Ave. S. to slow speeding traffic, improve safety, and create a pedestrian-friendly area.
- Support the business district as a one-stop shopping destination that meets the day-to-day needs of the surrounding residents.
- Complete connections to the Columbia City Station on Martin Luther King Jr. Way S. between Alaska and Edmunds.
- Improve safety for all travelers.



Shoppers of all ages enjoy the Columbia City Farmers Market held Wednesdays from May to October

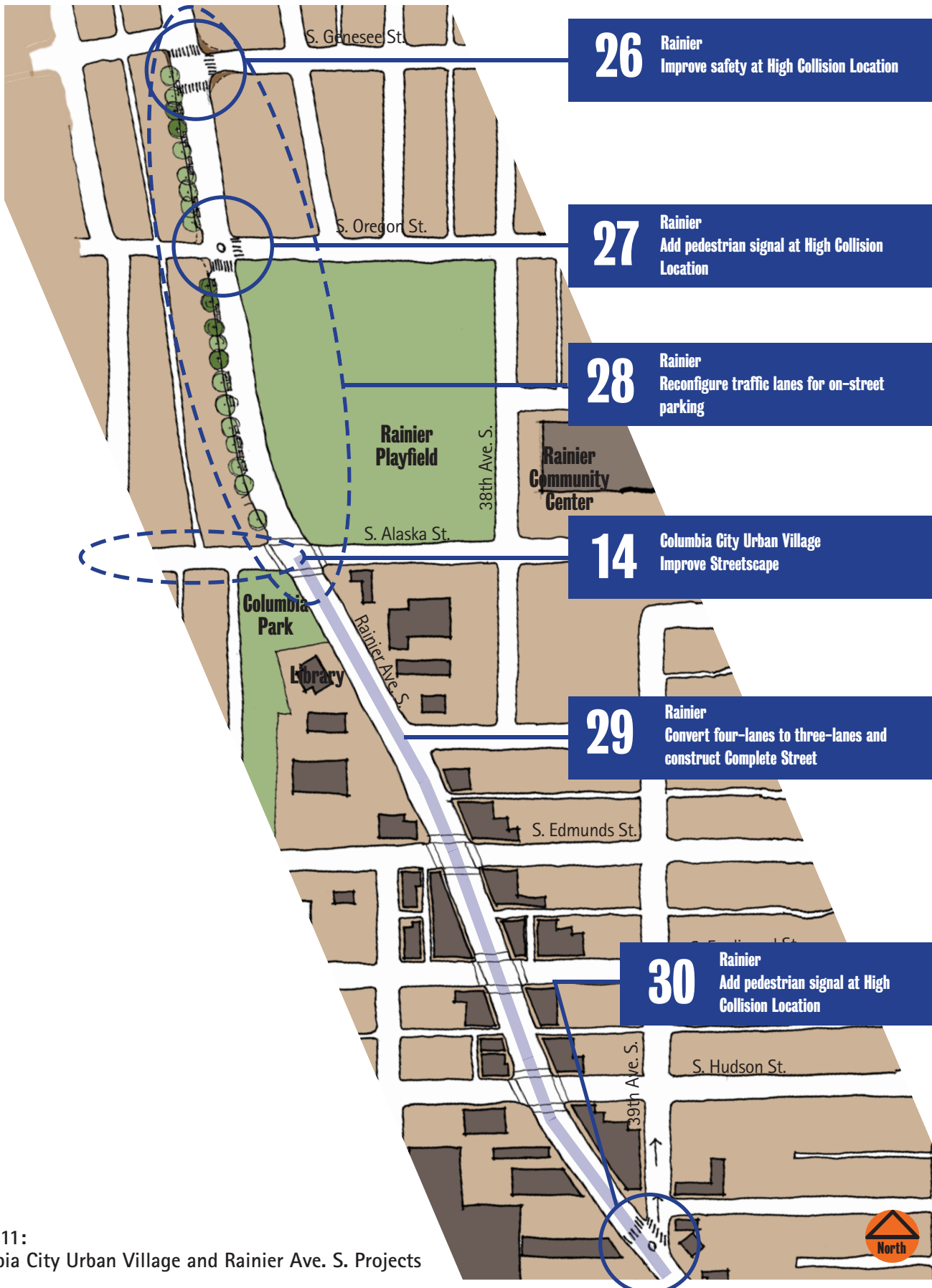


Figure 11:
Columbia City Urban Village and Rainier Ave. S. Projects

Hillman City

Hillman City, first settled in the mid 1800s, has a business district that has remained intact for over 100 years. Like Columbia City to the north, however, it has experienced periods of economic downturn.

Economic Development

The heart of the district, centered on Rainier Ave. S. and S. Orcas St, is about five blocks long and a half block deep. A number of successful barbershops and beauty salons share the street with a convenience store, restaurants and bars, a karate studio, medical offices, small clothing stores, an employment program, a state driver's licensing office and other businesses. In the last year, storefronts have been refurbished, new businesses have opened, including a glass studio, a furniture store, a bookstore, a women's gym, and a small grocery. Several windows have "Coming Soon" signs promising, among other things, a barbecue restaurant and a bakery.

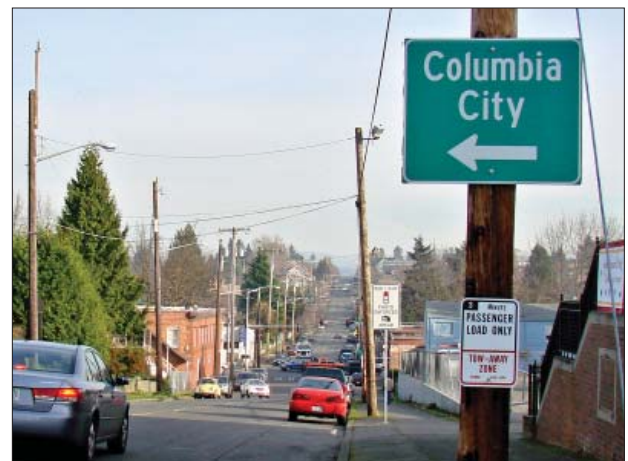
Pleasant residential neighborhoods of well-kept homes surround Rainier. Currently, there are few people on the sidewalks of Hillman City, but multiplying the changes of the last couple years and looking five or ten years into the future, it's reasonable to expect that the existing storefronts will be fully occupied, that a few under-used sites will have been redeveloped and that the sidewalks will be much busier than today.

Strength in togetherness

Columbia City and Hillman City were part of the same Neighborhood Planning area; from end to end they stretch less than a mile along Rainier. Hillman City will likely prefer to create a unique identity with urban design treatments that differ from those in Columbia City, and it's appropriate that they do so. However, linking the two business districts by extending their urban design treatments north and south to a meeting point along Rainier to would create an extended business district that would encourage people to travel back and forth between them, to the advantage of both.



A glass studio is one of the new businesses recently attracted to Hillman City.



A sign on Orcas tells drivers, who are only a half block from the Hillman City business district, how to get to Columbia City. This sign should say "Entering Hillman City and Columbia City."

Transportation – what works

- Hillman City has some of the largest and most beautiful street trees in the city of Seattle.
- Currently, there is adequate parking on Rainier Ave. S. and on side streets, however as more customers are attracted to the district this may change.
- The core business district is densely developed and generally supportive of transit, walking, and bicycling.

Transportation – what doesn't work

- Traffic moves quickly through the business district.
- Drivers often park partially on the sidewalk because the volume and speed of traffic makes it difficult to open the driver's side door.
- Pedestrians have only one traffic signal in the heart of the business district, at S. Orcas St, plus a pedestrian-activated signal near Group Health at S. Brandon St. It is difficult to cross Rainier north and south of Orcas.
- On the east side of Rainier between S. Findlay St. and Brandon, numerous long curb cuts interrupt the sidewalk continuity.



Drivers sometimes park on the sidewalk, which is unpleasant for pedestrians and a hazard to the trees.

3. PLACES

Hillman City

Project Recommendations

Hillman City needs the transportation improvements that make a neighborhood business district a great place: closely spaced traffic signals, curb bulbs, wide, well-maintained sidewalks, and street furniture.

Objectives

- Implement improvements along Rainier, to slow traffic, improve safety, and create a pedestrian-friendly area.
- Support the business district by joining Hillman City and Columbia City through extension of the existing urban design features along Rainier from 39th Ave. S. to S. Kenny St.
- Reorient wayfinding markers to direct people to Hillman City.
- Improve safety for all travelers.



52 A Hillman City storefront recently restored and part of the neighborhood's revival.



Figure 12:
Hillman City and Rainier Ave. S. Projects

Rainier Beach Urban Village

The Rainier Beach Urban Village combines large scale retail with apartments, single family homes, small auto-oriented businesses and major public facilities including the new public library, Rainier Beach High School and Rainier Beach Community Center. With a few exceptions, such as a small retail area on 57th Ave. S. and another at Martin Luther King Jr. Way S. and S. Henderson St, all of the retail is centered on Rainier.

The eastern edge of Rainier Beach is the Lake Washington waterfront, accessible to all through a public park and boat launch. The Henderson Station is about a half mile to the west at the corner of Henderson and MLK, and is the most southerly station in Seattle.

Development in Rainier Beach is almost entirely auto-oriented. Despite wide, and for the most part well-maintained, sidewalks there is little pedestrian feel to the streets and no separate accommodation for bicyclists.

Rainier Beach community and business organizations have been working hard to improve the business district. The two anchor supermarkets provide important shopping opportunities for surrounding residents but, set back from the street behind large parking lots, they do not support a pedestrian-oriented streetscape.

Rainier Beach has one of the lowest auto-ownership rates in the city, and one of the highest percentages of children and youth, both very important reasons to improve access and safety for people walking, bicycling, and riding transit.

Economic Development People

Density 14 people per acre / 2024 est. 22

Demographics 3,200 people
29% under 18; 10% over 65

Auto Ownership 30% of households have no vehicle.

Journey to Work 30% on transit; 46% drive alone.
68% work in Seattle.

2020 Station Boardings 2,000 a day

Sources: 2000 U.S. Census; Sound Transit

Although people commute through Rainier Beach heading both north into Seattle and south to Renton, traffic volumes are relatively low; volumes on Rainier here are about half of the volumes near I-90 at the north end of the street. Flat topography, wide street rights-of-way, and existing setbacks provide a good starting point to reconfigure development patterns as properties develop and redevelop. In anticipation of the opening of light rail, homeowners and landlords are already refurbishing housing on Henderson between Rainier and the light rail station on MLK. Capacity remains to add housing between the business district and the station.



The new Rainier Beach Public Library is a great place for kids; they need safe routes to get there.



Lake Washington forms the eastern edge of Rainier Beach; public parks and docks make it accessible to all.

Transportation – what works

- Rainier Beach is well served by transit, with 12 bus routes and very high ridership. Light rail will add an additional fast, frequent, reliable transit connection in 2009.
- Mature street trees in some areas make the streets and sidewalks beautiful.
- The Chief Sealth Bicycle Trail connects to the Henderson Station.
- The Mapes Creek Trail provides the beginning of a non-motorized pathway through the heart of the commercial area.
- S. Henderson St. between Martin Luther King Jr. Way S. and Rainier Ave. S. is being rebuilt as part of the light rail construction.

Transportation – what doesn't work

- The intersections of Rainier at Henderson and Rainier at 51st Ave. S. are both Pedestrian High Collision Locations.
- Multiple and wide curb cuts through the business district create difficult conditions for motorists and for bicyclists and people on the sidewalk.
- There are no bicycle lanes or sharrows on Rainier, Renton Ave. S, or MLK; the bicycle lanes on Seward Park Ave. S. are often blocked by illegally parked cars.
- Children and youth, in particular, need safe walking and cycling routes to the area's schools, community center and library, as well as to and from bus stops and the light rail station.



Two supermarket-related developments set back behind large parking lots front Rainier in the heart of Rainier Beach.

Project Recommendations

The two supermarkets and related businesses that dominate the heart of the Rainier Beach business district are housed in new buildings and are not likely to redevelop in the near future. Longer term, however, there will be significant opportunities to make better use of available land, with higher-density mixed use developments that broaden the retail offerings and add housing. Redevelopment will also provide an opportunity to reorient buildings to the sidewalk and create a pedestrian-focused retail center to complement the high school, community center, library, and medium density housing already there. In the interim, projects are needed now to improve safety for all modes, and to ensure area residents have good access to the new Henderson Station.

Objectives

- Improve safety for all travelers.
- Support existing businesses by providing good access for customers arriving by transit, car, foot and bicycle.
- Support the transition of the retail district from an auto-oriented center to a pedestrian friendly urban village.
- Ensure access to light rail for area residents.



New housing just off S. Henderson St. between Rainier Ave. S. and Martin Luther King Jr. Way S, a few blocks from the Link light rail station.



Figure 13:
 Rainier Beach Urban Village and Rainier Ave. S. Projects

The Rainier corridor

Rainier Ave. S. provides a great opportunity in the study area to transform a corridor into a more livable, complete street. Along the three primary north/south corridors in Southeast Seattle, Rainier Ave. S, Martin Luther King Jr. Way S. and Beacon Ave. S, the new light rail system will lead to increased densities, transit-oriented development and infill for areas within walking/bicycling distances of stations. Through the Link light rail project, MLK already has been transformed into a complete street for nearly all users, with many more pedestrian crossing opportunities, convenient transit access and wonderful urban design amenities.

The Rainier corridor is approximately 7.5 miles in length, extending from S. Dearborn St. to 75th Ave. S. It serves a diverse population of users including drivers, bicyclists, transit riders and pedestrians as well as a large population that speaks English as a second language.

Corridor highlights

- **Rainier is the "main street" for the business districts and residential neighborhoods of McClellan, Genesee, Columbia City, Hillman City, Othello and Rainier Beach.** These areas developed around the Seattle-to-Renton streetcar line that once ran through the Rainier Valley.
- Strong connections still exist with transit with **over 13,000 daily riders using Metro's bus service on Rainier.** At Rainier and McClellan alone over 1,700 riders access transit daily. Rainier Ave. S. is part of the Urban Village Transit Network supported by voters in the 2006 Transit Now levy.
- **In 2009 Link light rail will begin operating.** Of the four Rainier Valley stations, only the McClellan/Mt. Baker station is on Rainier, but the others are located within 1/4 to 1/2 mile from Rainier, a distance many will walk or bicycle for the convenience of light rail.



Majestic street trees along Rainier create a linear park and are an important element of the city's urban forest.

- **Average daily vehicle volumes on Rainier range from between 42,000 at the north end to 18,000 at the south end.** The entire length is classified as a principal arterial, though street types vary considerably along the corridor reflecting the different uses/needs of adjacent land uses.
- North of Martin Luther King Jr. Way S, **Rainier serves as a major truck route**, providing freight connectivity to the I-90 interchange on Rainier and the I-5 interchanges north via S. Dearborn St. South of Rainier's intersection with MLK the major truck route shifts to MLK.
- **Many bicyclists use Rainier** as it provides a nearly level grade and a direct route through the valley. The Seattle Bicycle Master Plan indicates that further study is needed to accommodate the bicycle demand along this corridor.
- **Significant street trees line most of Rainier creating a linear park.** These trees improve the environment and quality of life for neighbors and travelers along Rainier. Aside from the aesthetic benefits, this urban forest increases traffic safety by serving as a buffer between moving vehicles and pedestrians, slows drivers down by giving the perception of a narrower street, and forewarns drivers of upcoming curves.
- **On-street parking demand varies** along the corridor, with the highest demand in the neighborhood commercial areas. With the exception of the Columbia City urban village, where curb extensions define the parking area, drivers often park partially on the planting strip due to the perceived narrow lane widths. This has led to damaged sidewalks, curbs and planting strips, and negatively impacts the pedestrian environment.



North of MLK, Rainier is designated as a Major Truck Route.

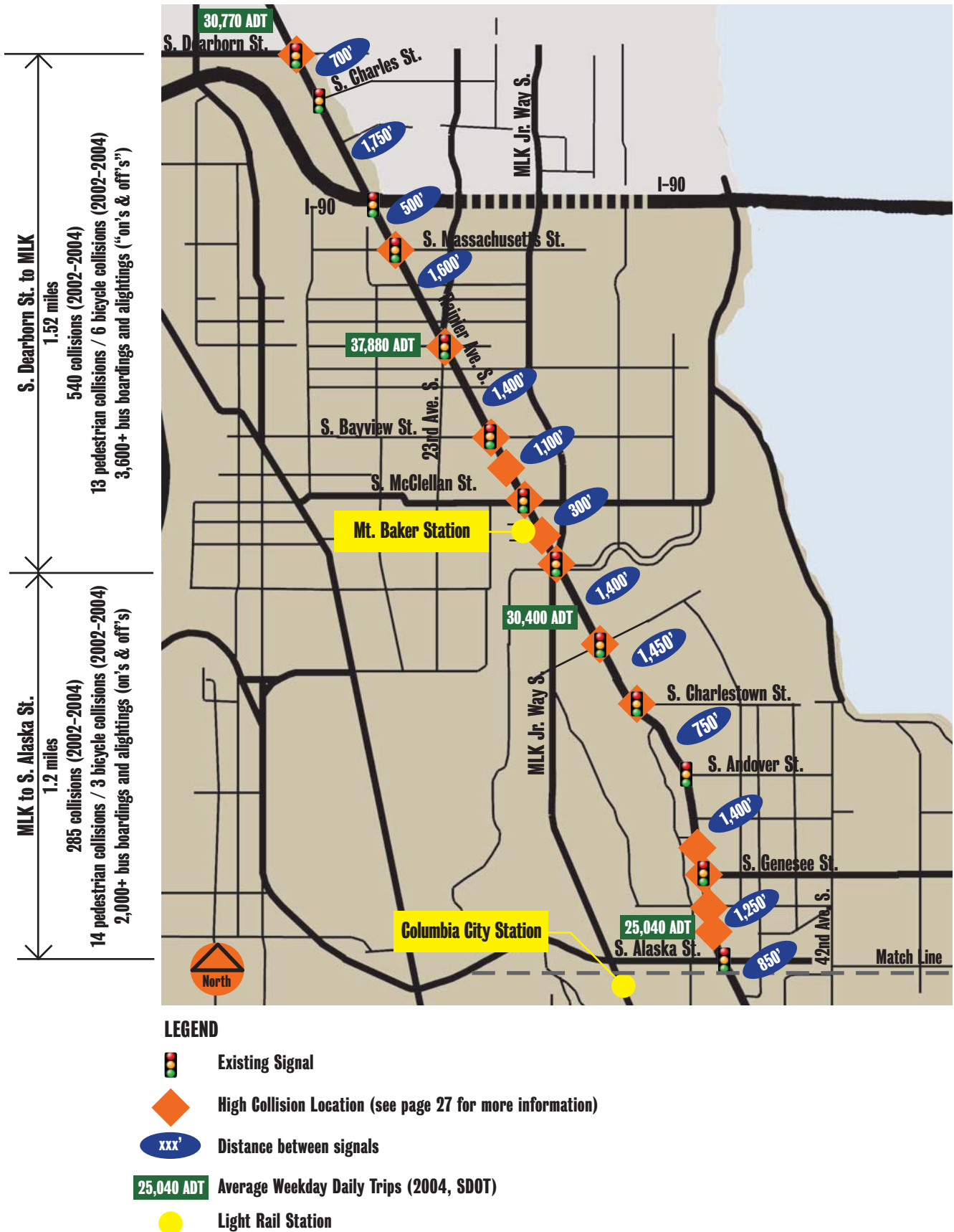


There is no signal to stop traffic for pedestrians at Rainier and S. Oregon St.



Drivers often park partially on the planting strip due to the perceived narrow lane widths.

3. PLACES
Rainier Corridor








- LEGEND**
-  Existing Signal
 -  High Collision Location (see page 27 for more information)
 -  xxx' Distance between signals
 -  25,040 ADT Average Weekday Daily Trips (2004, SDOT)
 -  Light Rail Station

Figure 14:
 Rainier Ave. S, Existing Conditions, S. Dearborn St. to S. Alaska St.

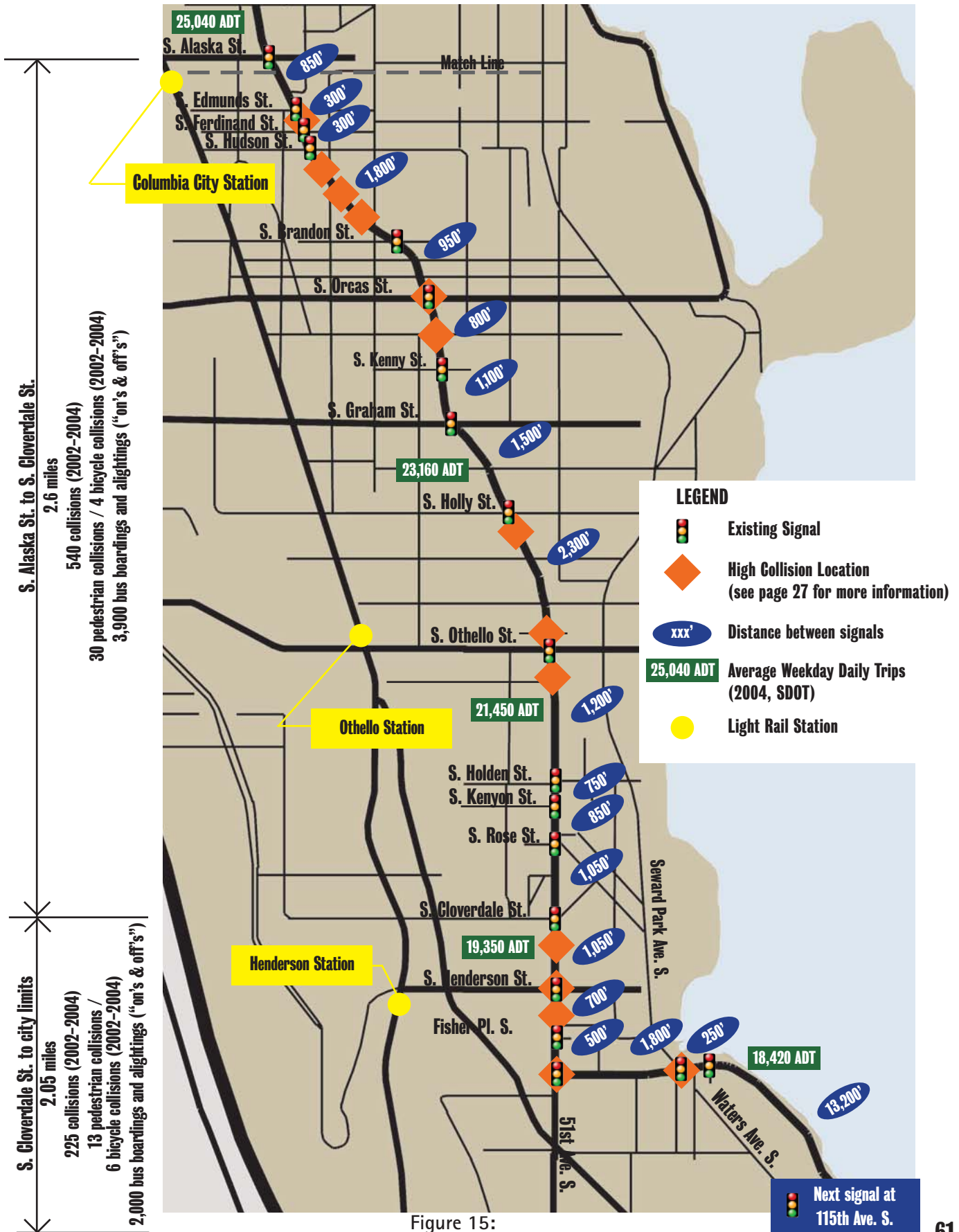


Figure 15:
Rainier Ave. S, Existing Conditions, S. Alaska St. to City Limits

Next signal at
115th Ave. S.

Rainier at a Crossroads

Rainier, mile for mile, is one of the highest collision corridors in the city. In the three-year period between 2002 and 2004, 1,743 collisions occurred, or nearly 50 collisions per month, including 37 where someone was killed or disabled. Seventy-three pedestrians were involved in collisions of which seven were fatal. For bicyclists, 19 were involved in collisions with one fatality. Most collisions occurred on clear days, in daylight hours, and all but 55 drivers were sober.

Recently, the Rainier Traffic Safety Project Task Force developed a number of near-term engineering measures to improve safety on Rainier. Many of these have been implemented including: upgrading all the roadway signs and markings; installing a pedestrian lead signal at S. Henderson St; installing countdown signals at S. Bayview St, S. McClellan St, S. Ferdinand St, S. Orcas St, and S. Othello St; and installing LED pedestrian push-buttons at S. Massachusetts St, S. Genesee St. and S. Edmunds St. These improvements, combined with the SETS comprehensive, multimodal projects, provide a transportation plan to improve safety along the corridor over the next twenty years.



A countdown signal alerts pedestrians to how much time remains for them to cross the street safely.



Balancing the needs of all travel modes can be a challenge. The limited 52' street width of Rainier needs to accommodate vehicles, buses, trucks and bicycles.



In recent years new developments such as this QFC and RiteAid have greatly expanded the shopping opportunities for southeast Seattle residents. However, pedestrians have to navigate through the parking lots that line the street frontage.

The land use connection

Rainier passes in front of single family homes, Mom and Pop businesses, senior centers, day care centers and parks. It's on the recommended walking route for six elementary schools, and runs in front of two high schools. It passes by large apartment buildings, supermarkets, a big box retailer, freight dependent businesses, fast food places and fancy restaurants. People drink coffee at sidewalk tables, play football, check out library books, attend worship services and, every now and then, shut down a few blocks of the street and parade along it. These environments are reflected in the street type designations along Rainier which include Main Street, Mixed Use Street, Regional Connector and Industrial Access Street.

The light rail connection

Change is already happening in the corridor as a result of Link light rail construction. With one station on Rainier, and three stations on MLK within walking distance of Rainier, residents will have a much greater ability to get around quickly, reliably and conveniently. Improved accessibility will effect both development and transportation. The new light rail system will lead to increased densities, transit-oriented development and infill for areas within walking/bicycling distance of stations. This, in turn, must be balanced with additional transportation investments that support growth to enhance neighborhood livability which, in turn, will help to ensure the success of light rail.

Balancing the needs of neighbors and travelers

Most of us are guilty of looking out our windows and complaining about all the traffic, but then we jump in our cars and drive past other people's homes and businesses. Naturally, neighbors and users of Rainier are often one and the same, but Rainier must serve many more than just those who live or work along it. Making the best use of the streets we have — in this case generally 52 feet of pavement plus a little more on each side for the planting strip and sidewalk — requires us to find ways to meet the needs of people passing through as well as those stopping along the way.

Building a better street for all

Nearly half of all the projects recommended in this study are on Rainier; a few others cross Rainier or connect to it. The number one focus of these projects is safety. Intertwined with this is the intention to build a street that works for all users: trucks, buses, cars, walkers, bicyclists, and those who live, work, shop, worship and play along it. Over its seven-and-a-half mile length, the character of Rainier varies as it passes through different neighborhoods. The study recommendations address the street from end-to-end, matching solutions to needs in each location.

Deciding what works where

All streets have two functions: to provide mobility and to provide accessibility. From a design perspective, these functions may be incompatible since high, uninterrupted speeds are desirable for mobility, while low speeds with interruptions are desirable for access. Along its entire length, Rainier must balance these functions. In the northern portion, mobility may be the primary function, although access to freight dependent businesses is also important. In urban villages and areas served by light rail, accessibility may be the primary function. It is a dynamic balance as private and public investments influence the function of the roadway. This balance is expressed in the goals set out for the Southeast Transportation Study; the proposed projects along Rainier are consistent with these goals:

- Improve mobility and safety for the diverse needs of Southeast Seattle.
- Improve the transportation network with a particular focus on connections to the new light rail system.
- Support the growth to enhance neighborhood livability.
- Make cost effective investments to maintain existing roads and build on other existing efforts.
- Prioritize transportation improvements that support the City's Comprehensive Plan as well as the strategies and actions defined in the Seattle Transportation Strategic Plan Update.



Left, this pedestrian overpass provides a grade separated crossing at Rainier and MLK, but only across the south approaches of the intersection. As shown to the right, many pedestrians choose to cross at grade, even though only one leg of the intersection has a crosswalk.

3. PLACES **Rainier Corridor**

Rainier today

No one debates that improvements are necessary on Rainier so that it will work better for everyone who travels along it and also meet the needs of the people and businesses who front directly on to the corridor. From a planning perspective, one could say the corridor has great potential. The diversity and character of the adjacent land uses, the many historical buildings, and the fact that buildings abut the sidewalk, create an active street frontage. Separation between moving traffic and pedestrians is reinforced by majestic street trees and on-street parking.

However, there are underlying problems. The 52-foot curb-to-curb width provides two 9-foot inside travel lanes and two 17-foot outside lanes that accommodate a travel and parking lane. Within the curb-to-curb space, Rainier is challenged to meet the conflicting functions of mobility, moving transit and other vehicles, and access to businesses, services and homes along the corridor. Rainier Ave. S. has one of the highest ridership routes in the region: Route 7 with 3.4 million riders a year. Rainier Ave. S. has been designated as a Transit Priority Corridor - with the goal to increase the speed and reliability of buses relative to general purpose traffic.

Due to the narrow lane widths, drivers routinely park partially on the planting strip, creating an inhospitable pedestrian environment. This, in turn, encourages drivers to speed as the outside lanes effectively become much wider. Drivers also make frequent lane changes to pass other vehicles stopped while waiting to make left turns or to go around busses partially blocking the through lane.

The Rainier Traffic Safety Project collision analysis identified the leading contributing causes of collisions as failing to yield, following too close and inattention. As a result, rear-end collisions made up one third of the reported collisions, with angle, sideswipe and driveway related collisions making up over 40 percent of the remaining collisions.

Rainier tomorrow

The project team conducted an initial planning level evaluation of the feasibility of a three-lane conversion in all or part of the Rainier corridor. Working closely with the Core Community Team (CCT) the project team was reminded that the Columbia City four-lane to three-lane conversion had been explicitly and repeatedly recommended since 1976, and was the top priority action in the Columbia City/Hillman City/ Genesee 1999 Neighborhood Plan.

Three-lane versus four-lane configuration

Converting four-lanes to three-lanes does not change the overall width of the street (curb-to-curb space). The conversion reallocates how the space between the curbs are used. A four-lane street typically contains four travel lanes, two in each direction. At intersections where there is not a dedicated left-turn lane, vehicles turning left queue in the inside lane until a gap is available to make the left turn.

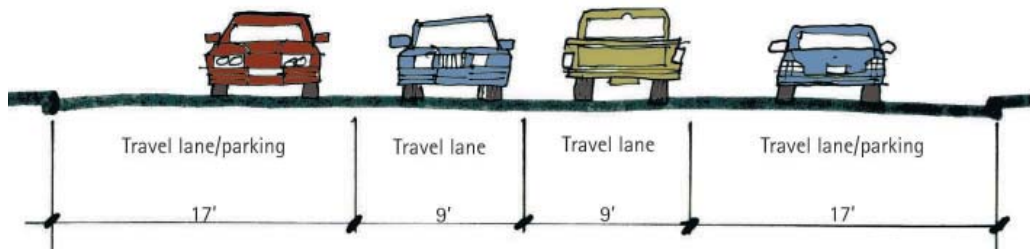
A three-lane street contains three travel lanes, one in each direction. A center lane provides a dedicated space for motorists turning left. Sometimes this turn lane is marked (at intersections) and sometimes this lane is marked as a two-way left turn lane, allowing motorists to turn left into streets and driveways.

Both the three-lane and four-lane cross-sections can be designed to include other elements such as parking lanes, bicycle facilities, and curb extensions (including bus bulbs).

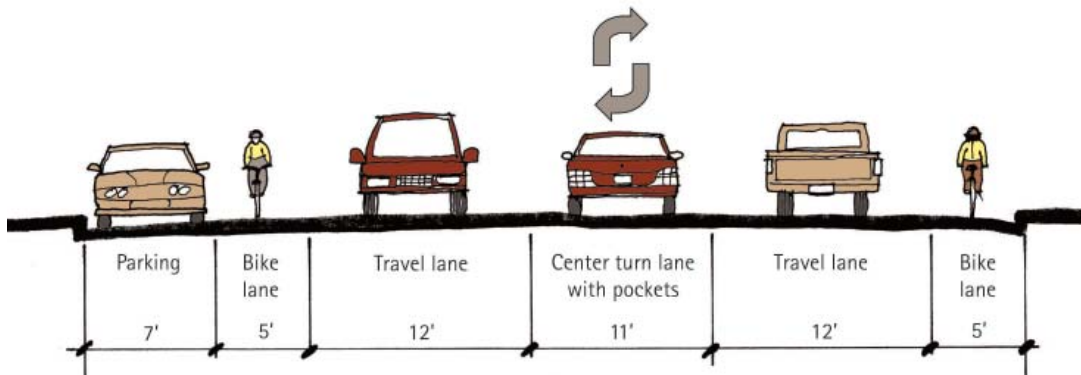
The sketches on the following page depict some options for allocating the street.

Need for further analysis

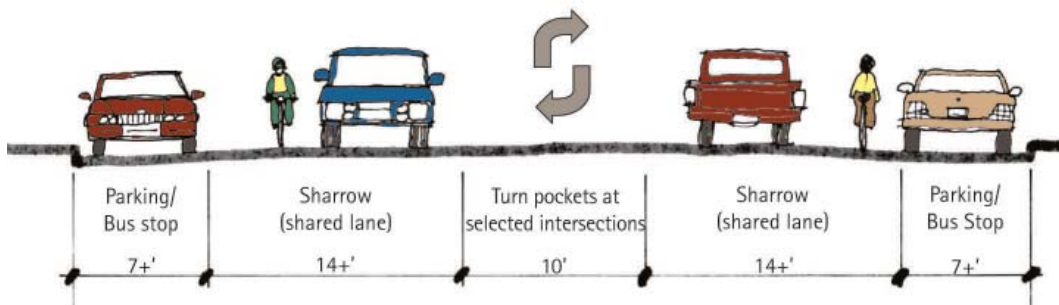
SETS included a high level planning analysis of the four-lane to three-lane conversion. This initial study concluded that Rainier could potentially function as a three-lane roadway with acceptable impacts to auto and transit. A more detailed operational analysis was recommended to determine if the project should move forward.



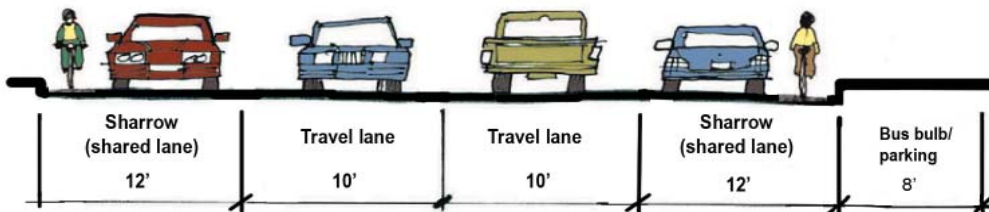
Existing Conditions (S. Alaska St. to S. Cloverdale St.)



Three-lane configuration with bike lanes, parking one side, center turn lane/turn pockets



Three-lane configuration with sharrows, parking, center turn lane/turn pockets



Four-lane configuration with sharrows, bus bulbs, parking on one side

Figure 16:
Rainier Ave. S. Street Sections: Possible lane configurations

Rainier Ave. S: Getting here from there

Policies and Plans Support Conversion		Voters Support New Funding	
1990s	Neighborhood Plans Recommend three lanes on Rainier	2006	Bridging the Gap
2005	Southeast Action Agenda Mayor Nickels' initiative promotes new investment in Southeast Seattle	2006	Transit Now
2007	Complete Streets Ordinance	Rainier Traffic Safety Project	
2007	Bicycle Master Plan Calls for further study to make Rainier work for bicycles	2007	Project Recommendation SETS should evaluate a "Road Diet" for pedestrian safety
2007	Bands of Green Seattle Parks Foundation recommends three lanes on Rainier	Southeast Transportation Study	
		2008	Completed Study
		Traffic diverted will return to MLK	
		2009	Link Light Rail Completed/ MLK Rebuilt Traffic diverted to Rainier redistribute to MLK



Southeast Transportation Study (2005–2007) tasked with:

- Preliminary planning level analysis of the feasibility of a four-lane to three-lane conversion project.
- Preliminary discussions with community and businesses to gauge support of the conversion.



Preliminary SETS analysis indicated that conversion between Alaska and Cloverdale:

- Could help support neighborhood business districts
- Increased safety for all users
- Continued to enjoy strong support from the community



**In-depth operational analysis concluded:
 Four-lane to three-lane conversion between S. Alaska St. to 57th Ave. S. will cause severe impacts to transit and auto mobility along Rainier.**

Figure 17:
 Chronicle of Rainier Ave. S: Lane Configuration

In-depth operational analysis

During summer, 2008, SDOT and its consultant team conducted an in-depth operational analysis and visual simulation of the proposed three-lane conversion of Rainier Ave. S. between S. Alaska St. and 57th Ave. S. The objectives of this analysis were to determine the transportation impacts of the conversion on:

- 2030 travel times for transit and general purpose traffic through the corridor
- 2030 levels of congestion at the signalized intersections for both transit and other traffic; congestion levels on the side streets intersecting Rainier

Key assumptions that were made for the purposes of this analysis included:

- Single travel lane, turn pockets and a bike lane in each direction
- In-lane bus stops
- Bus stop consolidation
- 5% traffic "migration" to Martin Luther King Jr. Way S. and other streets
- Only modest traffic growth on Rainier due to reduced capacity

The results of the analysis can be summarized as follows:

- 11 of the 14 intersections studied would operate at a very congested level of service (E and F)
- Southbound bus travel times would increase by 30 percent (PM peak hours)
- Southbound auto travel times would increase by 100 percent (PM peak hours)

Other Scenarios Studied

SDOT also examined whether installing bus queue jumps (providing buses with a "head-start" of about seven seconds through an intersection) would improve the performance of the three-lane Rainier. The impact of queue jumps at Orcas, Graham, Holly and Othello streets were modeled. However, the results still showed high congestion levels and slower southbound travel times for both buses and general traffic.

Finally, the analysis included an option to begin the three-lane conversion just south of Graham Street

(as opposed to north of S. Edmunds St. as originally proposed), and install a bus-only lane between S. Henderson St. and 51st Ave. S. The intent in looking at this option was to test whether the conversion to three lanes might result in less congestion if it was limited to areas outside of the neighborhood commercial nodes of Columbia City and Hillman City and additional transit improvements were provided.

The results were that southbound bus travel times were improved and far fewer intersections slipped to a very poor level of service (i.e., E or F). However, there is currently less pedestrian demand along this section of the corridor than in other locations..

Conclusions

By 2030, the three-lane conversion would result in very high levels of traffic congestion Rainier Ave S and at the signalized intersections, as well as long delays on the east-west side streets that intersect Rainier. Utilizing queue jumps would still result in long queues and delays along Rainier and the side streets, to a lesser degree than the three-lane conversion but still worse than today.

Next Steps

The results of the promised operational analysis of the three-lane conversion raise very serious concerns about the feasibility of implementing the conversion. While there are clear benefits, including health benefits, for pedestrians and bicyclists, there are also very clear negative impacts for bus riders and motorists. In addition, two other factors should be considered: one is the uncertainty over the long-range traffic redistribution within Southeast Seattle as light rail becomes operational; the other is the potential need for Rainier to carry more traffic during the Alaskan Way Viaduct Replacement Project.

SDOT has met with the SETS Core Community Team and other stakeholders to discuss the impacts of the proposed three-lane conversion in order to further gauge community opinions on this very challenging project. As part of this ongoing discussion, SDOT will describe possible measures that could be implemented to improve transit speed and reliability and enhance the roadway for pedestrians and bicyclists in a four-lane cross section.

Rainier, segment by segment

Following is a brief summary of the major operational and street design issues for Rainier Ave. S., broken out into four segments, from north to south.

S. Dearborn St. to Martin Luther King Jr. Way S.

This is a high traffic volume street, 38,000 vehicles per day, and a Major Truck Route. Development is primarily commercial/industrial, interspersed with retail and homes. It requires the full street width of four travel lanes and the center left turn lane to operate well.

SETS projects focus on safety for all modes, managing vehicle delay, improving transit speed and reliability. They also improve pedestrian safety and access, particularly at signalized intersections, and improve crossings at intersecting streets and in the retail area around the new light rail station. Longer-term, SETS recommends redesign of the Rainier/I-90 interchange to improve safety.



A bicyclist rides in traffic on Rainier just south of 23rd because there is no bicycle lane.

Martin Luther King Jr. Way S. to S. Alaska St.

This segment has high volumes, 32,000 vehicles per day. Development is dominated by retail and high-density housing, with the exception of Darigold.

SETS projects are similar to those for the Dearborn to MLK segment, again with the idea of creating a street that serves all users more efficiently and safely.



This photo shows early construction activity on the Mt. Baker Station. Light rail will reinforce the transition to a denser, pedestrian-focused urban center.

S. Alaska St. to S. Cloverdale St.

South of Alaska volumes drop off significantly, to approximately 24,000 vehicles a day. Development is dominated by small scale commercial and multi-family residential. The livability and economic success of historic urban villages at Columbia City and Hillman City largely depend on their ability to create a high quality, pedestrian-oriented environment, with parking, wide sidewalks, bus stops and bicycle access. This segment alternates street types; some stretches are designated as a main street and mixed use street, while others are designated as a regional connector.



Well implemented urban design changes have contributed to the success of Columbia City.

S. Cloverdale St. to City Limits

The Rainier Beach Urban Village has redeveloped with auto-oriented businesses and in this area on-street parking is restricted. However, it still retains a small historic section with limited on-street parking. Auto ownership is low and pedestrian volumes are high with significant transit use. Vehicle volumes here are the lowest in the corridor, about 20,000 a day.

South of Rainier Beach, a four-lane to three-lane conversion project has created a regional bicycle facility. It operates well, although speeds are high with a posted speed limit of 35 mph.

SETS projects focus on improving safety, adding pedestrian connections and, through design and operational changes that create a gateway to the business district and calm traffic.



Normally, parked cars provide a buffer between pedestrians and moving traffic. When drivers park on the curb it's a danger to pedestrians.

3. PLACES
Rainier Corridor



Figure 18:
 Rainier Ave. S. Projects; S. Dearborn St. to S. Alaska St.

Note: Refer to Section 4, Project Descriptions, for details about each numbered project.

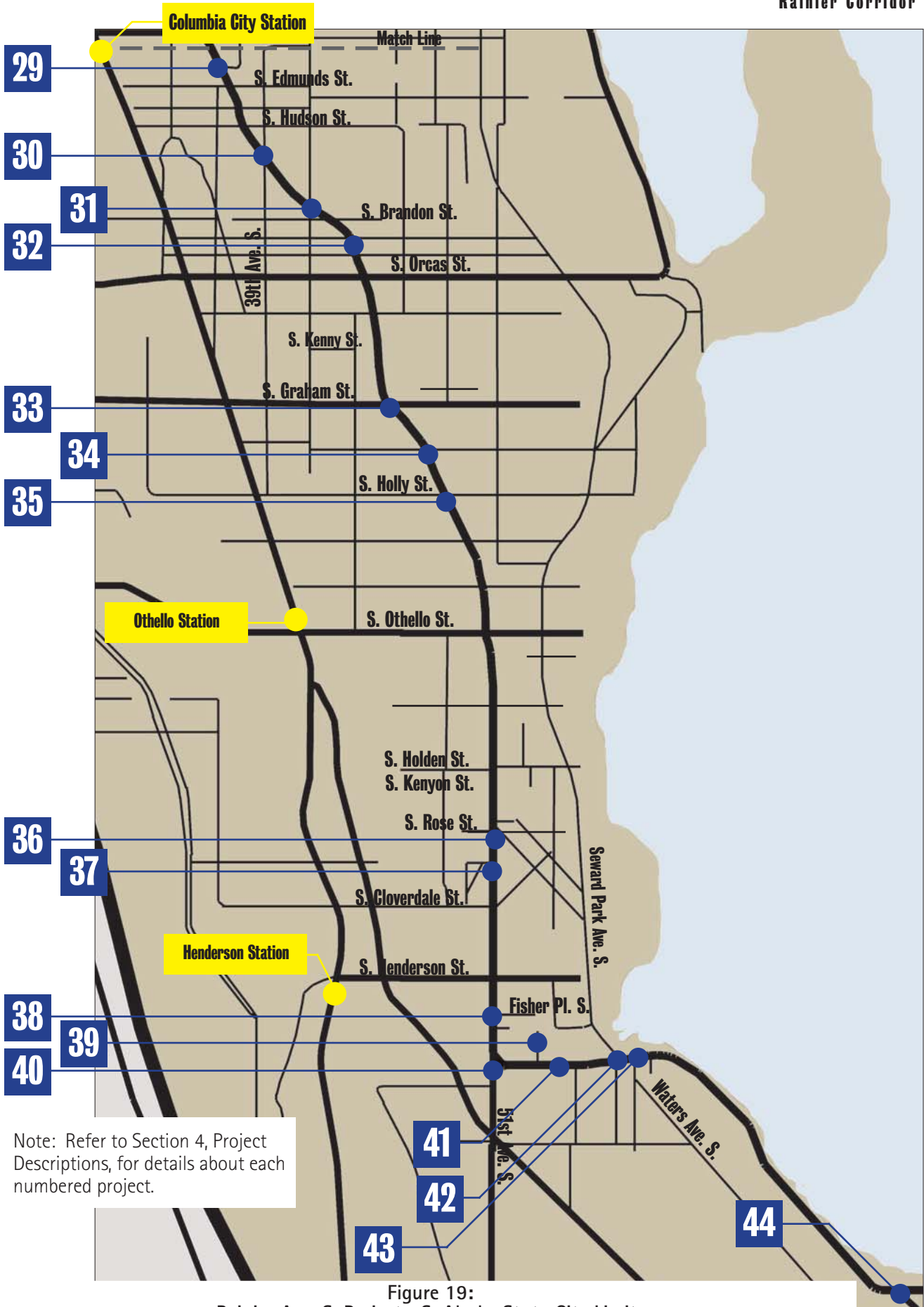


Figure 19:
Rainier Ave. S. Projects; S. Alaska St. to City Limits

Beacon Hill

In addition to the recommendations in the core business district of the North Beacon Hill Urban Village, six spot improvements are recommended. These improvements will:

- Reconfigure two High Collision Locations to improve safety for drivers, bicyclists and pedestrians.
- Reduce delays at four congested intersections and along the S. Spokane St. corridor.
- Add bike and pedestrian facilities, including a connection from the Chief Sealth Trail across I-5 to the west.

The map on the next page shows the locations and project numbers for each project; detailed discussions of each project are in the Project Descriptions section.



This bucolic looking intersection at Beacon Ave. S. and S. Orcas St. is a Vehicular High Collision Location. An elongated roundabout will reduce conflicts and improve safety.



This intersection at 15th Ave. S, Columbian Way S. and S. Oregon Street is a Vehicular High Collision Location and is near a school and the VA hospital.



The Chief Sealth Trail has been built in the City Light right-of-way, which is interrupted at ground-level by I-5. Bicyclists need a way to cross I-5 and to connect to the I-90 Trail.

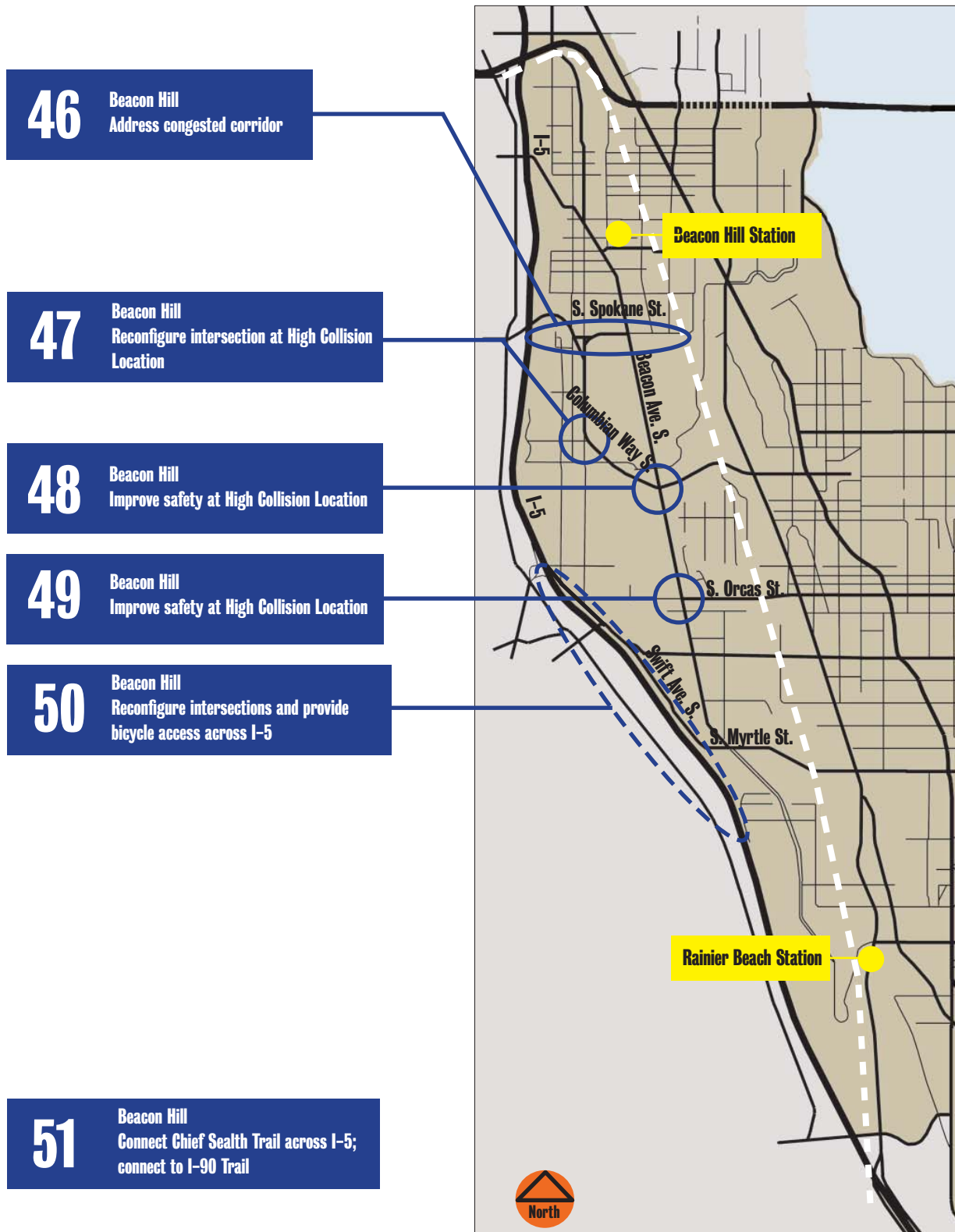


Figure 20:
Beacon Hill Projects, excluding North Beacon Hill Urban Village Projects

North Rainier Valley

In addition to the recommendations located in the North Rainier Station Area, Columbia City, Hillman City, and along Rainier Ave. S, the study includes six recommended projects at other locations in North Rainier Valley. These projects:

- Address safety at three High Collision Locations.
- Add safe walking and bicycling routes near the Mt. Baker and Columbia City Stations.
- Add bicycle facilities on MLK north of McClellan with connections to the I-90 Mountains to Sound Greenway Trail, and on Seward Park Ave. south of Seward Park.
- Construct a roundabout near the PCC supermarket at S. Wilson St. and S. Dawson St, to reduce delays and increase safety.

The map on the next page shows the locations and project numbers for each project; detailed discussions of each project are in the Project Descriptions section.



This intersection at S. McClellan St, Mt. Baker Blvd, S. and Lake Park Dr. S lacks sidewalks on one side and presents poor crossing conditions for people using the park on the north-west corner.



A small roundabout here at S. Wilson St. and S. Dawson St. near the PCC supermarket will reduce vehicle delay, improve pedestrian safety, and reduce the amount of paved surface, providing more room for landscaping.

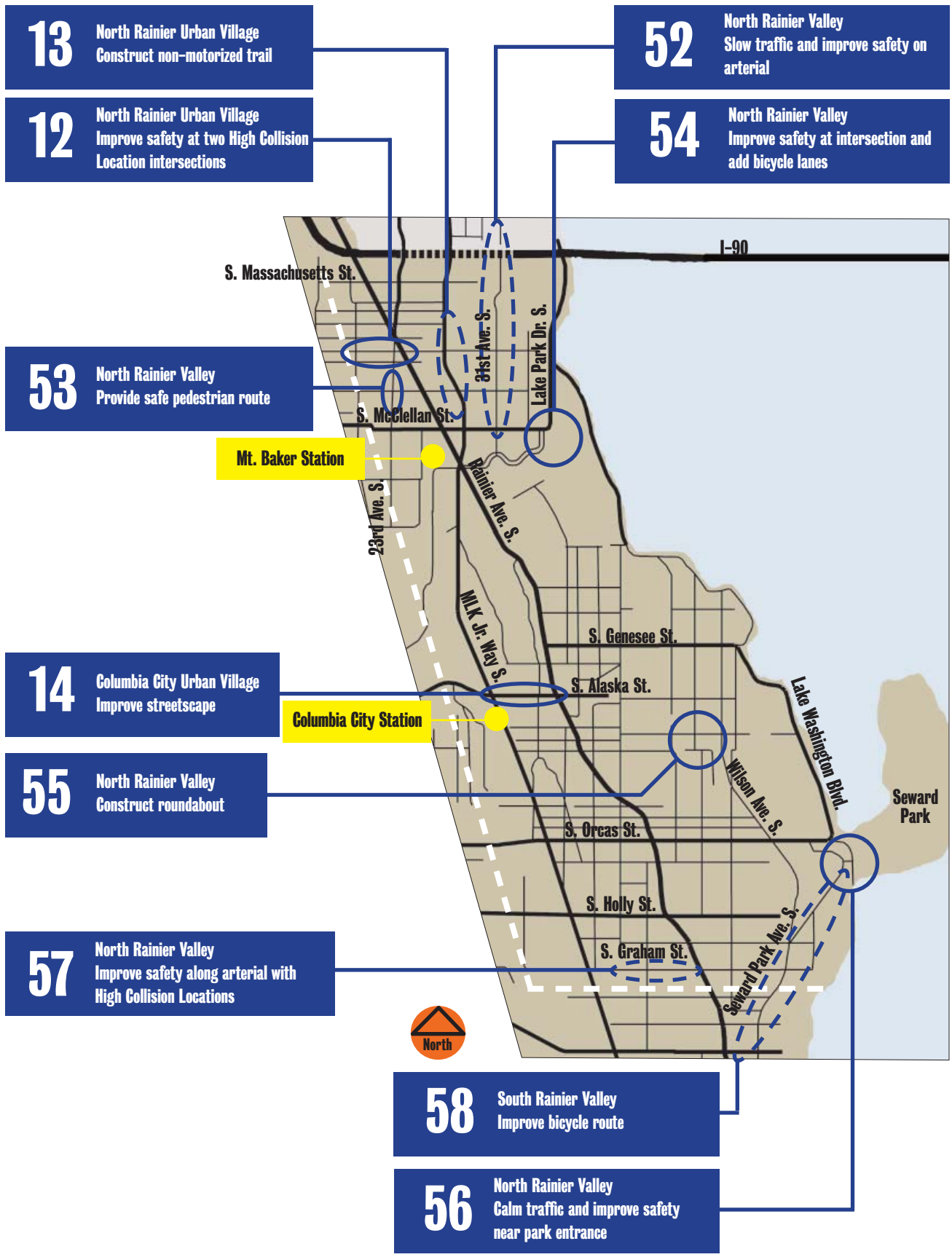


Figure 21:
North Rainier Valley Projects, excluding Rainier Ave. S, North Rainier Hub Urban Village,
Columbia City Urban Village and Hillman City

South Rainier Valley

There are four recommended projects in south Rainier Valley outside of the urban villages. These projects:

- Add a pedestrian/bicycle signal at a Pedestrian High Collision Location.
- Provide a safe route to the Othello Station for bicyclists and pedestrians.
- Create a better bicycle street on Seward Park Ave. S.
- Add a double roundabout at a complex intersection at Renton Ave. S, S. 51st St. and S. Roxbury St, a Vehicular High Collision Location with high vehicle delays.
- Reconfigure several intersections to improve safety for all modes.

The map on the next page shows the locations and project numbers for each project; detailed discussions of each project are in the Project Descriptions section.



This crossing adjacent to Othello Park near Othello Station is a Pedestrian High Collision Location.

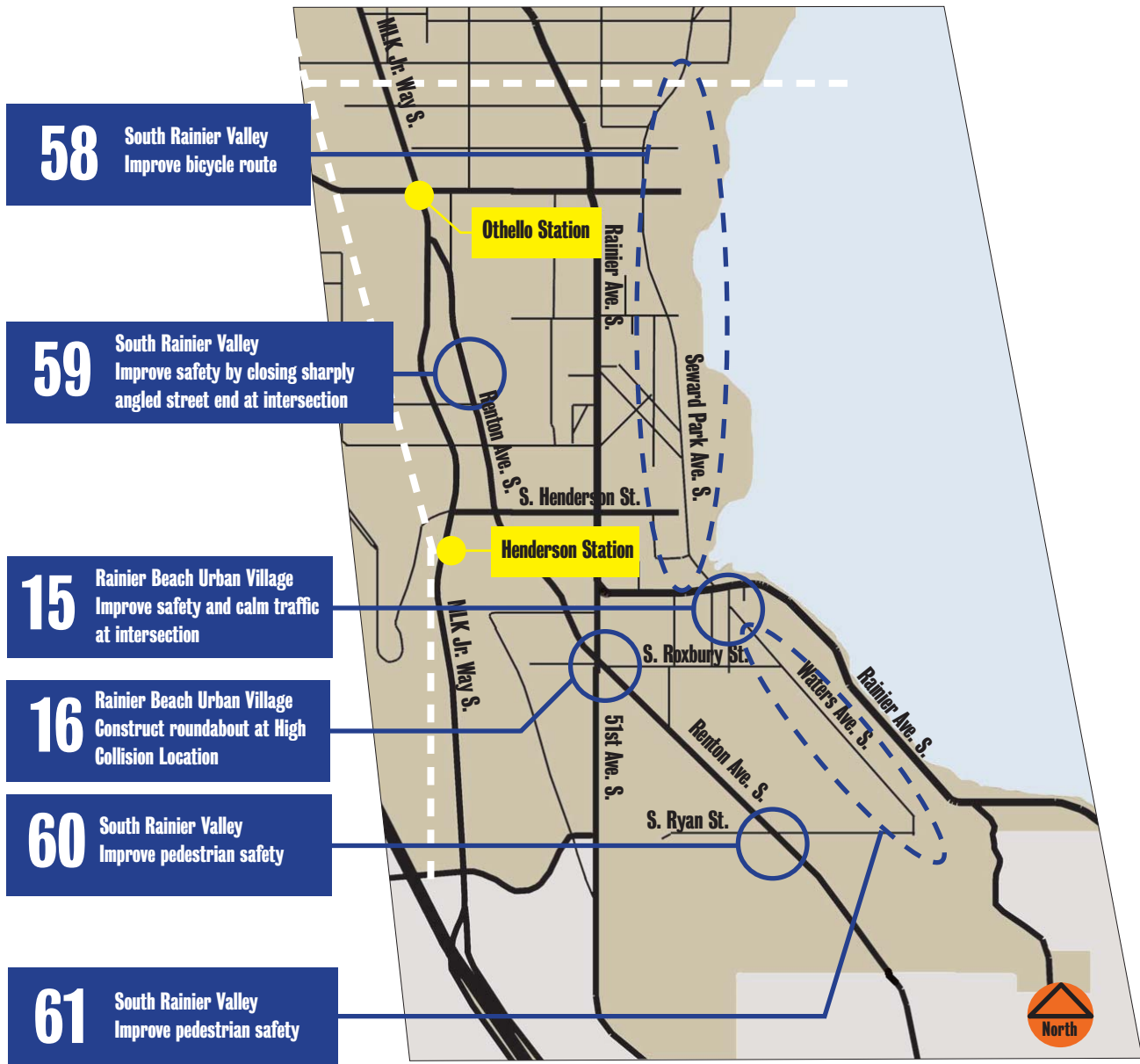






Figure 22:
South Rainier Valley Projects, excluding Rainier Ave. S and Rainier Beach Urban Village







4. Project Recommendations

1 BEACON AVE. S. & 14th AVE. S.

Improve safety at intersection.

Benefits:    

Modes:    

Cost (2007\$): \$370,200 Ranking: Medium

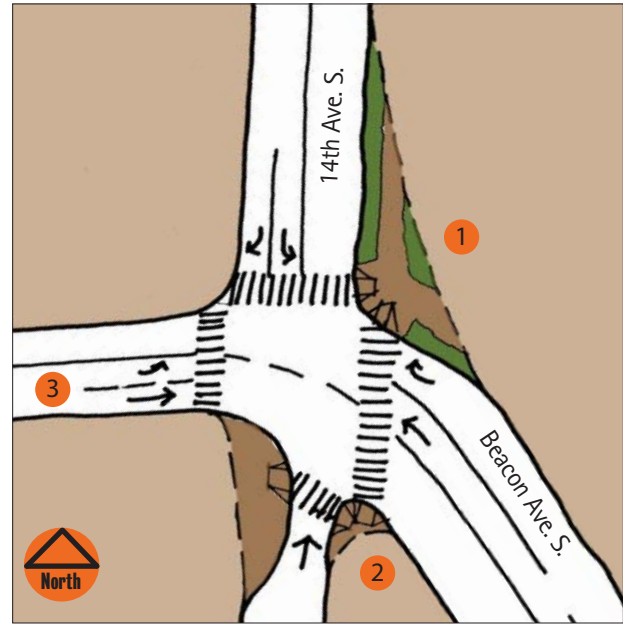


Existing

Beacon Ave. S. and 14th Ave. S. is a four-way stop with a free right turn from Beacon to 14th northbound. Beacon is a minor arterial and 14th north of the intersection is a collector arterial. South of the intersection 14th is a non-arterial street. Metro routes 36, 38 and 60 operate on Beacon and use the free right turn lane.

The angled street configuration and grade changes contribute to limited sight distances. Southbound 14th has a designated right turn lane to Beacon. Eastbound Beacon has two lanes approaching the intersections without any pavement markings to designate turn movements. As a result, either lane can continue east on Beacon although it is only one lane.

There is no pedestrian crossing on the south approach of Beacon. The uncontrolled free right turn, northbound from Beacon to 14th, is a challenge for pedestrians who must cross the free right turn lane while watching for oncoming vehicles, and then wait in the painted island to cross the rest of the intersection.



Proposed

Reconfigure the intersection to improve safety for all modes. To enhance the urban village and support the Beacon Hill light rail station, consider designating this area as a Main Street project. Coordinate projects on Beacon to ensure consistent urban design treatment. Refer to Project #7.

- 1 Eliminate free right turn and painted pedestrian islands for northbound Beacon. Construct curb extensions to square up intersection. Traffic volumes were not analyzed at this intersection and unintended consequences of adding a stop sign for northbound motorists should be examined. Add landscaping, pedestrian scale lighting, and pedestrian crossing on southeast approach.
- 2 To address cut-through traffic on the non-arterial portion of 14th, convert to one-way northbound, except for bicycles. Construct curb extension to prevent southbound vehicular movement; reduce curb radii on both corners.
- 3 Add pavement markings on the west approach to designate one through lane to Beacon and one left-turn lane to 14th.

PLS: 338

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4. PROJECTS

North Beacon Hill Urban Village

2

15th AVE. S: BEACON AVE. S. to S. STEVENS ST.

Calm traffic and add urban design in corridor with High Collision Location.

Benefits:



Modes:



Cost (2007\$): \$103,700 (four-way stop)
\$598,900 (signal)

Ranking: High

Existing

15th Ave. S. is a minor arterial that provides an alternate route to Beacon Ave. S, as well as a potential by-pass for I-5 traffic. The current land use north of Forest St. is mixed use, while south of this intersection the land use is primarily single-family residential.

15th and S. McClellan St. is a vehicular High Collision Location and is a congested non-signalized intersection. It is stop-controlled on McClellan but traffic on 15th does not stop. There is an overhead flashing red/amber light and a marked crosswalk on the north side of the intersection. Improvements to this intersection must accommodate truck access to the loading dock for the Red Apple Market, on the northeast corner, as well as the turning radius for Metro Route 60 buses which turn from northbound 15th to eastbound McClellan. The radius at this southeast corner has been previously increased for trucks and buses.

2004/2006		2030 with no improvement	
LOS	Delay in seconds	LOS	Delay in seconds
F	66	F	155

15th at Lander is offset, creating extra long pedestrian crossings. Lander will be heavily used by pedestrians accessing the Beacon Hill Station.

Because 15th is only 32' wide, providing a 16' through/parking lane in each direction, parking is restricted on both sides of the street during the morning and afternoon peak periods. At other times, motorists tend to park partially on the planting strip due to the narrowness of the parking lane, the speed and volume of through-traffic, and the perceived risk when exiting on the driver's side.

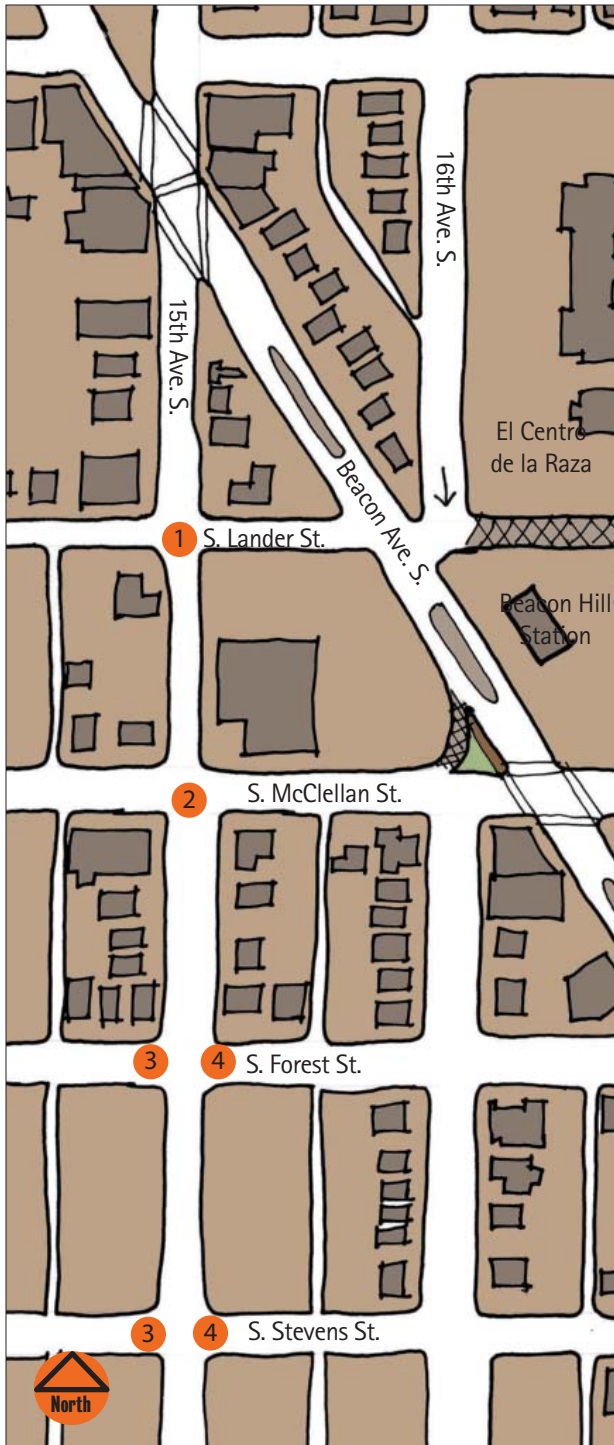
The community has expressed concerns about the speeds and volumes of diverted traffic along this corridor as well as on 14th Ave. S, one block to the west. Traffic circles have been installed on 14th in an attempt to discourage cut-through traffic.

The Seattle Bicycle Master Plan recommends sharrows along 15th.



PLS: 372FF

(Project 2 continued)



Proposed

The four intersections along 15th at S. Lander St, McClellan, Forest and Stevens Streets should be considered as a corridor and modified to slow traffic and reduce collisions.

Extending the business district urban design treatments on 15th between McClellan and Beacon could help demarcate the business district, reduce speeds and make drivers more cautious. Coordinate with Project #7.

- 1 At 15th and Lander, install curb extensions to reduce the pedestrian crossing distance to 32', consistent with the rest of the corridor. Install marked crosswalks on the north and south approaches. Install a five-foot wide planting strip on the east side of 15th, north of Lander.
- 2 At McClellan, to address the High Collision Location, install either a full traffic signal or four-way stop. A traffic signal could have unintended consequences, such as a lower compliance of motorists stopping for pedestrians at Lander and increased speeds on 15th. However, installing a traffic signal at this location would upgrade the LOS to A.

Potential parking/lane reconfigurations requires further study, but could include:

- 3 Eliminate the peak period parking restrictions and install curb extensions at Forest and Stevens to narrow the roadway entering the business district.
 Or
- 4 Establish full-time parking on one side of the street and shift the center line accordingly which would allow for two 12' lanes and one 8' parking lane.

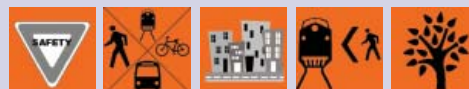
The recommended sharrows could help reduce vehicle speed, however, sharrows should be reviewed in coordination with the proposed options.

3

BEACON AVE. S. & S. LANDER ST.

Modify street to create public plaza and designate one-way street.

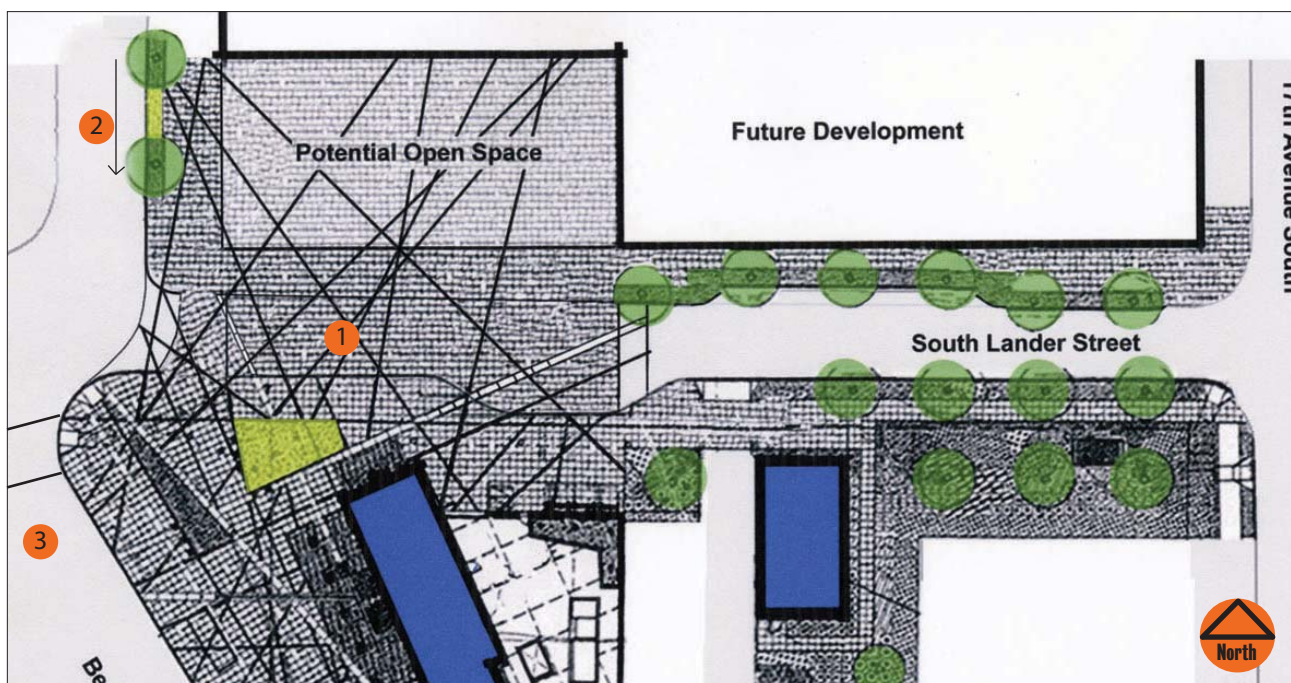
Benefits:



Modes:



Cost (2007\$): \$265,000 Ranking: High



Schematic sketch of Lander Square
City Design

Existing

S. Lander St. between 16th Ave. S. and 17th Ave. S. was closed in 2004 for construction staging for the Beacon Hill Station. Station construction plans assume rebuilding and reopening Lander to through traffic in 2009. A paratransit loading zone is planned for the south side of Lander, adjacent to the station plaza. El Centro de la Raza is on the north side of Lander, with a large open space abutting the street. The neighborhood and El Centro de la Raza have been working with the City and Sound Transit to explore options for creating a larger public plaza between the Beacon Hill Station and El Centro's building. The plaza could be used as a gathering space, host a farmer's market, and provide space for celebrations and festivals.

16th between Beacon and S. Bayview St. is one-way, southbound only, during light rail construction. As part of the light rail construction, a marked pedestrian crossing with overhead signs will be installed at Beacon and Lander. Signal infrastructure will be installed as well, allowing for a future signal.

Proposed

Improve pedestrian safety and enhance the Beacon Hill neighborhood commercial district. Coordinate projects on Beacon to ensure consistent urban design treatment. Refer to Project #7.

- 1 Implement proposed improvements for Lander Plaza.
- 2 Designate 16th as one-way southbound permanently, to reduce conflicts at the intersection with Beacon and Lander and improve vehicle, bicyclist and pedestrian safety.
- 3 Add pedestrian-activated half signal on Beacon at Lander to provide a preferred pedestrian crossing to and from the Beacon Hill Station and bus stops on both sides of the street.

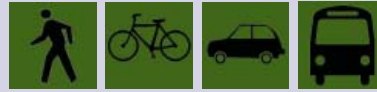
4 BEACON AVE. S. & S. McCLELLAN ST.

Add missing sidewalk link.

Benefits:

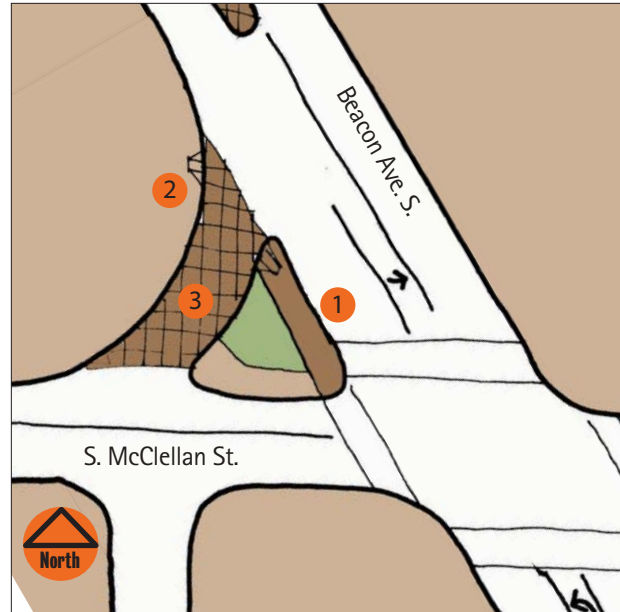


Modes:



Cost (2007\$): \$201,600

Ranking: Long-term



Existing

The southbound right turn lane from Beacon Ave. S. to S. McClellan St. provides trucks and buses a negotiable radius at a skewed intersection. Just short of where the right turn lane intersects with McClellan, there is a stop sign and a marked crosswalk. This stop sign is frequently disregarded as drivers cross it and stop just short of McClellan to look for approaching traffic, as opposed to stopping twice. The sight distance between pedestrians and motorists is limited.

Pedestrians walking on the west side of Beacon do not have a continuous sidewalk. They either detour to the marked crosswalk or continue straight through the landscaped island; a worn foot path on the island indicates many choose the most direct route.

The Beacon Hill Station is located across the street from this intersection. When the light rail system is operational in 2009, pedestrian volumes are expected to increase in this area.

Based on analysis, the current and projected conditions at this intersection are:

PLS: 372FF

The Underhill Company LLC

2004/2006		2030 with no improvement	
LOS	Delay in seconds	LOS	Delay in seconds
C	21	C	27





Proposed





Improve pedestrian access and safety near the Beacon Hill Station. Coordinate projects on Beacon to ensure consistent urban design treatment. Refer to Project #7.

- 1 Construct continuous sidewalk along Beacon, through the landscaped island, following the desired foot path.
- 2 Relocate existing pedestrian crossing further south to line up with desired travel path along McClellan; relocate stop sign accordingly.
- 3 Repave the right turn lane with a raised, textured table, to slow turning traffic and make pedestrians more visible. Raised table should be designed to accommodate heavy vehicles. Match the textured concrete to the urban design treatment proposed for the Lander Plaza and the median on Beacon between Lander and McClellan.

5 BEACON AVE. S. & 17th AVE. S.

Improve safety at intersection.

Benefits:    

Modes:    

Cost (2007\$): \$412,200 **Ranking: High**



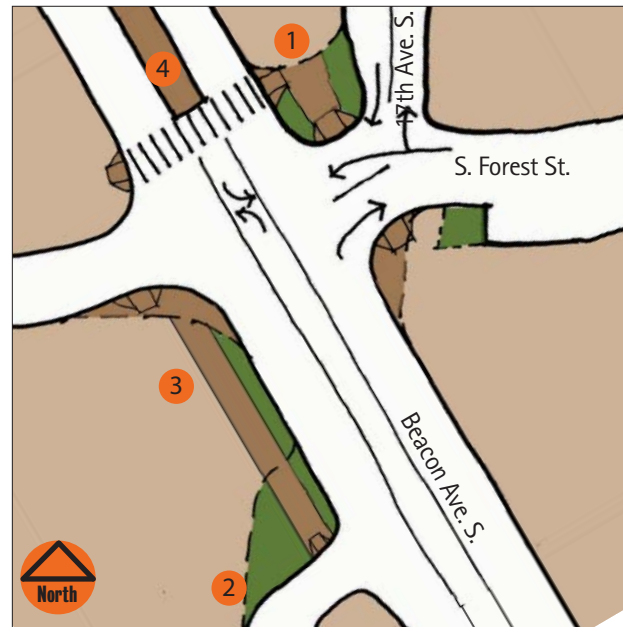
Existing

Beacon Ave. S., S. Forest St. and 17th Ave. S. is a six-legged intersection in the Beacon Hill neighborhood commercial district. The cross streets are stop controlled. The skewed angle of Beacon creates long pedestrian crossings parallel with Beacon and the large curb radii allow motorists to execute fast turns from Beacon to 17th. The marked pedestrian crosswalk across Beacon on the north approach is unsignalized.

An asphalt island on the north approach of 17th channels traffic to and from 17th, and partially prevents vehicles on Forest from crossing Beacon from east to west.

The Beacon Hill Public Library on the northwest corner generates significant pedestrian traffic, and the intersection is one block from the Beacon Hill Station.

The Bicycle Master Plan recommends bike lanes on Beacon.



Proposed

Reconfigure the skewed intersection to improve pedestrian safety and reduce vehicle conflicts. Coordinate projects on Beacon to ensure consistent urban design treatment. Refer to Project #7.

- 1 Remove existing asphalt traffic island and extend curb south, reduce curb radii and realign streets to meet at right angles. Eliminate approximately two parking spaces on the southeast corner, reducing the potential for conflicts between turning vehicles and motorists backing out of stalls.
- 2 Reduce curb radius and realign driveway for existing business.
- 3 Reduce curb radius and pedestrian crossing distance.
- 4 Construct center median north of crosswalk to protect pedestrians in the crosswalk from vehicles in the two-way left turn lane.

6

BEACON AVE. S. & S. STEVENS ST.

Improve safety at High Collision Location.

Benefits:



Modes:



Cost (2007\$): \$ 89,900

Ranking: Medium



Existing








The skewed angle of Beacon Ave. S. creates long pedestrian crossings at intersections along Beacon. This intersection is a vehicular High Collision Location.

The Beacon neighborhood commercial district continues north and south from this intersection for several blocks, making Beacon an important walking route. A small park is located on the northwest corner of this intersection and one block further north is the Public Library.

Proposed

Improve pedestrian safety by reducing crossing distance in a neighborhood commercial district. Coordinate projects on Beacon to ensure consistent urban design treatment. Refer to Project #7.

- 1 Reconfigure intersection so Stevens intersects Beacon at a right angle, reducing the crossing distance.

<h1 style="font-size: 48px; margin: 0;">7</h1>	<h2 style="margin: 0;">BEACON AVE. S: 14th AVE. S. to S. STEVENS ST.</h2>	Benefits:    
	<p style="text-align: center;">Improve streetscape.</p>	Modes:   
	<p>Cost (2007\$): \$1,558,500</p>	<p>Ranking: High</p>

Existing

Beacon Ave. S. is an arterial street that runs through the heart of the North Beacon Hill Urban Village, connecting in the north to SODO and continuing south almost to the city limits. Along most of Beacon Hill the street is an Olmstead Boulevard, with a landscaped median, but north of S. Spokane St. it operates as a three lane arterial street with one travel/parking lane in each direction and a center left turn lane.

The Beacon Hill Station will draw more people to the area by foot, bicycle, car, and bus. Safety for all modes needs to be considered in any recommendation for this area. The Seattle Bicycle Master Plan recommends bicycle lanes along Beacon.

Proposed

A series of projects in this study recommend changes at each of the intersections on Beacon in the core North Beacon Hill business district. Together, these projects will create a more pedestrian-friendly business district, calm traffic, and improve access to the Beacon Hill Station and other pedestrian generators. This project addresses the configuration of Beacon between intersections, to further enhance the pedestrian environment.

- 1 Replace the existing center left turn lane on Beacon with a raised, paved median, constructing turn pockets where necessary to access existing businesses and intersecting streets. The median should use attractive paving design and materials.
- 2 Extend the urban design features created for North Beacon Hill and currently installed around the intersection of Beacon and 15th Ave. S. along the length of Beacon Ave. S. between 14th Ave. S. and S. Stevens St.
- 3 Maintain parking along Beacon and stripe the parking lane to further help calm traffic.



8

43rd AVE. S. & S. OTHELLO ST.

Improve safety at High Collision Location.

Benefits:

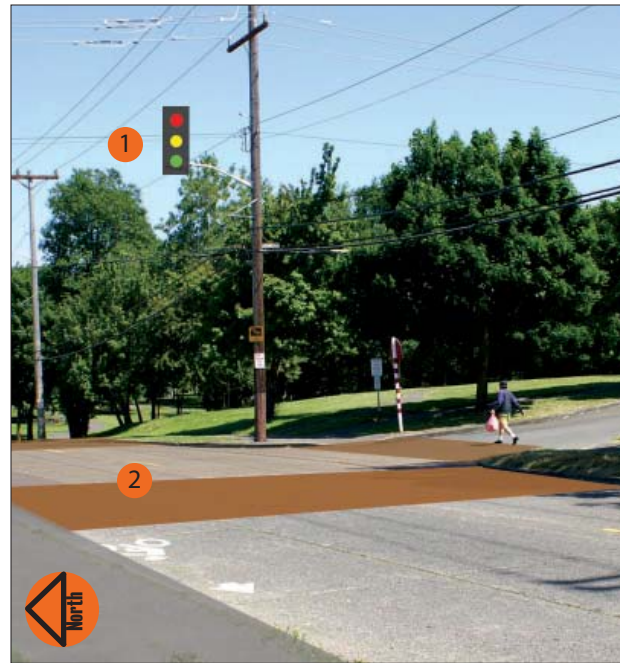


Modes:



Cost (2007\$): \$292,500

Ranking: High



Existing

43rd Ave. S. and S. Othello St. is an unsignalized intersection and pedestrian High Collision Location. Traffic on 43rd is stop controlled. To the east, Othello slopes downhill, limiting the sight distance of drivers approaching from that direction. One block to the west is MLK and the Othello light rail station. Othello Park, at the southeast corner of the intersection, is a major pedestrian generator, as are the Othello business district, and Othello Station/New Holly housing development which include a public library and community center. Children attending Brighton and Graham Hill Elementary Schools use Othello as a school walking route.

By 2020, Othello Station is expected to serve over 1,400 passengers a day. Walking and bicycling trips in the area will increase due to the light rail station, population increases associated with development, and likely improvements in the business district.

Currently, there are bicycle lanes on Othello, and the Seattle Bicycle Master Plan recommends sharrows on 43rd, which together would be the primary bicycle route from areas south to the Othello station.





Proposed

- 1 Install a full traffic signal at 43rd and Othello one block from the MLK/Othello intersection. If the full traffic signal is not feasible, install a pedestrian signal with in-lane bicycle detection.
- 2 Construct new crosswalks with raised pavement, textured or colored treatments, increasing motorist awareness of pedestrian activity.




9 RENTON AVE. S. & 43rd AVE. S.

Improve safety at intersection and create safe pedestrian/bicycle route to light rail station.

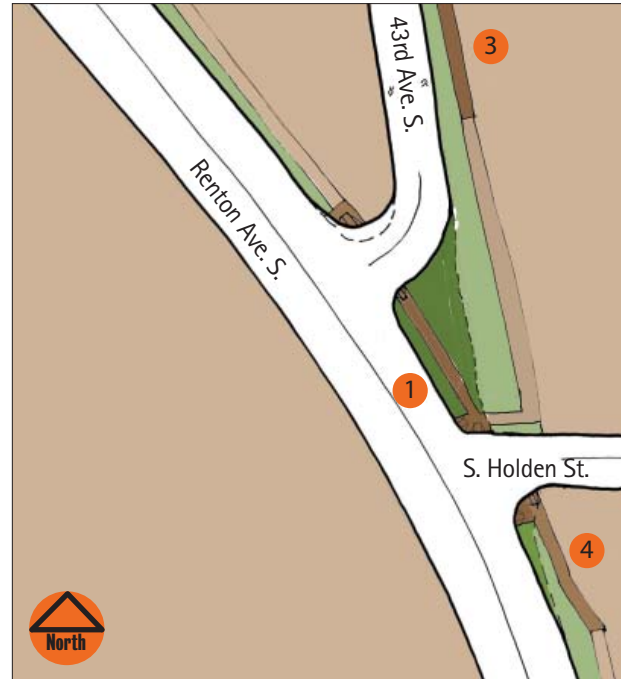
Benefits:

Modes:

Cost (2007\$): \$515,500 **Ranking: Medium**



Existing

Renton Ave. S. and 43rd Ave. S. is just southeast of Renton and Martin Luther King Jr. Way S. and is a few blocks south of the Othello Station. By 2030, the signalized intersection of Renton and MLK is projected to operate at LOS D and motorists avoiding this intersection may divert to 43rd, a non-arterial street.

Othello Park, a pedestrian and bicyclist destination, is located two blocks north of Renton and S. Holden St. on 43rd.

The Seattle Bicycle Master Plan recommends bicycle lanes on Renton Ave. and signage directing bicyclists north on 43rd to avoid the Renton/MLK and Othello/MLK intersections. A pedestrian-actuated traffic signal is planned for the intersection of 43rd and Othello, north of this project and adjacent to Othello Park (refer to Project #8).

Proposed

Reconfigure the intersection to improve bicycle and pedestrian safety and access and to calm traffic along 43rd.

- 1 Reconfigure intersection so 43rd intersects with Renton at a right angle. Provide new landscaping.
- 2 Install sharrows on 43rd between Holden and Othello.
- 3 Extend sidewalk north to S. Webster St, connecting to Othello Park.
- 4 Construct new sidewalk south of Holden, connecting to existing sidewalk.

10

**S. McCLELLAN ST:
23rd AVE. S. to RAINIER AVE. S.**

Add missing sidewalk link.

Benefits:



Modes:



Cost (2007\$): \$959,700

Ranking: High



Existing

S. McClellan St. is a direct, though very steep, pedestrian connection between 23rd Ave. S. and Rainier Ave. S. McClellan links the North Rainier urban village commercial core, Mt. Baker Station and bus routes on Rainier to residential areas on the east side of north Beacon Hill. It is also on the recommended walking route for Kimball Elementary School.

The sidewalks on both sides of McClellan between 26th Ave. S. and Rainier are substandard at only six feet wide without any separation between the sidewalk and moving traffic. This portion of sidewalk also has numerous driveways with large parking lots with required plantings providing a minimal buffer between the sidewalk and the parked vehicles.

The sidewalk on the south side of McClellan is continuous to 23rd and provides the large residential population west of Rainier access to services and transit along Rainier.

The sidewalk on the north side of McClellan is missing between 26th and 23rd. West of 23rd, the sidewalk width is six feet with a nine-foot planting strip.

At McClellan and Rainier, the existing landings at the intersection do not provide adequate space for pedestrians waiting to cross the street, and are partially taken up with traffic signal poles and a signal controller cabinet.

When light rail is operating, this pedestrian connection will become increasingly important as people living on the hillside may wish to walk downhill to the Mt. Baker Station for outbound trips, while coming home via the Beacon Hill Station and walking downhill again.

Proposed

- 1 Construct sidewalk, planting strip and curb ramps on the north side of McClellan between 26th and 23rd Avenues. New sidewalk and planting strip should be consistent with sidewalk width and planting strip to the west of 23rd.

Work with the property owner on the northwest corner of the Rainier/McClellan intersection to consolidate driveways and provide a wider sidewalk and landscaped planting strip.

- 2 Update the Right of Way Manual to include a pedestrian overlay for the portion of McClellan between Rainier and 26th to provide a minimum of ten feet wide clear sidewalk with a landscaped planting strip and limit driveways as redevelopment occurs.

- 3 Update the Right of Way Manual to provide adequate pedestrian queuing area for all intersection landings within station overlay zones as redevelopment occurs.

PLS: 538

4. PROJECTS
North Rainier Urban Village

11

**S. McCLELLAN ST:
RAINIER AVE. S. to MT. BAKER BLVD.**

Calm traffic, improve streetscape.

Benefits:



Modes:



Cost (2007\$): \$964,200

Ranking: Medium



Existing

S. McClellan St. between Rainier Ave. S. and S. Mt. Baker Blvd. is a minor arterial street connecting Rainier to Lake Washington Blvd., Hunter Blvd. and Mt. Baker Blvd. East of Martin Luther King Jr. Way S, it serves primarily local residential traffic. Currently, land uses at the intersection of Rainier include grocery, drug and hardware stores and auto-oriented services. With the new Mt. Baker Station nearby, over time, land use in the area is likely to become more pedestrian-oriented.

Currently, peak period parking is restricted on the north side of McClellan during the AM peak and on the south side in the PM peak, between Rainier and 31st. Travel speeds are limited by the traffic signal at MLK and all-way stops at 31st, 34th and Lake Park Dr./Mt. Baker Blvd.

Between Rainier and 31st, the sidewalks are narrow, lack a landscaped buffer, and are obstructed occasionally with utility poles. On the south side of McClellan there are numerous wide driveways. Combined with the steep grade east of MLK, the pedestrian environment is uninviting. East of 31st, the planting strips are narrow limiting street tree types, but utilities are undergrounded creating the potential for additional landscaping.

Pedestrian generators include Mt. Baker Park, Mt. Baker neighborhood commercial core, Mt. Baker Community Center, Muir Elementary School, Franklin High School, transit services, and businesses along Rainier. A crossing guard is stationed at the school crosswalk at 33rd and curb bulbs have been built to further improve the crossing.

A Metro trolley route operates on McClellan east of 31st. Once light rail is operating, this route will be revised and likely extended to Mt. Baker Station.

The Seattle Bicycle Master Plan recommends sharrows between Rainier and 29th Ave. S. and bicycle lanes between 29th and Mt. Baker Blvd.

(Project 11 continued)



Proposed

Pedestrian activity will likely increase along McClellan once light rail begins operating. Metro is coordinating bus service with light rail stations and plans a public outreach process to solicit public comment. Residents east of 31st may choose to walk along McClellan to access transit, making this street a candidate for pedestrian improvements to encourage more walking and bicycling.

- 1 Evaluate removal of the peak period parking restrictions and installation of bus bulbs, particularly east of MLK.
- 2 Install curb extensions to improve visibility between motorists and pedestrians at all intersections east of 31st. Incorporate signature street tree species at curb extensions to create a boulevard-like atmosphere.
- 3 Stripe parking lane edge line and bicycle lane between 29th and Mt. Baker Blvd. to visually narrow street and slow traffic.

- 4 Relocate utility poles where necessary to ensure a minimum five-foot clear walking path.
- 5 Provide planting/landscaping buffers where feasible by removing extra concrete/asphalt planting strip materials.

**12 S. COLLEGE ST:
 22nd AVE. S. to RAINIER AVE. S.**

Improve safety at two High Collision Locations.

Benefits:

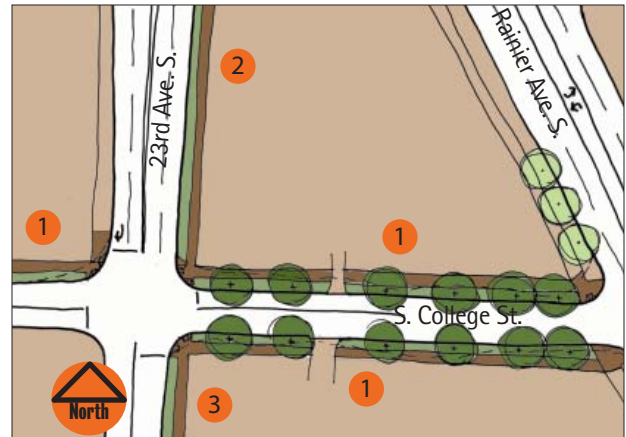


Modes:



Cost (2007\$): \$733,200

Ranking: Medium



Existing

S. College St. is a collector arterial street between Rainier Ave. S. and 14th Ave. S. College is one of the limited number of east-west streets that connects Rainier directly to the Beacon Hill commercial district. Between 22nd Ave. S. and Rainier, development on College is mixed residential and light industrial. The north side of College between 22nd and Rainier and the south side between 22nd and 23rd have poorly defined street edges with no sidewalks or curbs.

College and 23rd Ave. S. is a four-way stop with a dedicated right turn lane for southbound motorists turning west on College. West of 22nd, development is primarily residential with sidewalks and planting strips, and cross streets are stop-sign controlled.

College and 22nd is a two-way stop. There is heavy traffic on 23rd, which is a major north-south route between Rainier and Beacon Hill, with connections to S. Spokane St, I-5, and the West Seattle Bridge.

The Bicycle Master Plan calls for climbing lanes on 23rd south of College and bike lanes north of College.

Proposed

- 1 Construct curb, gutter and sidewalk on the north side of College between 22nd and Rainier and the south side of College between 23rd and Rainier to better define street edge, slow traffic and reduce collisions.
- 2 Construct curb, gutter and sidewalk on the east side of 23rd between College and Rainier to better define street edge, slow traffic and reduce collisions.
- 3 Coordinate with Project #53, sidewalks on east side of 23rd.

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13

**MARTIN LUTHER KING JR. WAY S:
 S. MASSACHUSETTS ST. to
 S. McCLELLAN ST.**

Construct non-motorized trail.

Benefits:



Modes:



Cost (2007\$): \$4,893,100

Ranking: Medium

Existing

Martin Luther King Jr. Way S. (MLK) north of Rainier Ave. S is a minor arterial with a speed limit of 35 mph. South of Rainier, MLK is a 35 mph principal arterial and major truck route. Between S. McClellan St. and S. Holgate St, MLK is a 52 foot wide five-lane street with two travel lanes in each direction and a center two-way turn lane. Peak traffic volumes decrease to nearly half of those south of Rainier. The roadway width and continuation of the 35 mph speed limit reflect MLK's past as the access route to I-90, a function it no longer serves. Because of the steep hill on the east side of MLK, access points are limited. Between McClellan and Holgate there are only three intersecting non-arterial streets and no driveways.

Bicyclists connecting to the Mountains to Sound I-90 multi-use trail, or to the bicycle lanes further north on MLK, travel in the curb lane adjacent to fast moving traffic. North of Holgate, the travel lanes are reduced to one lane in each direction with on-street parking. Further north, at the I-90 lid, the speed limit is reduced to 30 mph, and north of S. Judkins St. there are bicycle lanes. The Seattle Bicycle Master Plan recommends bicycle lanes along this corridor.

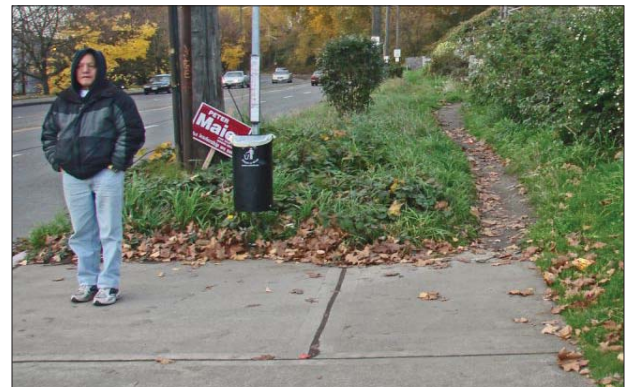
MLK lacks a sidewalk on the east side between S. Bayview St. and McClellan. The need for a sidewalk is evident by the narrow worn dirt path along the hillside P-Patch just north of McClellan, where there is also a bus zone.



Three-lane configuration along MLK at S. Massachusetts St, looking south

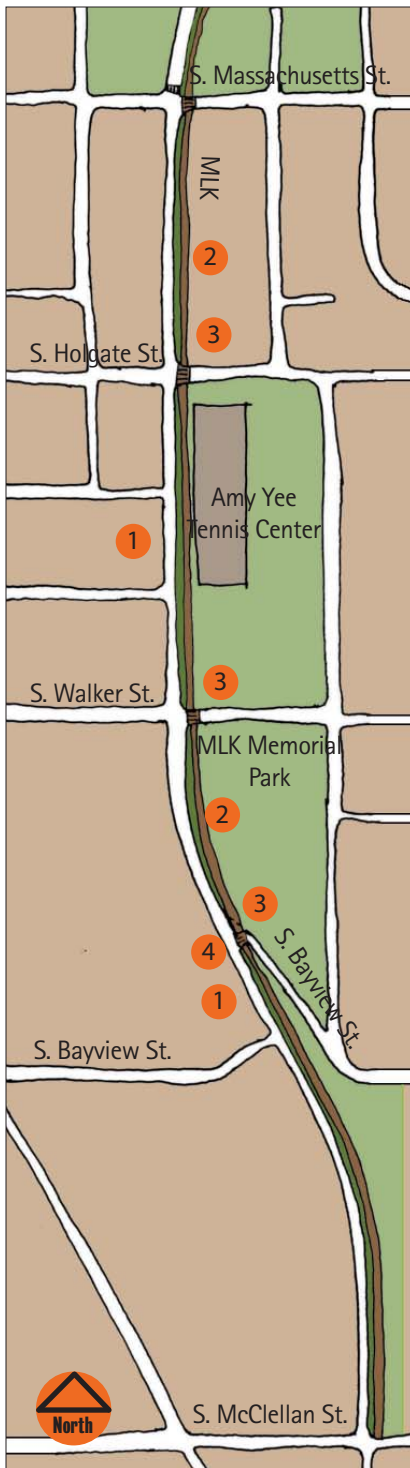


Five-lane configuration along MLK near Amy Yee Tennis Center, looking south



Existing pathway on east side of MLK north of S. McClellan St.

(Project 13 continued)







Proposed



Construct a pedestrian/bicycle facility along the east side of MLK connecting to the Mountains to Sound I-90 multi-use trail, MLK bicycle lanes (to the north), MLK Memorial Park, Amy Yee Tennis Center, and Mt. Baker Station (to the south).

- 1 Reduce the street roadway on MLK from five lanes to three lanes, matching the lane configuration to the north.
- 2 Convert the right-of-way underutilized for vehicular traffic to open space including natural drainage features and a multi-use pedestrian/bicycle facility.
- 3 On the east side of MLK at S. Holgate St, S. Walker St, and S. Bayview St, provide raised crossings to increase motorists' awareness of the trail.
- 4 Reduce the width of the crossing on the east side of MLK at Bayview by realigning Bayview to intersect MLK at a right angle.

**14 S. ALASKA ST:
MARTIN LUTHER KING JR. WAY S.
to RAINIER AVE. S.**

Improve streetscape.

Benefits:    

Modes:  

Cost (2007\$): \$1,506,500 **Ranking: Medium**



Existing

S. Alaska St. is a minor arterial street connecting Martin Luther King Jr. Way S. and Rainier Ave. S. It is just over one-quarter mile long and is an important pedestrian connector between generators towards the east and the Columbia City station to the west. Pedestrian generators near Rainier include Orca Elementary School, Rainier Community Center, Rainier Playfield, Columbia City Library, Rainier Cultural Center, Zion Prep, and Washington State Services for the Blind. Seattle Housing Authority’s Rainier Vista, at the west end, will contain over 1,000 housing units when completed. The Columbia City Station is located at the intersection of Alaska and MLK.

S. Edmunds St., two blocks south of Alaska, has been identified as the pedestrian connector between the Columbia City Station and the Columbia City business district and has been improved with streetscape amenities to enhance the pedestrian environment. However, people walking to and from destinations on or closer to Alaska are likely to choose it as a route, as will many bus riders.

Metro route #39 operates on Alaska and other transit routes on MLK and Rainier cross Alaska.

The Seattle Bicycle Master Plan recommends a climbing lane westbound on Alaska and a sharrow eastbound.

Proposed

- 1 Add pedestrian amenities on S. Alaska St. to provide an inviting connection from Rainier and the Columbia City Station.
Amenities should include: pedestrian scale lighting to improve the sense of safety and security for pedestrians and a landscaping buffer between the sidewalk and moving traffic.
- 2 Add urban design elements to pedestrian crossings at 35th Ave. S. for visibility such as textured concrete crossings.
- 3 A pedestrian overlay should be adopted for this corridor and any redevelopment along the corridor would be required to build the pedestrian improvements.

15

57th AVE. S. & S. FLETCHER ST.

Improve safety and calm traffic at intersection.

Benefits:



Modes:



Cost (2007\$): \$146,400

Ranking: Long-term



Existing

57th Ave. S. is a collector arterial street serving the local residents as well as a Metro trolley. Waters Ave. S. merges into 57th and then intersects with Rainier Ave. S. The street geometry is skewed and due to grade changes the sight distances are limited.

There is a small commercial area between S. Fletcher St. and Rainier with parking and pedestrian needs.

Proposed

- 1 Convert 57th to one-way southbound.
- 2 Reconfigure Fletcher at Waters Ave. S. to a right angle to slow motorists turning right (southbound) from Fletcher and to improve pedestrian safety.

16

**RENTON AVE. S. & S. ROXBURY ST/
 51st AVE. S.**

Construct roundabout at High Collision Location.

Benefits:



Modes:



Cost (2007\$): \$2,094,000

Ranking: High

Existing

51st Ave. S, Renton Ave. S. and S. Roxbury St. create three intersections that function in a larger system. Renton is a major north-south route between Renton and Seattle; to the north it connects to Martin Luther King Jr. Way S. and to the south it ends at Renton Airport. 51st is a southern extension of Rainier Ave. S. serving Skyway and connecting to Beacon Ave. S.

These intersections are currently controlled by nine stop signs, and two of the three intersections have been identified as vehicular High Collision Locations. For the three intersections, there have been more than 60 collisions since 2000. In addition, because the intersections are so closely spaced, long vehicle queues form, creating significant delays resulting in increased greenhouse gas emissions from idling vehicles and cut-through traffic in the surrounding neighborhood. The skewed approaches of the intersections also result in pedestrian crossings as long as 60 feet, 20-30 feet wider than a typical two lane arterial crossing.

The intersections have a high volume of traffic – an average of 20,280 vehicles per day. In addition to automobile traffic, these intersections are served by Metro Bus Routes 42 and 106.

2004/2006		2030 with no improvement	
LOS	Delay in seconds	LOS	Delay in seconds
F	96	F	154

The Rainier Beach community identified improving this intersection as their number one priority. Based upon earlier transportation analysis, the community has specifically requested a roundabout to simplify these intersections.



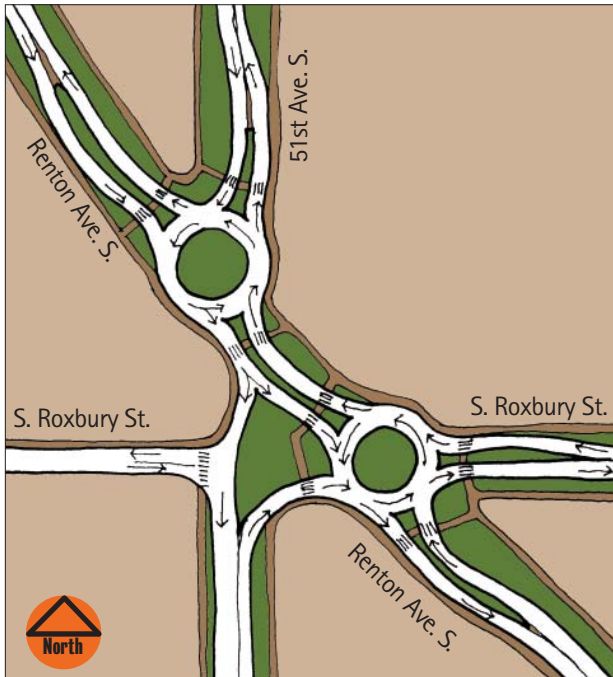
The Seattle Bicycle Master Plan recommends the following bicycle facilities:

Renton Ave. S: bicycle lanes north of the intersection; sharrow south of the intersection

S. Roxbury St: key corridor of short-term study (east of the intersection)

51st Ave. S: climbing lanes north and south of the intersection

(Project 16 continued)





Proposed




From a traffic perspective, the roundabout provides the best reduction in the number and severity of collisions for this High Collision Location. In addition, it creates a safer environment for pedestrians and provides the best level of service for vehicles. The roundabout also creates an environmental benefit by reducing greenhouse gases and creating more pervious surface for natural drainage features and landscaping.

The roundabout has the potential to create a gateway for the Rainier Beach Community.

17 RAINIER AVE. S. & S. DEARBORN ST.

Reduce delay, improve safety and add bicycle/ pedestrian access at congested High Collision Location.

Benefits:  

Modes:   

Cost (2007\$): \$3,530,200 **Ranking: Medium**

Existing

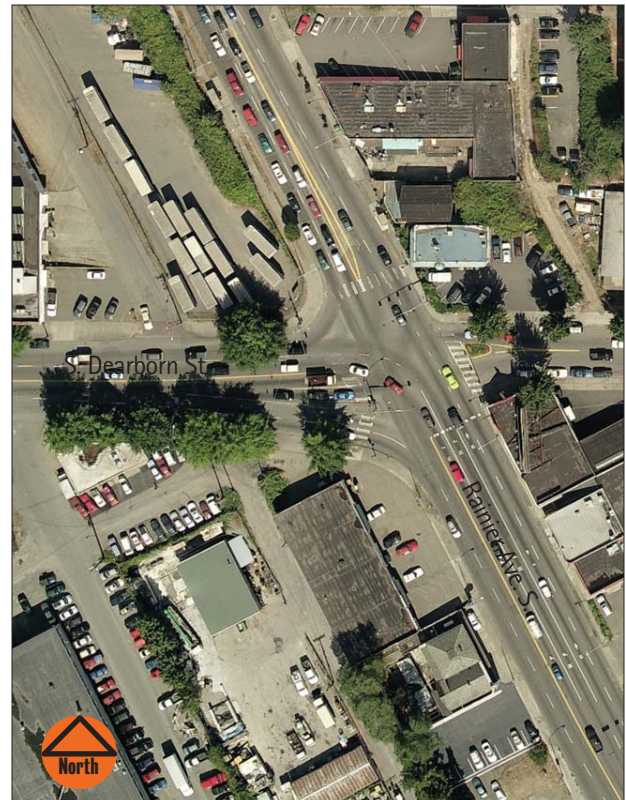
Rainier Ave. S. and S. Dearborn St. is a signalized multi-phase intersection with heavy turn movements and is currently operating at capacity. It is a vehicular High Collision Location.

As Dearborn connects to I-5 and Rainier connects to I-90, demand and delay are expected to increase by 2030. The intersection currently operates at LOS F with a PM peak overall delay of nearly 2 minutes and a delay on the south approach of over 4 minutes. By 2030, overall delay is projected to exceed 3 minutes with a delay on the south approach of nearly 8 minutes.

2004/2006		2030 with no improvement	
LOS	Delay in seconds	LOS	Delay in seconds
F	109	F	188

The bicycle lanes on the south side of Dearborn end 300' before the intersection and on the north side, the bicycle lane does not start until 600' west of the intersection. The four foot wide bicycle lane is immediately adjacent to the curb and tends to collect gravel and debris. The Seattle Bicycle Master Plan has a designated route east of the intersection on Hiawatha Pl. S, which then connects to the I-90 multi-use path. Providing a clear connection for bicyclists to this route is challenging due to traffic volumes and turn movements. There are no bicycle lanes on Rainier.

Pedestrians can cross three approaches of the intersection but are restricted from crossing Rainier on the south approach. Pedestrians crossing Dearborn on the west approach must cross double right turn lanes from Dearborn eastbound to Rainier southbound. Although the right turn lanes are signalized, due to the large radius and motorists making right turns on red, this crossing is particularly challenging. The pedestrians have an asphalt raised island between the double right turn lanes and double left turn lanes.

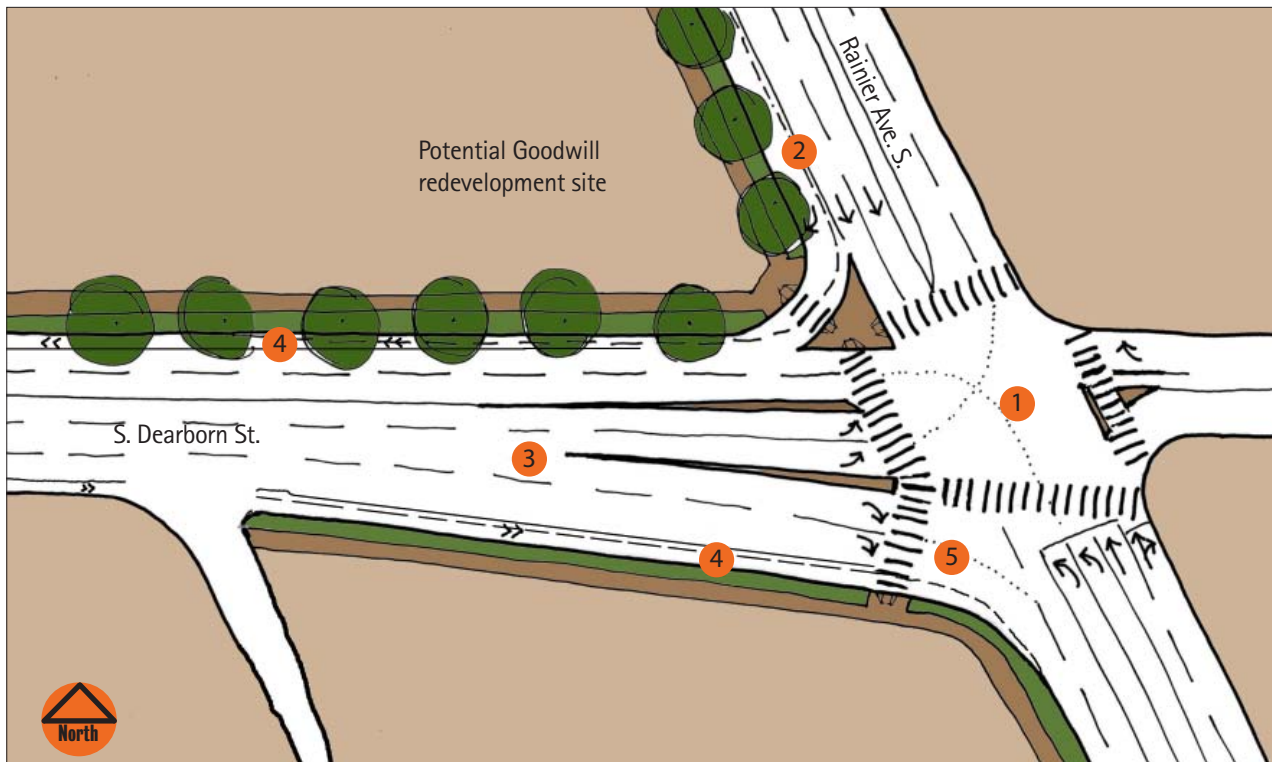


Proposed

Potential redevelopment and street vacations proposed for the Goodwill property on the northwest corner may provide opportunities to improve the safety and capacity of the intersection through other approaches. For example, a multi-lane roundabout may be a potential solution, but property acquisition would be necessary. Also, changes to the I-90 ramps (Project #18) could affect this intersection and would need to be considered in potential design solutions.

Reconfigure Rainier/Dearborn intersection to reduce vehicle delay and potentially reduce collisions. Changes to this intersection should improve safety and access for bicyclists and pedestrians, including connecting bicyclists to the I-90 Trail.

(Project 17 continued)



One solution may be:

- 1 Restrict the Dearborn east approach to right-in right-out operation. Modify the center island to define vehicle movement and improve pedestrian crossings.
- 2 Acquire right-of-way and widen the Rainier north approach to add a southbound right turn lane. The right turn pocket should start a minimum of 300 feet from the intersection. Construct a crossing island separating the right turn lane from the through lanes. Relocate the bus stop north of right turn lane.
- 3 Acquire right-of-way on Dearborn and re-stripe to create a 500-foot eastbound left-turn pocket, a shared left and right-turn lane that splits to left-only and right-only lanes, and one right-turn only lane. Remove parking spaces on the north side of Dearborn. Shift two westbound lanes to the north. Keep the existing two right-turn lanes.

- 4 Extend existing bicycle lanes on Dearborn to Rainier. Allow eastbound through movement for bicycles only from left hand (south) left turn lane. Alternately, bicyclists may choose to stay in the bicycle lane to the intersection and use the crosswalk to the east side of Rainier and continue to Hiawatha/I-90 Trail.
- 5 Provide a new pedestrian crosswalk and pedestrian island across Rainier on the south approach of the intersection with a pedestrian lead signal. Consider restricting right turn on red from Dearborn to Rainier during pedestrian signal phase for this crossing.

2030 with proposed improvement	
LOS	Delay in seconds
C	28

18 RAINIER AVE. S. & I-90 RAMPS

Improve safety at freeway access ramps.

Benefits:

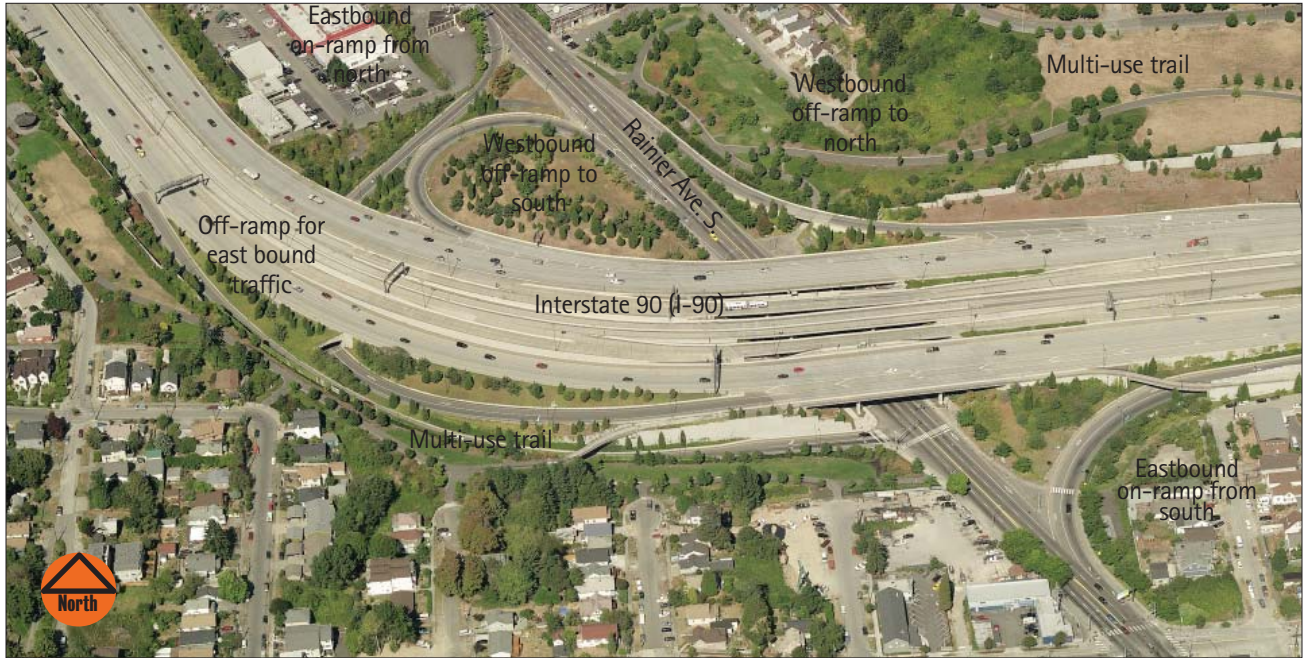


Modes:



Cost (2007\$): \$6,486,200

Ranking: Long-term



Existing

The Rainier Ave. S. I-90 interchange ramps were designed with merge lanes and large radii to maximize vehicular access and speeds. This design prioritizes vehicular access creating an unfriendly pedestrian/bicyclist environment on Rainier.

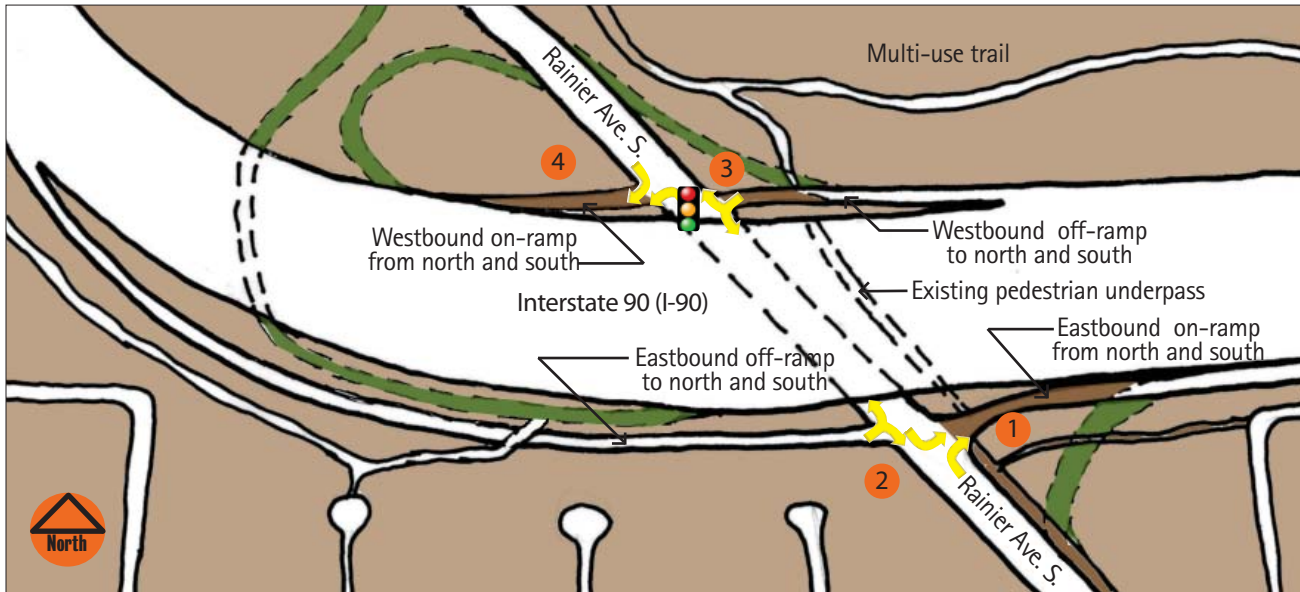
The large ramp radii allow motorists to accelerate while on Rainier to freeway ramp speeds. Due to the curve of the on-ramps, the crosswalks are not visible to drivers until they are already on the curve and have sped up to merge onto the freeway. The unsignalized crossings have low compliance for motorists stopping for pedestrians. The marked crosswalk on the southbound I-90 on-ramp was removed. However, the westbound off-ramp to Rainier northbound provides the safest pedestrian crossing as it is grade-separated and the eastbound off-ramp is signalized.

Currently, transit connections are provided between the I-90 flyover and transit stops on Rainier. Sound Transit is planning to construct a light rail station for East Link in the I-90 center right-of-way between Rainier and 23rd, with pedestrian and bicycle access from both streets.

Based on analysis, the current and projected conditions at Rainier and I-90 eastbound off-ramps are:

2004/2006		2030 with no improvement	
LOS	Delay in seconds	LOS	Delay in seconds
D	36	D	49

(Project 18 continued)



Proposed

The potential redesign of the following ramps should be evaluated and prepared in cooperation with Sound Transit plans for the East Link light rail station, and with WSDOT. The proposed improvements, below, reflect an urban approach to freeway design. There are other options that would improve safety for all modes that could be implemented as well. The proposed improvements, below, are preliminary and have not been analyzed for traffic impacts.

- 1 Relocate the eastbound on-ramp (from northbound Rainier) further north to align with the traffic signal for the eastbound off-ramp. This ramp would intersect with Rainier at a right angle with a much reduced radius, allowing for a marked crosswalk that is aligned with the sidewalk adjacent and parallel to Rainier. Allow northbound and southbound access, utilizing the existing traffic signal.
- 2 Restripe lanes at eastbound off-ramp to allow northbound and southbound movement to Rainier.

- 3 Relocate the westbound off-ramp to Rainier northbound to intersect with Rainier at a right angle. Allow northbound and southbound access to Rainier. Install traffic signal to facilitate turning movements. This new signal could greatly reduce capacity and may result in unacceptable backups on I-90.
- 4 Relocate the westbound on-ramp from the north to intersect with Rainier at a right angle. Allow northbound and southbound access from Rainier. Install traffic signal (#3 above) to facilitate turning movements.

19 RAINIER AVE. S. & S. MASSACHUSETTS ST.

Improve safety at intersection.

Benefits:

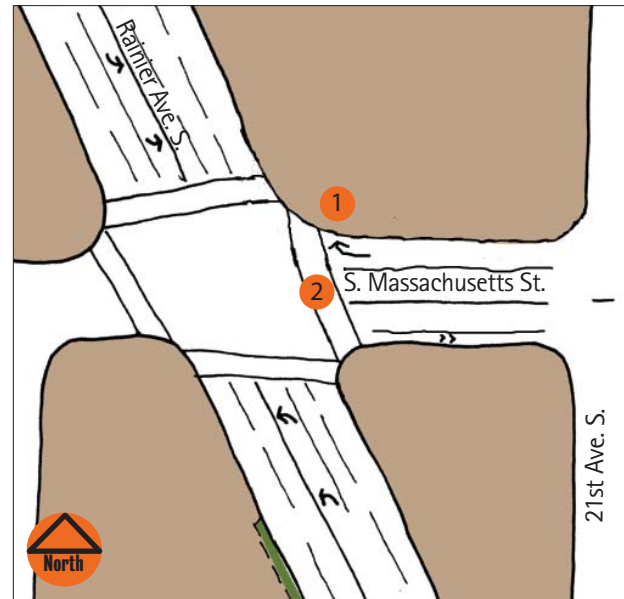


Modes:



Cost (2007\$): \$369,000

Ranking: Medium



Existing

Rainier Ave. S. and S. Massachusetts St. is a vehicular High Collision Location and presents challenges to pedestrians and bicyclists. Bus stops under I-90 and access points to the I-90 multi-use trail on the northwest corner of this intersection generate significant pedestrian and bicycle traffic.

Based on analysis, the current and projected conditions at this intersection are:

2004/2006		2030 with no improvement	
LOS	Delay in seconds	LOS	Delay in seconds
B	15	B	17

The intersection is signalized with pedestrian crossings on all approaches, but the crossing on the north approach is challenging for pedestrians. The double right turn lane from Massachusetts to Rainier, as well as the large radius encourages motorists to continue through the intersection even when pedestrians have the walk light to cross Rainier. Many motorists attempting to make a right turn on red look for a gap and then start their right turn without checking for pedestrians. Also, if a vehicle in the right turn curb

lane stops for pedestrians it can block the view of a driver in the second right turn lane, who may not see the pedestrians.

The Seattle Bicycle Master Plan recommends a climbing lane on the south side of Massachusetts which would require elimination of on-street parking. High volumes of bicyclists cross all directions at this intersection, in part due to its proximity to the I-90 trail.

Sound Transit is planning to construct a light rail station for East Link in the I-90 right-of-way between Rainier and 23rd with pedestrian access from both streets.

Proposed

- 1 Reconfigure the lanes to one travel lane in each direction with a bicycle climbing lane between Rainier and 21st.
- 2 Eliminate the dual right turn lanes from Massachusetts to Rainier, maintaining one right turn lane. Consider eliminating right on red.

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4. PROJECTS
Rainier Ave. S.

20

**RAINIER AVE. S. & 21st AVE. S,
S. STATE ST, S. GRAND ST.**

Improve safety at intersection.

Benefits:



Modes:



Cost (2007\$): \$205,800

Ranking: Long-term

Existing

Rainier Ave. S, 21st Ave. S. and S. State St. is a six-approach unsignalized intersection. On the east side of Rainier, 21st and State intersect at a skewed angle with Rainier creating a 105' long pedestrian crossing parallel with Rainier. On the west side of Rainier, although the cross streets do not intersect, the skewed angle at 21st creates a pedestrian crossing of 95'. In addition to the pedestrian and bicyclist challenges posed by these crossings, the wide intersections also result in motorists not having clearly defined stopping locations to make turns onto Rainier while motorists turning from Rainier can do so at high rates of speeds.

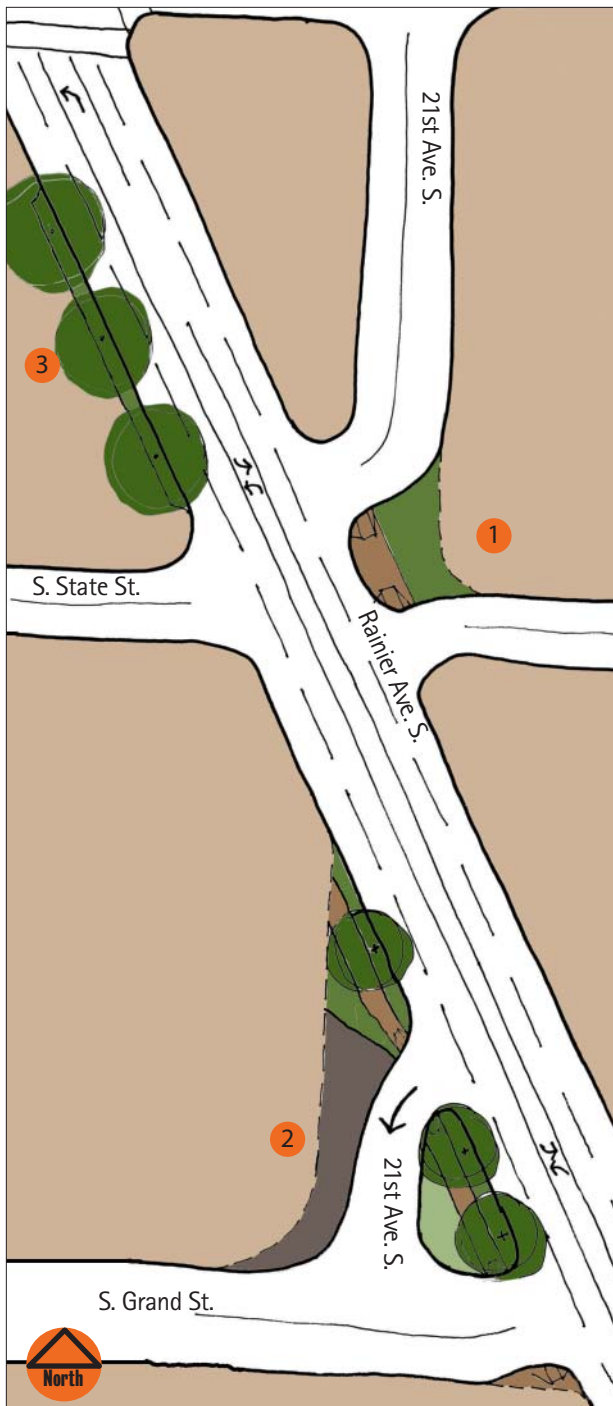
The one block section of 21st between Rainier and S. Grand St. serves as the vehicle and truck loading and parking area for Stewart Lumber. This portion of 21st Ave. S. lacks sidewalks. It is 53' wide, one foot wider than Rainier. As a result, a potential conflict exists between vehicles loading/parking at Stewart Lumber and vehicles turning from Rainier at a high rate of speed.

On the west side of Rainier, between the signalized intersection of Massachusetts and State there is a parking setback that serves the adjacent business. Motorists parking in this 7' parking strip impede traffic flow on Rainier during the parking maneuver and park partially on the sidewalk so they can exit their vehicles safely. This partially blocks the limited sidewalk width and has damaged the sidewalk.

Pedestrians and bicycle volumes are generated to access to the I-90 multi-use trail and the adjacent transit stops. These volumes can be expected to increase when the East Link light rail station opens at I-90.



(Project 20 continued)



Proposed

A solution to this intersection needs to be developed that prevents or discourages right turns from Rainier to 21st, and prohibits left and right turns from 21st to Rainier, while maintaining Stewart Lumber's ability to maneuver large trucks to and from its loading doors at the front of the building and preserving customer parking. Safety for pedestrians and bicyclists on Rainier also must be considered.

- 1 Square up the intersection of 21st and State, reducing the crossing distances to improve pedestrian and bicyclist safety and to more clearly define motorist turning locations.
- 2 Consider making 21st, southwest of Rainier, one-way southbound. This will allow large truck access to the loading area, as trucks must enter 21st and back into the loading zone. However, there may be unintended consequences for motorists who will then need to turn onto 21st instead of possibly using Grand. Consider additional treatments to slow or discourage through-traffic from using this portion of 21st.
- 3 On the west side of Rainier between State and Massachusetts, eliminate the parking setback, restore planting strip with street trees and landscaping to remove parking conflict and improve pedestrian safety and transit speed and reliability.

4. PROJECTS
Rainier Ave. S.

21

**RAINIER AVE. S. & 22nd AVE. S,
S. HOLGATE ST, S. PLUM ST.**

**Improve safety, reduce turning speeds at
intersection.**

Benefits:



Modes:



Cost (2007\$): \$443,000

Ranking: Long-term

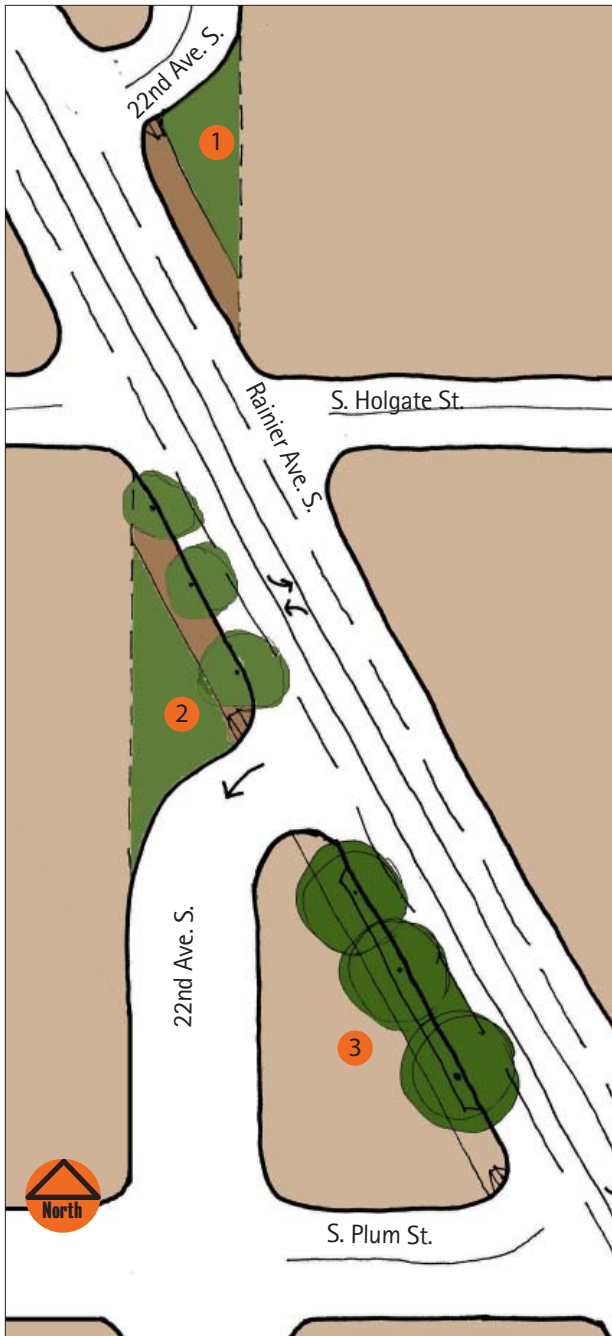
Existing

Rainier Ave. S, and 22nd Ave. S. intersect at a skewed angle that creates long pedestrian/bicyclist crossings, 135' on the west and 110' on the east, parallel to Rainier. In addition to the pedestrian and bicyclist challenges presented by these long crossings, the wide intersection also results in potential conflicts with motorists not having clearly defined stopping locations to make turns onto Rainier, and motorists turning from Rainier at high rates of speed.

Between 22nd and Plum on the west side of Rainier, there is a parking setback that serves the adjacent business. Motorists parking in this seven-foot wide parking strip impede traffic flow on Rainier, including buses, during the parking maneuver and park partially on the sidewalk as exiting their vehicle adjacent to Rainier's high traffic flow is difficult. This has resulted in damage to the sidewalk as well as partially blocking the limited sidewalk space. Parking for this establishment can be accommodated on either 22nd or Plum.



(Project 21 continued)



Proposed

A solution to this intersection needs to be developed that traffic calms right turns from Rainier to 22nd, and prohibits left and right turns from 22nd to Rainier. Safety for pedestrians and cyclists on Rainier also must be considered.

- 1 Square up the intersections at 22nd to reduce the crossing distances to improve pedestrian and bicyclist safety and to more clearly define the motorists stopping location to execute turns.
- 2 Consider making 22nd, southwest of Rainier, one-way southbound. Narrow 22nd to 25' wide, allow parking on the west side and construct street improvements including sidewalks, landscaping and street trees.
- 3 On Rainier between Plum and 22nd, eliminate the parking set back and restore planting strip with street trees and landscaping, removing the parking conflict and improving pedestrian safety and transit speed and reliability.

22

RAINIER AVE. S. & 23rd AVE. S.

Improve safety at High Collision Location.

Benefits:



Modes:



Cost (2007\$): \$292,600

Ranking: High

Existing

Rainier Ave. S, 23rd Ave. S. and S. Hill St. intersect at a signalized intersection that is a vehicular High Collision Location. Hill bisects this intersection and is stop sign controlled with right turn only restrictions. Motorists turning right from Hill to Rainier must cross 23rd.

Left turns are restricted from Rainier to 23rd, but there are significant left turning volumes from 23rd to Rainier. The traffic signal is split-phased, serving each approach from 23rd separately due to the left turn demand.

The traffic volume on Rainier is almost 38,000 vehicles daily, and is projected to exceed 41,000 vehicles per day by 2030. Daily traffic volumes on 23rd are less than half of those on Rainier, at about 15,000 vehicles per day.

The intersection and approach delays were analyzed for this intersection. The south approach delay, currently operating at LOS F with 86 second delay, is expected to increase to 122 seconds by 2030.

2004/2006		2030 with no improvement	
LOS	Delay in seconds	LOS	Delay in seconds
D	35	E	58

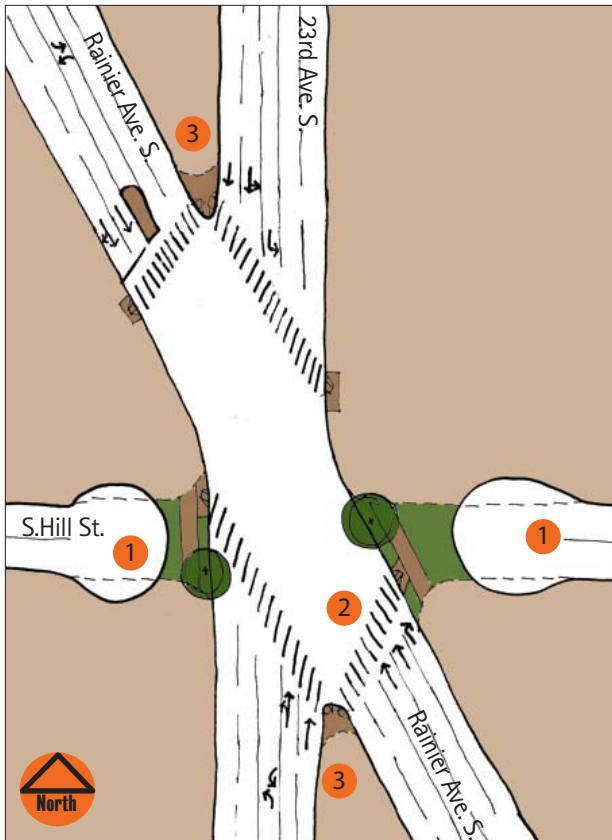
This is also a very challenging intersection for pedestrians and bicyclists. Crossings are not permitted on the north approach of Rainier, and due to the skewed angle of the intersection, the crossings are very long. In addition, the distance from the stop bars on Rainier to the pedestrian crossings on 23rd is approximately 140' (almost half a block), and motorists tend not to yield to pedestrians in the crosswalks. The Lighthouse for the Blind is located two blocks to the east, and many blind pedestrians cross to and from the bus stops.

This intersection serves as a transit hub; Metro route



7 on Rainier and route 48 on 23rd meet here with over 1,300 riders boarding and alighting between 6:00 am and 6:00 pm, the greatest number of transit patrons of all the stops along the Rainier corridor. These transit riders are likely to cross these streets at least once, on the inbound or outbound trip.

(Project 22 continued)



Proposed

This intersection was not analyzed with the following recommended improvement. Analysis would be part of the design phase as this project moves forward.

- 1 Close Hill east and west of Rainier, creating two cul-de-sacs. This eliminates the conflict of traffic from Hill crossing the signalized approaches of 23rd. All local access traffic on Hill will reroute to other streets. A cul-de-sac will significantly improve pedestrian connections with new sidewalks and street trees.
- 2 Install a pedestrian crosswalk on the north approach of Rainier; realign the crosswalks on the south approaches. Install a pedestrian lead signal to address vehicle/pedestrian conflicts during right turns on green. Consider special pavement treatment to heighten motorist awareness of pedestrians and to aid blind pedestrians in crossing. Consider constructing a pedestrian island at the southwest approach.
- 3 Restrict right turns from 23rd to Rainier because of the very difficult angle, and realign curbs to reinforce this restriction. Motorists can make right turns via streets north or south of this intersection. This also has the benefit of reducing the pedestrian crossing distances.

23

RAINIER AVE. S. & S. WALKER ST.

Improve safety, reduce pavement and add landscaping at intersection.

Benefits:

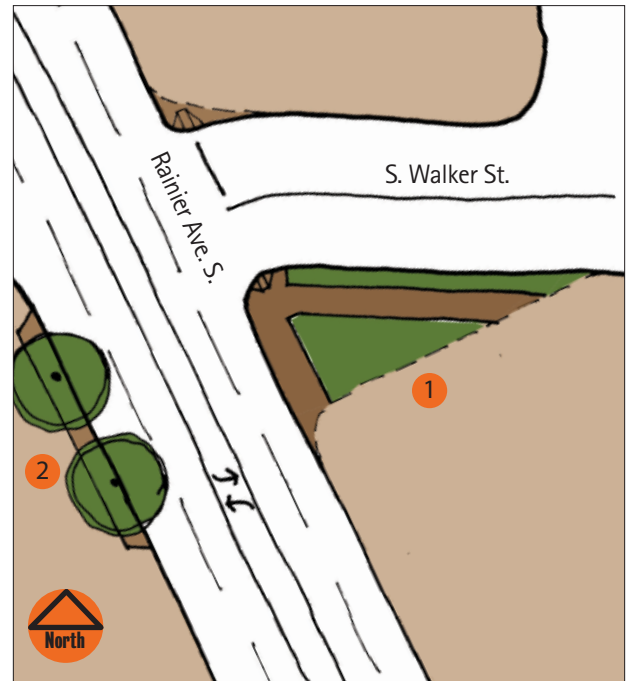


Modes:



Cost (2007\$): \$226,200

Ranking: Long-term



Existing

On the east side of Rainier Ave. S. at S. Walker St, the intersection is 90 feet, which is twice as wide as is typical. This wide crossing results in a long exposure time for pedestrians and bicyclists crossing Walker and allows motorists to execute turns at high speeds, thus creating a conflict. Overhead trolley lines serve Metro's turn around for route 4 for the westbound direction.

On the west side of Rainier, an existing planting strip was removed to provide a 5.5' wide parking area. Because of the limited width of the parking area, when motorists park in this area, to avoid conflicts with the travel lane they park partially on the sidewalk. Parking maneuvers also cause conflicts with traffic in the curb lane, particularly with buses and trucks.





Proposed





- 1 Narrow the crossing by realigning the curb line on the south side to reduce the pedestrian crossing distance and require motorists to slow down to make the turn; add street trees and landscaping.
- 2 Construct planting strip by eliminating the narrow parking strip. Add street trees.

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24 RAINIER AVE. S. & MARTIN LUTHER KING JR. WAY S.

Improve safety at intersection.

Benefits:    

Modes:    

Cost (2007\$): \$533,100 **Ranking: High**

Existing

Rainier Ave. S. and Martin Luther King Jr. Way S. is one of the busiest intersections in the study area, handling 4,800 vehicles in the PM peak hour today, with a projected increase to 5,200 vehicles by 2030. Despite these high volumes, the intersection operates acceptably for vehicles with an overall LOS D both now and projected in 2030.

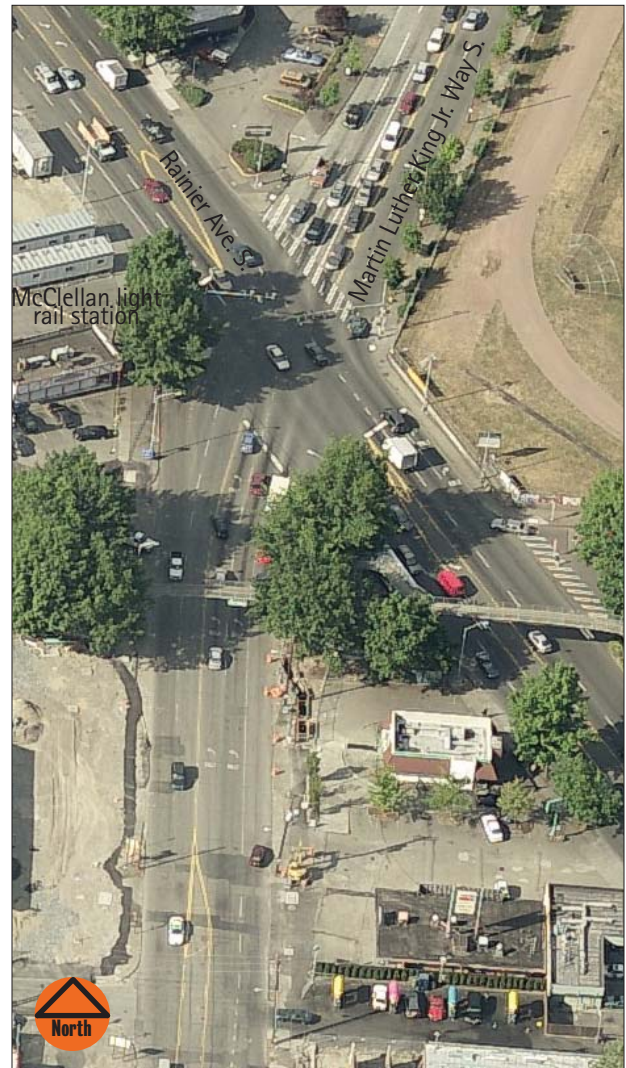
2004/2006		2030 with no improvement	
LOS	Delay in seconds	LOS	Delay in seconds
D	38	D	45

The intersection is configured similar to Rainier and 23rd Ave. S, with the signal controlling MLK being split phased due to the heavy left turn movements to Rainier. Left turns from Rainier to MLK are restricted. Right turns from MLK to Rainier are limited due to the intersection angle. The free right turn lane from Rainier southbound to MLK southbound is yield-controlled.

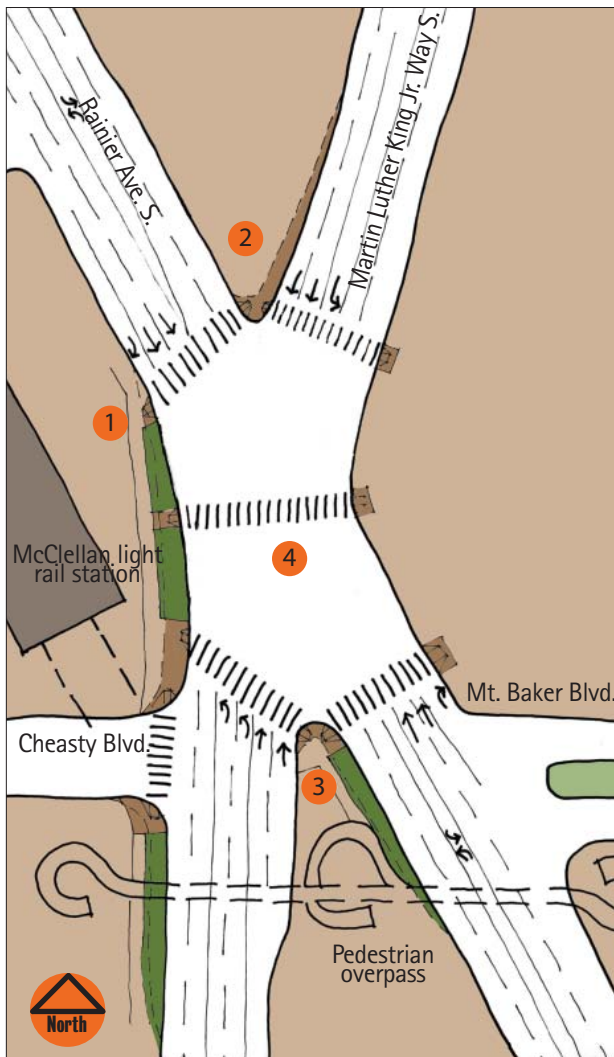
South of the intersection, MLK is a Major Truck Route and north of the intersection Rainier is a Major Truck Route.

Although the pedestrian overpass provides the safest option for crossing Rainier and MLK south of Mt. Baker Blvd, many pedestrians cross at grade. Only one at-grade crossing is signalized; the north approach of MLK. Franklin High School, on the east side, generates significant pedestrian traffic, and the future Mt. Baker Station, on the west side and the bus transfer center to the north will greatly increase the numbers of people walking and bicycling. Sidewalk widths are minimal along Rainier, particularly adjacent to the high school, where the clear sidewalk width is five feet.

This area is within the North Rainier Urban Village; increased commercial and residential transit-oriented development is expected in the future.



(Project 24 continued)



Proposed

- 1 Reconfigure the free-right turn lane from Rainier southbound to MLK southbound to provide an adequate turn radius for trucks and buses and also to reduce the pedestrian crossing distance.
 - 2 Realign the curb on the north approach of MLK on the west side.
 - 3 Realign the curb the on the south approach of Rainier on the west side. Buses would then stop in-lane. Any modifications to Metro stops will be done in coordination with King County Metro.
 - 4 Add an all-way walk to the signal phasing and install five pedestrian crosswalks nearly perpendicular to the street being crossed. This includes a crosswalk across the center of the intersection, providing Franklin High School and the Mt. Baker neighborhood with the most direct crossing opportunity.
- Operation of the intersection will also require restricting all right-turns on red. This will allow for the safest pedestrian movements by eliminating potential conflicts and at the same time facilitate the best vehicular traffic flow by eliminating pedestrian crossings during the vehicle phase.
- 5 As redevelopment occurs in the vicinity of the Mt. Baker Station, require all new buildings to be set back to provide a minimum six-foot planting strip and ten-foot wide sidewalk and minimize driveways across the sidewalk and near the traffic signal.

25 RAINIER AVE. S. & S. WALDEN ST.

Add pedestrian lead to signal at High Collision Location.

Benefits:

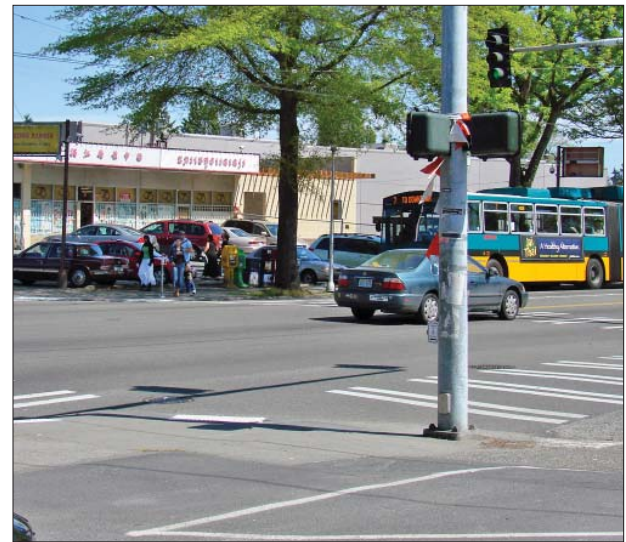
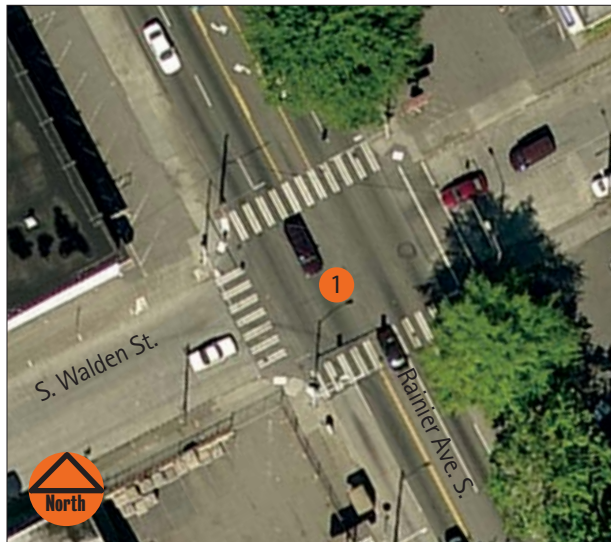


Modes:



Cost (2007\$): \$166,600

Ranking: High



Existing

This pedestrian High Collision Location is a signalized intersection, on the grid, without grade changes, and with good sight distances. All four corners have businesses with curb cuts near to the intersection; vehicles use the center turn lane to enter and exit parking lots. On the northwest corner the old Chubby & Tubby building has angled parking between the building and the sidewalk that uses the sidewalk for circulation space.

Proposed

- 1 Add pedestrian lead signal to give pedestrians a short all-way red cycle where no traffic enters the intersection. When the light turns green for vehicles, pedestrians will already be in the intersection and will be more visible to right and left turning drivers.
- 2 Relocate northbound bus zone from near side to far side to improve intersection sight distance.

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26 RAINIER AVE. S. & S. GENESEE ST.

Improve safety at High Collision Location.

Benefits:



Modes:



Cost (2007\$): \$ 91,100

Ranking: High

Existing

Rainier Ave. S. and S. Genesee St. is a Vehicular High Collision Location. In 2006, SDOT revised the southbound left turn to a protected phase, eliminating the permissive phase that contributed to the collision history at the intersection. Speeding was a contributing factor in many of the collisions, as this intersection had the highest reported number of collisions between 2002 and 2004 for motorists running off the road and hitting fixed objects (utility poles), for the entire Rainier Corridor.

Based on analysis, the current and projected conditions at this intersection are:

2004/2006		2030 with no improvement	
LOS	Delay in seconds	LOS	Delay in seconds
B	20	C	30

The intersection is not inviting for pedestrians. They are restricted from crossing on the south approach, where the commercial development on the southeast corner includes a coffee shop and drug store.

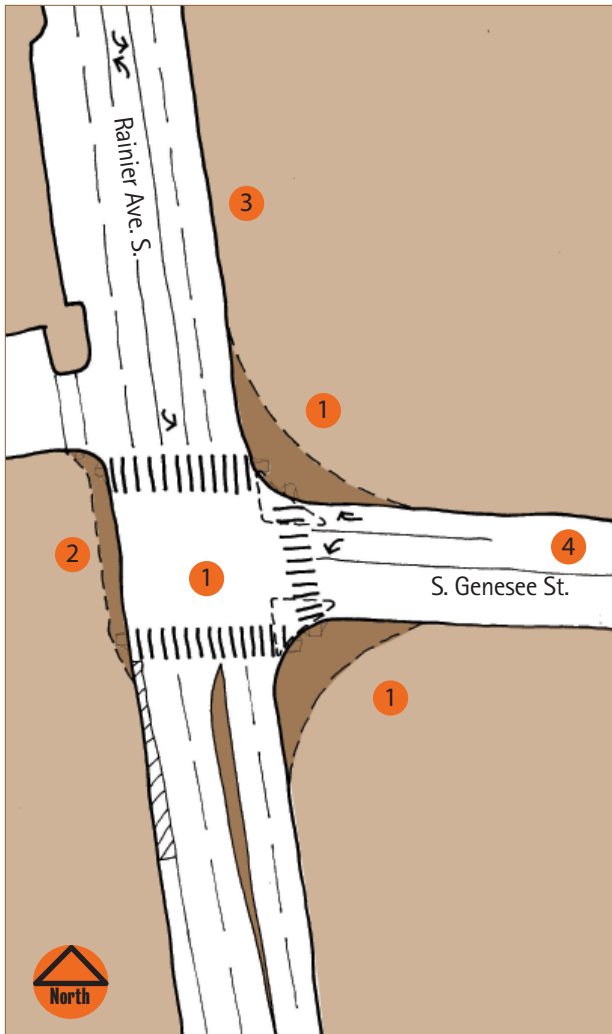
The free right turns with large turning radii also present a challenge for pedestrians as motorists are able to execute these turns at relatively high speeds. For the northbound free right turn, it is difficult for pedestrians to determine if motorists are turning right or continuing straight. For the westbound free right turn, motorists often block the crosswalk, as they look to their left for a gap in traffic.

On the west side of Rainier, the north crosswalk is often obstructed by vehicles parked across it and the curb setback creates a safety issue as vehicles pulling into and out of parking spaces block the intersection.

The Seattle Bicycle Master Plan recommends sharrows on Genesee.



(Project 26 continued)



Proposed

- 1 Reduce the curb radii on the northeast and south-east corners, eliminating the free right turn lanes and traffic islands. The revised radii must be designed so that motorists do not block the crosswalk when making the westbound right turn. Install a pedestrian crossing on the south approach.
- 2 Construct curb and sidewalk on the west side of Rainier, eliminating the parking setback within the intersection. See Project #28, where on-street parking south of this intersection will be accommodated in a safety improvement.
- 3 Prohibit on-street parking north of Genesee on the east side of Rainier, to improve traffic flow and ensure buses stopped in-lane can pull back into traffic.
- 4 Implement Bicycle Master Plan recommendations.

27

RAINIER AVE. S. & S. OREGON ST.

Add pedestrian signal at High Collision Location.

Benefits:



Modes:



Cost (2007\$): \$258,300

Ranking: High



Existing

Rainier Ave. S. and S. Oregon St. is an unsignalized intersection that has a significant number of pedestrian generators in the immediate vicinity, including the Rainier Community Center, Rainier Park, community businesses, three elementary schools and churches. These land uses generate many pedestrian trips including significant numbers of children and seniors. The intersection is on the preferred walking route for three elementary schools. The nearest signalized intersections are located 530' to the north at S. Genesee St. and 850' to the south at S. Alaska St, requiring pedestrians to walk one quarter of a mile out of their way to cross the street with the aid of a traffic signal.

This intersection, mid-block between Oregon and Genesee and the intersection of Rainier and Genesee are all vehicular High Collision Locations.

Proposed

Coordinate with Project #28, reconfigured traffic lanes for on-street parking along Rainier between Genesee and Alaska.

- 1 Install a pedestrian signal.

28

**RAINIER AVE. S:
S. GENESEE ST. to S. ALASKA ST.**

Reconfigure traffic lanes for on-street parking.

Benefits:



Modes:



Cost (2007\$): \$230,600

Ranking: Medium

Existing

Between S. Genesee St. and S. Alaska St, except where there are left turn pockets at intersections, Rainier has 9' inside lanes and 17' curb lanes for through traffic and parking. On the east side of the street between Genesee and Oregon is a large commercial development with off street parking, and between Oregon and Alaska is Rainier Playfield. Parking on the east side of the street is restricted. On the west side of Rainier, development includes single-family homes, churches and small-scale neighborhood businesses. Parking for these uses is generally on-street and motorists, due to the narrow curb lane, frequently park on the planting strip and/or sidewalk. This damages both the planting strip and sidewalk along the corridor, and discourages pedestrian travel.

Proposed

- 1 Because parking is limited to the west side of the street, shift the centerline four feet east to establish the following lane configuration: northbound 10' inside lane, 12' curb lane; southbound 10' inside lane, 12' travel lane plus an 8' parking lane. Transition lane widths to meet lane configuration needs at intersections. Coordinate with Project #26 and #27.
- 2 Construct curb extensions on Rainier on the northwest and southwest corners at Oregon, to further define parking lane and discourage parking on the planting strip.
- 3 Reconstruct sidewalks where damage has occurred; rehab planting strip to improve tree health and aid in permeability of soil.



4. PROJECTS

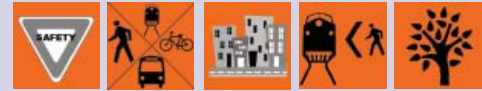
Rainier Ave. S.

29

RAINIER AVE. S: S. ALASKA ST. to S. CLOVERDALE ST.

Consider long-range conversion from four-lanes to three-lanes; improve transit speed and reliability.

Benefits:



Modes:



Cost (2007\$): \$ NA

Ranking: High

Existing

The Rainier corridor is approximately 7.5 miles in length, extending from S Dearborn St. to 75th Ave. S. It serves a diverse population of users including drivers, bicyclists, transit riders and pedestrians. A large portion of Southeast Seattle's residents live within walking distance of the street. The 52-foot curb-to-curb width provides two 9-foot inside travel lanes and two 17-foot outside lanes that accommodate a travel and parking lane. Within the curb-to-curb space, Rainier is challenged to meet the conflicting functions of mobility, moving vehicles, and access to businesses, services and homes along the corridor.

Rainier is the "main street" for the business districts and residential neighborhoods of McClellan, Genesee, Columbia City, Hillman City, Othello and Rainier Beach. These areas developed around the Seattle-to-Renton streetcar line that once ran through Rainier Valley.

Over 11,000 people a day get on and off Metro's bus service on Rainier. Stops at Rainier and S. McClellan St. alone serve over 1,700 people boarding and alighting daily. Rainier Ave. S. has one of the highest ridership routes in the region: Route 7 with 3.4 million riders a year. Rainier Ave. S. has been designated as a Transit Priority Corridor - with the goal to increase the speed and reliability of buses relative to general purpose traffic.

In 2009 Link light rail will begin operating. Of the four Rainier Valley stations, only the Mt. Baker Station is on Rainier, but the others are located within 1/4 to 1/2 mile from Rainier, a distance many will walk or bicycle for the convenience of light rail.

Average daily vehicle volumes on Rainier range from 42,000 at the north end to 18,000 at the south end. The entire length is classified as a principal arterial, though street types vary considerably along the corridor reflecting the different uses/needs of adjacent land uses.

North of Martin Luther King Jr. Way S, Rainier serves as a major truck route, providing freight connectivity to the I-90 interchange on Rainier and the I-5 interchanges north via Dearborn. South of Rainier's



Rainier Avenue S through Columbia City

intersection with MLK the major truck route shifts to MLK.

Many bicyclists use Rainier as it provides a nearly level grade and a direct route through the valley. The Seattle Bicycle Master Plan indicates that further study is needed to accommodate the bicycle demand along this corridor.

Large street trees that line most of Rainier, create the feel of a linear park. These trees improve the environment and quality of life for neighbors and travelers along Rainier. Aside from the aesthetic benefits, this urban forest increases traffic safety by serving as a buffer between moving vehicles and pedestrians, slows drivers down by giving the perception of a narrower street, and forewarns drivers of upcoming curves.

On-street parking demand varies along the corridor, with the highest demand in the neighborhood commercial areas. With the exception of the Columbia City urban village, where curb extensions define the parking area, drivers often park partially on the planting strip due to the perceived narrow lane widths. This has led to damaged sidewalks, curbs and planting strips, and negatively impacts the pedestrian

PLS:

(Project 29 continued)

environment.

Rainier, mile for mile, is one of the highest collision corridors in the city. Drivers make frequent lane changes to pass other vehicles stopped while waiting to make turns. In the three-year period between 2002 and 2004, 1,743 collisions occurred or nearly 50 collisions per month, including 37 where someone was killed or disabled. Seventy-three pedestrians were involved in collisions of which seven were fatal. For bicyclists, 19 were involved in collisions with one fatality. Most collisions occurred on clear days, in daylight hours, and all but 55 drivers were sober.

The Rainier Traffic Safety Project Task Force developed a number of near-term engineering measures to improve safety on Rainier, many of which have been implemented.

The SETS project team evaluated the feasibility of a three-lane conversion in all or part of the Rainier corridor during an initial planning level analysis. Working closely with the Core Community Team (CCT) the project team was reminded that the Columbia City four-lane to three-lane conversion has been explicitly and repeatedly recommended since 1976, and was the top priority action in the Columbia City/Hillman City/Genesee 1999 Neighborhood Plan.

Initial Project Description

- 1 Between S. Alaska St. and S. Cloverdale St. consider a conversion of Rainier from a four-lane to a three-lane configuration, with one through lane in each direction, a center left turn lane, left turn pockets at intersections where appropriate, plus parking, bus stops, loading zones and sharrows. Include curb bulbs and urban design features as appropriate. Integrate with other SETS projects on Rainier that reconfigure intersections and add pedestrian crossings.

Results of project analysis

The initial planning level analysis completed during SETS suggested that the conversion of Rainier from a four-lane to three-lane roadway produced no fatal flaws, yet suggested that a detailed operational analysis should be conducted to determine if the

project should move forward. *Contrary to the planning level analysis, the in-depth operational analysis and Vissim simulation, concluded that, by 2030, the levels of congestion and delay in travel time for transit riders and motorists would be significant.*

Next Steps

SDOT has met with SETS Core Community Team and other stakeholders to discuss the results of the in-depth operational analysis of a three-lane conversion along Rainier, as well as the overall advantages and deficiencies of the conversion. SDOT recognizes the need for improvements for all corridor users and, therefore, *as a near-term solution for the Rainier corridor, we will move forward with the design of a four-lane cross section that includes improvements for transit users, pedestrians, bicyclists, and utilizes other traffic calming techniques.*

These improvements include:

- Bus "bulbs" that reconstruct and widen sidewalks at bus stops, provide additional waiting space, and allow buses to get back into traffic
- New pedestrian lighting and bike racks
- Striping the parking lane to better distinguish the travel lane from the parking lane; striping the centerline in such a way to help calm traffic and thus improve safety
- Special signs and crossing treatment in the neighborhood business districts
- Bicycle "sharrows" to increase motorist awareness that bicyclists are on the road

Ongoing Monitoring

SDOT will collect traffic count data on Rainier Ave S. one year after Link Light Rail is in full operation, specifically in late Summer and early Fall 2010. This timetable allows time for traffic to normalize between different travel modes and different travel paths. With this information, SDOT may reconsider the feasibility of the three-lane option.

4. PROJECTS

Rainier Ave. S.

30

RAINIER AVE. S. & 39th AVE. S.

Add pedestrian signal at High Collision Location.

Benefits:

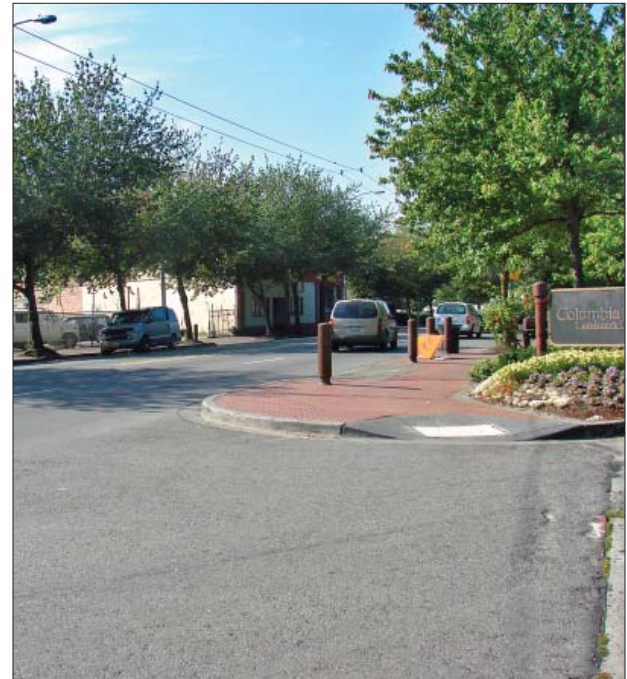


Modes:



Cost (2007\$): \$258,100

Ranking: High



Existing

Rainier Ave. S. and 39th Ave. S. is a pedestrian High Collision Location near the southern end of the Columbia City business district. Urban design features that create an identity for the historic business district include brick curb extensions, benches, drinking fountains and historic lighting. At one time a marked crosswalk was installed on Rainier at 39th, but the location did not meet the current crosswalk marking criteria so the crosswalk was removed. Curb ramps still exist and pedestrians continue to use the unmarked crossing. Metro bus zones are located immediately south of this intersection. The nearest signalized crossing to the north is at S. Hudson St, over 530 feet away, and to the south there is a half signal at S. Brandon St. over a third of a mile away. The distance between two full traffic signals is over half a mile. This long, uninterrupted section between Columbia City and Hillman City provides motorists an opportunity to exceed the speed limit, which many do, particularly due to the downhill grade northbound.

Proposed

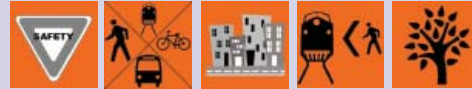
- 1 Install a pedestrian signal to provide a protected crossing.
- 2 Relocate bus zones to the existing curb extensions, providing in-lane stops at the far side of the proposed pedestrian signal.

31

**RAINIER AVE. S. & 42nd AVE. S. /
S. BRANDON ST.**

Realign intersection.

Benefits:



Modes:



Cost (2007\$): \$ 285,200

Ranking: Medium



Existing

S Brandon St. is a 25' non-arterial street that intersects Rainier Ave. S. at a skewed angle making the crossings of Brandon along Rainier 65' wide. The long crossings are not inviting to pedestrians as they increase the exposure time the pedestrian is in the street. The width of the crossings also allow motorists to execute right turns from Brandon and left turns from Rainier at high speeds. A pedestrian signal provides access to transit stops, a medical facility and other pedestrian generators in the area. Motorists turning right from Brandon are not able to see the traffic signal heads and therefore must be alert for pedestrians utilizing the signalized pedestrian crossing.

The neighborhood is currently working on a community-designed public space at 42nd Ave. S, between the Columbia City and Hillman City commercial districts.

Proposed

- 1 Realign both approaches from Brandon so they intersect Rainier at right angles reducing the pedestrian crossing from 65' to 30' and improving the sight distance for motorists turning across the signalized pedestrian crossing.
- 2 Continue public space design elements in new sidewalk/landscaping area to help create a sense of place and an inviting environment for pedestrians.

PLS:

The Underhill Company LLC

4. PROJECTS
Rainier Ave. S.

32 **RAINIER AVE. S:
 S. LUCILLE ST. to S. JUNEAU ST.
 (HILLMAN CITY)**

Add urban design features and improve pedestrian safety in business district.

Benefits:

Modes:

Cost (2007\$): \$3,200,700 **Ranking: High**

Existing

Rainier Ave. S. between S. Lucille St. and S. Juneau St. is the heart of the Hillman City neighborhood commercial district. The storefronts along Rainier share a similar historic character with those in Columbia City, but the street lacks pedestrian amenities and crossing opportunities. The impacts from traffic on Rainier add to an uninviting environment for pedestrians. Due to narrow travel lanes and high travel speeds, motorists park their vehicles partially on the planting strip further encouraging high speeds and detracting from the pedestrian environment.

The mature street trees contribute to Hillman City's historic character, provide a buffer between vehicles and pedestrians, and shelter pedestrians from rain and sun. With few businesses having large windows facing the street, however, the sidewalk area lacks light. Additionally, some sidewalks are in poor condition due to damage from tree roots and vehicles.

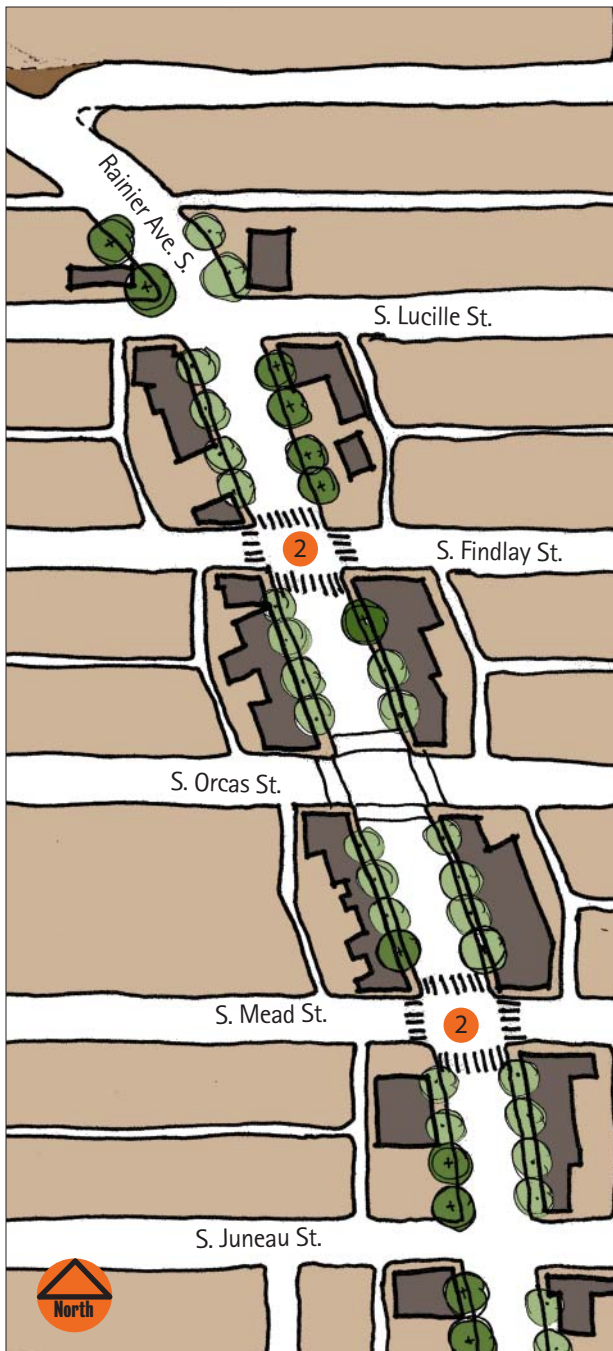
The Rainier Traffic Safety Project recommended evaluating the use of curb extensions in Hillman City for pedestrian safety.

Traffic flows through this area fairly well. Based on analysis, the current and projected conditions at Rainier and S. Orcas St:

2004/2006		2030 with no improvement	
LOS	Delay in seconds	LOS	Delay in seconds
B	13	B	15



(Project 32 continued)



Proposed

- 1 Install urban design elements to create a sense of place and improve the pedestrian environment. Improvements may include curb extensions on Rainier and cross streets to shorten pedestrian crossings and define parking lanes, special pavers, benches and pedestrian lighting. To encourage a connection to Columbia City some design elements should continue north to 39th, the southern end of Columbia City.
- 2 Install traffic signals at Rainier/S. Mead St. and Rainier/S. Findlay St. to provide crossing opportunities and accessibility for all modes.
- 3 Consolidate driveways and, where possible, move access from Rainier to cross streets, to reduce driveway/pedestrian conflicts and reaffirm Rainier as a pedestrian Main Street. Work with property owners/developers to reconfigure access and on-site parking when buildings are upgraded or redeveloped.
- 4 Install directional signs on cross streets that emphasize Hillman City (current signs direct drivers to Columbia City) to help create an identity for Hillman City.
- 5 Repair sidewalks in business district. Consider providing more space for tree growth.

33

**RAINIER AVE. S. & S. GRAHAM ST. /
46th AVE. S.**

Improve safety at High Collision Location.

Benefits:

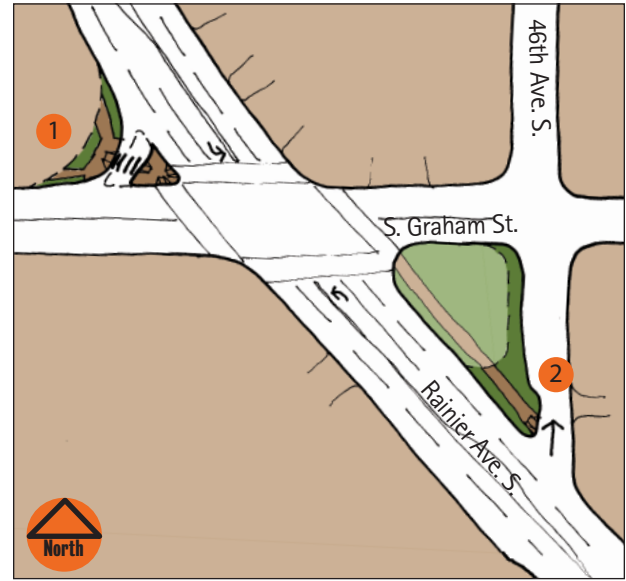


Modes:



Cost (2007\$): \$268,400

Ranking: Medium



Existing

Rainier Ave. S. and S. Graham St. is a signalized pedestrian High Collision Location. The land uses along Rainier are multi-family and commercial. Two elementary schools, Brighton and Graham Hill, have this intersection on their recommended walking routes. An adult crossing guard is not stationed at this intersection. Transit ridership is high and bus zone shelters are provided south of the intersection.

West of Rainier, Graham is a minor arterial that connects to Swift, with access to I-5. The intersection experiences high pedestrian and vehicular volumes and heavy turning movements. The free right turn on the northwest corner is a challenge for pedestrians due to the large curb radius.

Just south of the intersection, 46th Ave. S. intersects Rainier at a skewed angle creating a 65' long crossing which is not inviting to pedestrians as it increases the exposure time the pedestrian is in the street. The width of the crossing also allows motorists turning right from Rainier to do so at a high speed. Left turns from Rainier are restricted at this intersection. The triangular island created by these intersecting streets is a landscaped park-like area with a bus shelter, and is a neighborhood amenity.

Traffic flows through this area fairly well. Based on analysis, the current and projected conditions at this intersection are:

2004/2006		2030 with no improvement	
LOS	Delay in seconds	LOS	Delay in seconds
B	17	B	19

Proposed

- 1 Reduce the curb radius on the northwest corner, maintaining the free right turn and reduce the size of the pedestrian island. Reconstruct the smaller pedestrian island with concrete curb and sidewalk. This improvement will slow motorists, making the pedestrian crossing safer.
- 2 Reduce the width of the crossing at 46th by creating a one-way northbound right turn only from Rainier. The crossing will be reduced from 65' to 20'. Extend the sidewalk and landscaping from the triangular island.

34 RAINIER AVE. S. & S. MORGAN ST.
/ 47th AVE. S.

Improve safety at intersection.

Benefits:

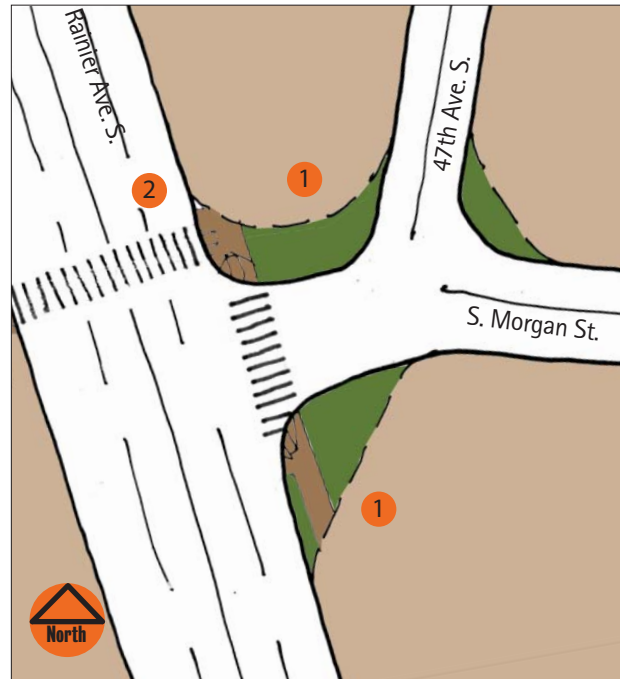


Modes:



Cost (2007\$): \$429,800

Ranking: Long-term



Existing

Rainier Ave. S., S. Morgan St. and 47th Ave. S. is an unsignalized intersection. On the east side of Rainier, Morgan and 47th intersect creating a long pedestrian crossing parallel with Rainier. Although both Morgan and 47th are non-arterial streets with widths of 25', the overlapping right-of-way creates a crossing nearly 85' long. The wide crossing results in a long exposure time for pedestrians and bicyclists walking or riding on the east side of Rainier, as well as allowing motorists to execute turns at higher speeds, thus creating potential conflicts.

Traffic speeds and volumes along this segment of Rainier are generally high, limiting pedestrian accessibility in the area. The area is characterized by high density, multi-family apartments. Bus stops are located at this intersection.

Proposed

- 1 Reduce intersection width by realigning how 47th intersects with Morgan and realign Morgan to intersect Rainier at a right angle. The crossing can be significantly reduced creating a more inviting pedestrian environment with landscaping and trees, and increasing vehicle safety.
- 2 Install a pedestrian signal on Rainier to provide a preferred crossing.

PLS:

The Underhill Company LLC

4. PROJECTS
Rainier Ave. S.

35 RAINIER AVE. S. & S. HOLLY ST.

Improve crossing conditions at intersection with high use by elderly and children.

Benefits:

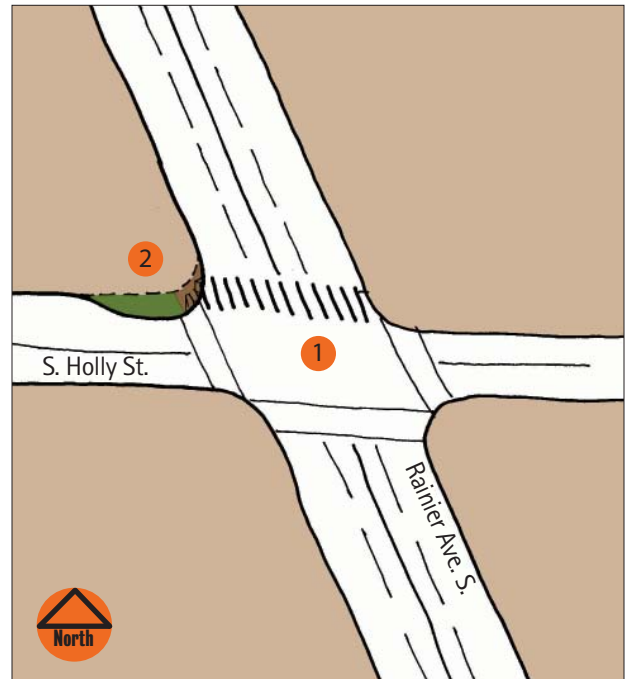


Modes:



Cost (2007\$): \$239,000

Ranking: Long-term



Existing

Rainier Ave. S and S Holly St. is a signalized intersection. Holly is a non-arterial street, but west of Rainier it is 36' wide, so it functions similar to an arterial street. This intersection has one of the highest densities of multi-family housing along the Rainier corridor. Pedestrian generators in the area also include transit stops, a senior center on the southwest corner and several schools. This intersection is on the recommended walking route to school for both Brighton and Graham Hill Elementary Schools; an adult crossing guard is stationed at this intersection.

Proposed

- 1 Install pedestrian lead and countdown signals for all crosswalks, to assist the elderly and young pedestrian population in the area.
- 2 Construct a curb extension on the northwest corner to reduce the crossing distance for pedestrians crossing Holly, shift centerline south to accommodate right turns. Realign the north approach crosswalk.

36

**RAINIER AVE. S. & S. ROSE ST. /
WABASH AVE S.**

Improve safety at intersection.

Benefits:

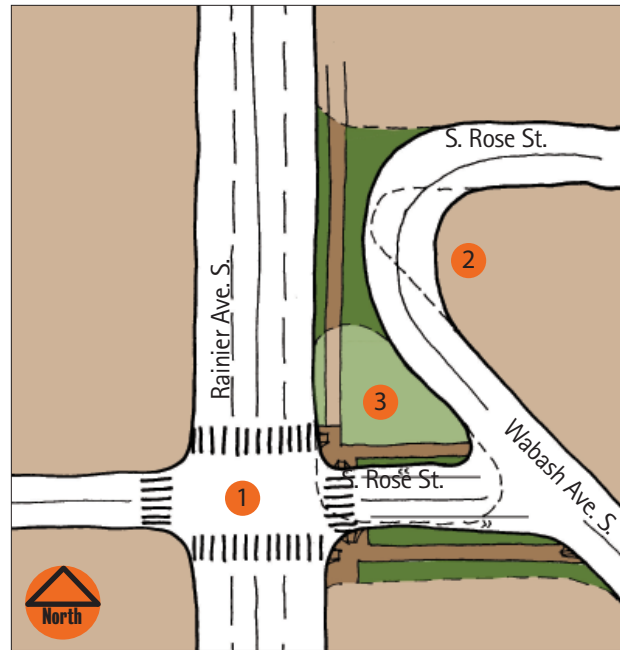


Modes:



Cost (2007\$): \$1,010,800

Ranking: Medium



Existing

Rainier Ave. S, S. Rose St. and Wabash Ave. S, intersect in an unusual configuration. North of the pedestrian signal, the intersection of non-arterial streets Rose and Wabash, both 25' feet wide, and Rainier, results in a pedestrian crossing over 90' long parallel to Rainier. This is due to the skewed angle of Wabash and the overlapping right of way with the north leg of Rose. The south leg of Rose does not line up with the west approach. The configuration creates challenges and confusion for pedestrians and motorists alike.

There is currently a pedestrian half signal to cross Rainier south of the western approach of Rose, and a northbound Metro bus stop on the island. Surrounding land uses include multi-family housing, churches and schools. Students from Dunlap and New School Elementary schools cross at this intersection which is on their recommended walking routes. The three-quarter mile distance between full traffic signals on Rainier encourages motorists to exceed the speed limit. The community has identified improvements to this intersection during the Neighborhood Planning process.

The Seattle Bicycle Master Plan has identified Wabash as a shared roadway facility and Rose as a crossing location. Wabash serves as a bicycle route linking Seward Park Ave. S. to alternate routes through the valley.

Proposed

- 1 Upgrade the half signal to a full signal, improving accessibility. Install bicycle detection on Rose.
- 2 Realign Wabash and the north leg of Rose intersection and construct a new sidewalk and landscaping, eliminating the 90' crossing.
- 3 Relocate the east approach of Rose at Rainier to align it with the west approach of Rose. Stripe bicycle lanes consistent with the bicycle detection. Adjust the south portion of this street accordingly with new curb, sidewalk and landscaping.

PLS: 477

37

**RAINIER AVE. S. & S. THISTLE ST.
 / RAINIER PL. S.**

Improve safety at intersection.

Benefits:

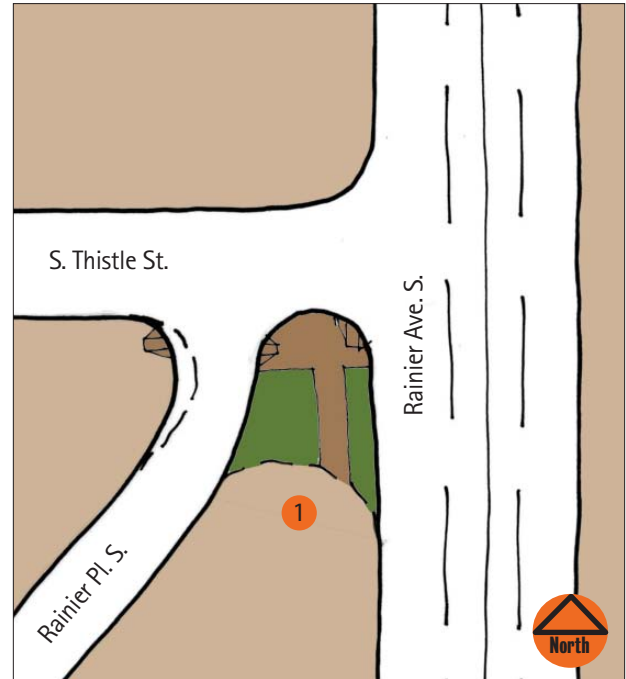


Modes:



Cost (2007\$): \$154,800

Ranking: Long-term



Existing

S. Thistle St. intersects Rainier Ave. S. at a right angle, but Rainier Pl. S. also intersects at this location at a skewed angle creating a 75' wide intersection that is challenging to negotiate for both pedestrians and motorists.

SDOT has added a radar speed sign at this intersection to encourage southbound motorists to observe the posted speed limit.

Proposed

- 1 Reconfigure intersection, so that Rainier Pl. intersects Thistle at a right angle, eliminating the direct turns to and from Rainier Pl. to Rainier. This enhances the pedestrian environment by reducing the crossing distance and the exposure time the pedestrian is in the street and redefines the intersection for motorists and requires them to make turns at reduced speeds.

38

RAINIER AVE. S. & FISHER PL. S.

Extend and improve pedestrian connection in urban village.

Benefits:



Modes:



Cost (2007\$): \$423,900

Ranking: Medium



Existing

Fisher Pl. S. connects Rainier Ave. S. with 52nd Ave. S./ Mapes Walkway. This one block street is an unimproved street lacking curbs and sidewalks that serves as a back entrance to the grocery store and other services. At the intersection of Rainier, there is a pedestrian half signal that is utilized by Rainier Beach Library patrons, local residents and transit riders. Fisher Pl. could provide an ideal pedestrian connection for those traveling from the library or senior housing on the west side of Rainier to Mapes Walkway and the public spaces adjacent to Lake Washington. It is an alternative pedestrian route that would allow pedestrians to avoid the congested intersection of Rainier and Henderson, just to the north.

Proposed

- 1 Improve pedestrian safety and accessibility to the public right of way by constructing sidewalks and installing pedestrian scale lighting and landscaping.

4. PROJECTS
Rainier Ave. S.

39

**RAINIER AVE. S. & 52nd AVE. S./
 MAPES WALKWAY**

Extend and improve pedestrian connection in urban village.

Benefits:



Modes:



Cost (2007\$): \$1,009,000

Ranking: Medium

Existing

Mapes Walkway is a north-south pedestrian connection within the 52nd Ave. S. right of way between S. Henderson St. and Rainier Ave. S. Only the first phase of a community project, a raised walkway along the creek connecting a small public plaza at Henderson with the intersection of Fisher Pl. S. and 52nd, is complete. Lack of landscape maintenance, pedestrian scale lighting, and the fact that the path dead-ends behind the Safeway store, all contribute to the trail being underutilized; personal safety concerns and lack of awareness of the trail may be additional contributing factors.

Additional components of this project must be constructed to complete the community vision and improve the safety and attractiveness of this route, a major non-motorized connection for walkers and bicyclists. The distance between the high school area and businesses on Rainier is shorter via the Mapes Walkway than traveling along Rainier.

Major pedestrian generators that are served by the trail include Rainier Beach High School, Rainier Beach Community Center, The New School, Rainier Beach Library, the Rainier Beach business district, Lake Washington Apartments, and the lakefront. The trail also serves transit riders on Metro routes 7, 42, 48, and 107, and the Henderson Station.



(Project 39 continued)



Existing conditions, looking north



Existing conditions, looking north

Proposed

Coordinate this project with other Rainier Beach projects.

- 1 Connect Mapes Walkway to Director, providing a neighborhood connection.
- 2 Continue connection south to Rainier, with pedestrian scale lighting, landscaping and clear delineation of path along the Safeway parking lot and across the driveway.
- 3 Install a pedestrian signal at 52nd and Rainier to provide a preferred crossing for people connecting from Mapes Walkway to the south side of Rainier.
- 4 Consolidate bus zones from Sturtevant and 54th Ave. S. to the preferred pedestrian crossing location at 52nd.
- 5 Implement Mapes Walkway Master Plan recommendations.

40 RAINIER AVE. S. & 51st AVE. S. / STURTEVANT AVE. S.

Improve safety at High Collision Location.

Benefits:



Modes:



Cost (2007\$): \$537,000

Ranking: High



Existing

Rainier Ave. S. makes a 90 degree turn at the intersection of 51st Ave. S. This "T" intersection operates well for vehicles but is a vehicular High Collision Location.

51st is a minor arterial that connects Rainier to Renton Ave. S. and Beacon Ave. S, serving Skyway and Renton. There is a significant amount of turning traffic between 51st and Rainier. Motorists turning from Rainier can do so at high speeds as they currently turn into a 30' lane.

The intersection of Rainier and 51st operates at a good level of service and is expected to maintain this LOS in 2030.

2004/2006		2030 with no improvement	
LOS	Delay in seconds	LOS	Delay in seconds
B	12	B	13

The pedestrian crossing on 51st is 65 feet, longer than the crossing on Rainier. Pedestrians not only have a long exposure time in the street, they must also

be alert for turning motorists due to the large radii. When motorists on 51st have the green light to turn onto Rainier, they do not face any vehicular conflicts because it is a "T" intersection, but they must stop for pedestrians crossing Rainier. Signs have been installed at the signal to increase motorist awareness of the pedestrian crossing.

The pedestrian crossing on Sturtevant Ave. S. is wide due to the large turning radius.

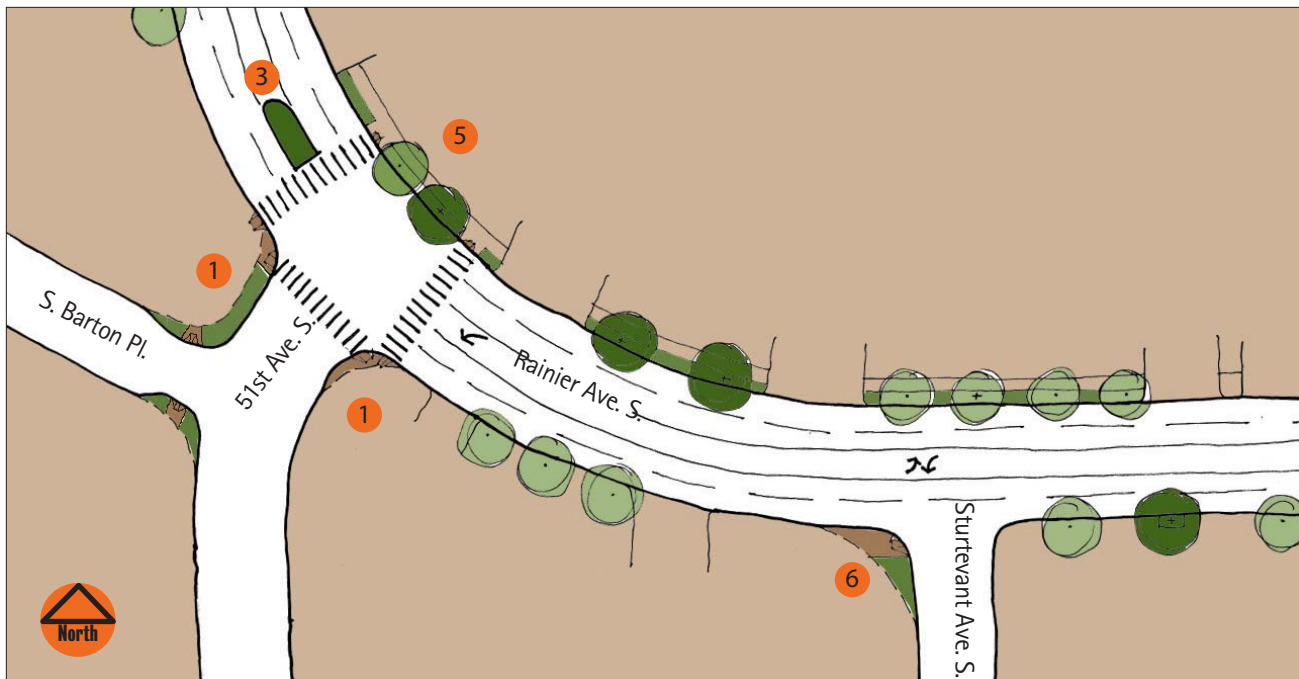
Numerous wide driveways for the businesses are located on the north side of Rainier, further deteriorating the pedestrian environment.

This intersection is located in the heart of the Rainier Beach commercial area. The large senior housing on the northwest corner, the Rainier Beach library, the commercial center on the northeast corner and transit connections, all attract many pedestrians who cross at this location.

Pedestrian volumes can be expected to increase as this intersection will be within a half-mile radius from the Henderson Station.

PLS: 377

(Project 40 continued)



Proposed

Coordinate this project with other Rainier Beach projects.

- 1 Narrow the southbound lane of 51st and reduce the curb radius on the southeast corner to reduce crossing distances and slow turning motorists.
- 2 Provide the following signal improvements: a protected left turn phase for the westbound Rainier left turn; a pedestrian lead signal for crossing Rainier.
- 3 Construct a median island to further define the pedestrian crossing and provide a location where pedestrians can pause and look to avoid conflicts with left turning motorists.
- 4 Evaluate vehicular access and work with property owners along Rainier to consolidate driveways where possible and to provide opportunities to "tame" Rainier traffic with landscaped medians.
- 5 Add street trees and planting strips on the northeast side of Rainier where feasible, to further define the pedestrian walking area and to buffer pedestrians from moving traffic. Planting strips will also benefit the existing trees.
- 6 Reduce curb radius on the southwest corner of Sturtevant Ave S. This street provides an additional connection to Roxbury, but is a non-arterial street and the existing large radius encourages cut-through traffic and speeding.

4. PROJECTS

Rainier Ave. S.

41

RAINIER AVE. S: 52nd AVE. S. to ITHACA PL. S.

Improve safety and accessibility in urban
village corridor.

Benefits:



Modes:



Cost (2007\$): \$1,395,200

Ranking: High



Existing

Rainier Ave. S. between 52nd Ave. S. and Ithaca Pl. S. runs through the heart of the Rainier Beach commercial area. In this one-third mile section, Rainier changes from a five-lane roadway with no parking on either side to a four-lane roadway with parking on both sides to a three-lane roadway with parking on only one side east of Ithaca. Both the five-lane and three-lane sections operate well. In the five-lane section private parking lots have eliminated the need for on-street parking and in the three-lane section, parking is only needed on the east side, as the hillside on the west restricts development. The four-lane section, however, does not serve the needs of adjacent businesses, pedestrians or bicyclists.

The commercial area between 54th Ave. S. and 56th Ave. S./Seward Park Ave. S. has high on-street parking demand. Currently, motorists park partially on the planting strip as the 17 foot curb lane is too narrow for people to comfortably exit their vehicles. The result is damage to the curbs, sidewalk and street trees. East of 56th, the roadway was widened and the planting strip was removed, eliminating the buffer between pedestrians and moving traffic.

Both the signalized intersections at Seward and 57th/Spinnaker Bay Condominium entrance experience left turn demand that affects the through traffic lane. Southbound Metro buses turn left onto Seward.

The speed limit on Rainier increases from 30 mph to 35 mph just south of Ithaca. Northbound motorists frequently exceed the 35 mph speed limit along the 1.4 mile section of Rainier between Ithaca and the south city limits and often continue speeding through the Rainier Beach commercial area. SDOT has added a radar speed sign at this intersection to encourage southbound motorists to observe the posted speed limit. Urban design treatments that reinforce the reduced speed limit, as a supplement to signing, would benefit the community by reducing collisions and creating a more inviting pedestrian environment for people to patronize local businesses.

The Seattle Bicycle Master Plan recommends bicycle lanes along this portion of Rainier connecting to the existing bicycle lanes south of Ithaca.

(Project 41 continued)



Proposed

Coordinate this project with other Rainier Beach projects.

- 1 Provide a continuous two-way left turn lane through this portion of Rainier transitioning with lane markings and signage from two through-lanes in each direction to one through-lane in each direction between 53rd and 54th. Provide left turn pockets at both Seward and 57th, and possibly add left turn protected signal phasing.
- 2 Stripe parking edge line between 54th and 56th. If a landscaped median can be installed in this block without conflicting with driveway access, it would eliminate motorists using the two way left turn lane as a passing lane, which they do now, and further help to tame traffic on Rainier.
- 3 Stripe bike lanes from Seward connecting to existing bike lanes south of Ithaca. Install a planting strip on the south side of Rainier between 56th and 57th to provide buffer for pedestrians. Construct a landscaped island between the two signals to define the left turn pockets and prevent conflicting uses for the left turn space between two closely spaced traffic signals.
- 4 Continue the planting strip on the south side of Rainier, east of 57th so curb lines match. This creates an opportunity to add street trees and landscaping. Construct a landscaped island east of the left turn pocket for 57th.
- 5 Plant street trees along Rainier in the planting strips and island. The tree canopy will also alert motorists to slow down as they are entering a commercial area. Investigate opportunities for speed tables or other pavement treatments to further reinforce the reduced speed limit upon entering the Rainier Beach commercial area.

4. PROJECTS

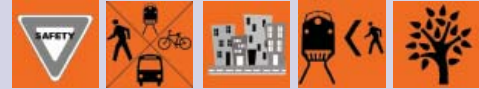
Rainier Ave. S.

42

RAINIER AVE. S. & SEWARD PARK AVE. S.

Improve safety at intersection.

Benefits:



Modes:



Cost (2007\$): \$291,200

Ranking: High

Existing

Seward Park Ave. S, a minor arterial street, is a major connection for bicyclists on the Lake Washington Loop. Currently, the bicycle lanes on Rainier Ave. S. end just east of Ithaca Pl. S, and fail to connect to Seward. Bicyclists use the travel lanes during the right turn from Rainier and conversely, the left turn from Seward. Motorists can make the right turn from Rainier at a high speed due to the large radius and wide lanes. The curb lane on Rainier is 17 feet wide, and the receiving lane on Seward is 25 feet wide. The pedestrian crossing of Seward is 75 feet long, more than double the width of a typical three-lane crossing.

These design features tend to result in higher speeds, when the desire is to reinforce the lower posted speed limit of 30 mph. The high speeds also create challenges for motorists turning left from Rainier to Seward. Seward, just 120 feet north of the intersection it is only 28 feet wide.

The intersection of Rainier and Seward operates at a good level of service and is expected to maintain this LOS in 2030.

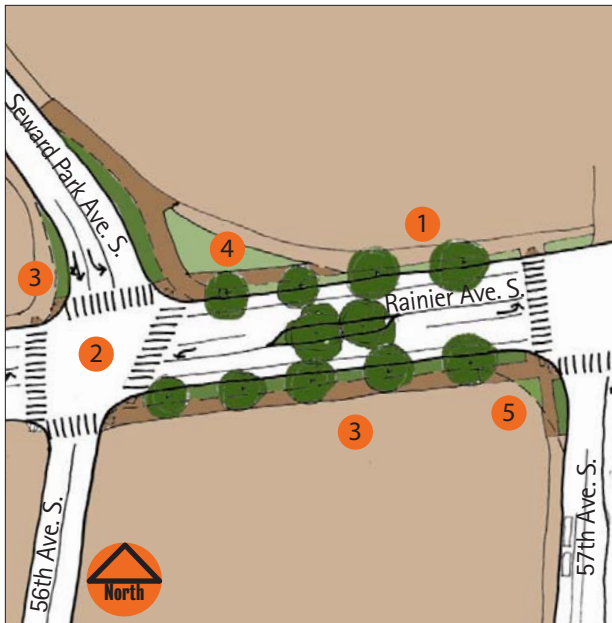
2004/2006		2030 with no improvement	
LOS	Delay in seconds	LOS	Delay in seconds
C	20	C	21

Pedestrians cannot cross Rainier on the east approach of this intersection and the sidewalks east of this intersection are minimal. On the north side of Rainier the minimum standard of an eight foot wide sidewalk adjacent to a moving travel lane has been accommodated with landscaping on the back side of the sidewalk. On the south side of Rainier the sidewalk does not meet minimum standards and, as pedestrians walk east, the sidewalks narrow even further.

The Seattle Bicycle Master Plan recommends sharrows on Seward and a bicycle lane on Rainier. With the bicycle lanes on Rainier ending only a few blocks away, a gap in the bicycle network exists.



(Project 42 continued)



Proposed

Coordinate this project with Projects #41 and #43.

- 1 With the channelization proposed in Project # Rainier 25, bicycle lanes on Rainier continue to Seward and left turn pockets are provided.
- 2 Add a pedestrian crosswalk on Rainier on the east approach to improve accessibility for pedestrians.
- 3 Narrow Seward at the intersection with Rainier, taking into account the turn radius needed for buses, to narrow the crossing distance for pedestrians, slow traffic through the intersection and provide room to add landscaping. Change the left double left turn from Seward to Rainier to a single left turn lane.
- 4 Relocate existing sidewalk to provide a landscape buffer on the northeast corner of Rainier and Seward.
- 5 On the south side of Rainier between 56th and 57th, provide separation between the travel lanes and the sidewalk by constructing the planting strip proposed in Project # Rainier 25.

43 RAINIER AVE. S. & 57th AVE. S.

Improve safety at intersection.



Cost (2007\$): \$490,700

Ranking: High

Existing

The area around 57th Ave. S. and Rainier Ave. S. is developing into a small pedestrian-oriented neighborhood commercial area with cafes and services for residents from the surrounding area. 57th is a collector arterial street with trolley bus service that provides a connection to Waters and a large residential area. The current intersection design encourages high speeds and is not inviting to pedestrians. Calming traffic here would enhance the business district and encourage more people to patronize local businesses, without limiting the vehicular capacity of the intersection.

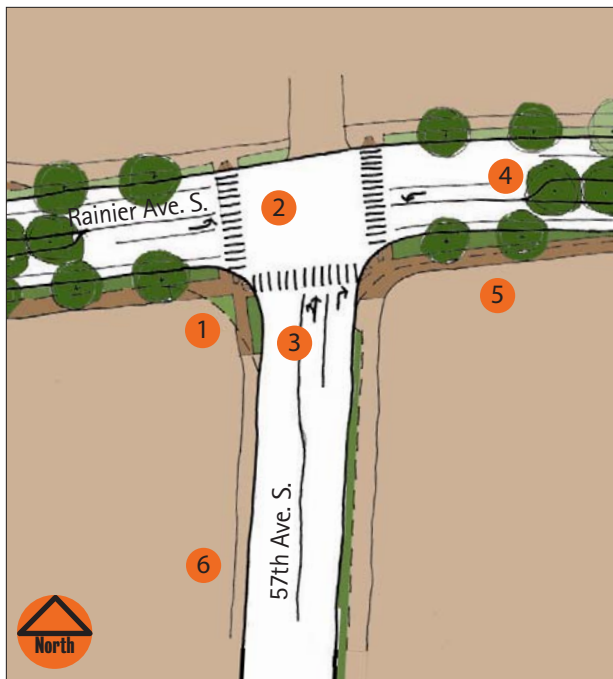
Pedestrians are restricted from crossing the west approach of this intersection due to the double left turn from 57th. The pedestrian crossing on 57th is challenging, as people must cross a 20-foot wide free right turn with a large radius, which allows motorists to make the turn at high speeds, and then wait on a small asphalt island for the WALK signal. The large radius on the southeast corner is an additional challenge for pedestrians, where northbound right turning motorists turn into a 22+ foot wide lane on Rainier; pedestrians just stepping off this curb on the WALK signal must be cautious of motorists making the right turn, especially if the motorist is trying to make a right turn on red.

The sidewalk on the south side of Rainier east of 57th is only five feet wide and is adjacent to a travel lane. The speed limit on Rainier to the east increases to 35 mph after this intersection.

The Seattle Bicycle Master Plan recommends a shared roadway on 57th and Waters Ave. S.



(Project 43 continued)



Proposed

Coordinate this project with Projects #41 and #43.

- 1 On the southeast corner, reduce curb radii, eliminating the free right turn thus narrowing the pedestrian crossing. Design the radii to accommodate the trolley bus turns at this intersection.
- 2 Add a pedestrian crosswalk on the west approach to improve accessibility for pedestrians
- 3 Eliminate the double left turn from 57th as necessary to accommodate corridor improvements in Project #43.
- 4 Construct a landscaped median east of the left turn pocket from Rainier to 57th; this island will be the first visual clue that motorists are entering the Rainier Beach Neighborhood commercial area and will act to reinforce the lower speed limit.
- 5 Construct a planting strip on the east side of 57th. This will provide opportunities to enhance the pedestrian environment without eliminating parking.
- 6 Stripe a bicycle climbing lane southbound on 57th; designate 57th as a sharrow in the northbound direction.

44

RAINIER AVE. S. & CORNELL AVE. S.

Improve safety at intersection.

Benefits:



Modes:



Cost (2007\$): \$155,400

Ranking: Long-term



Existing

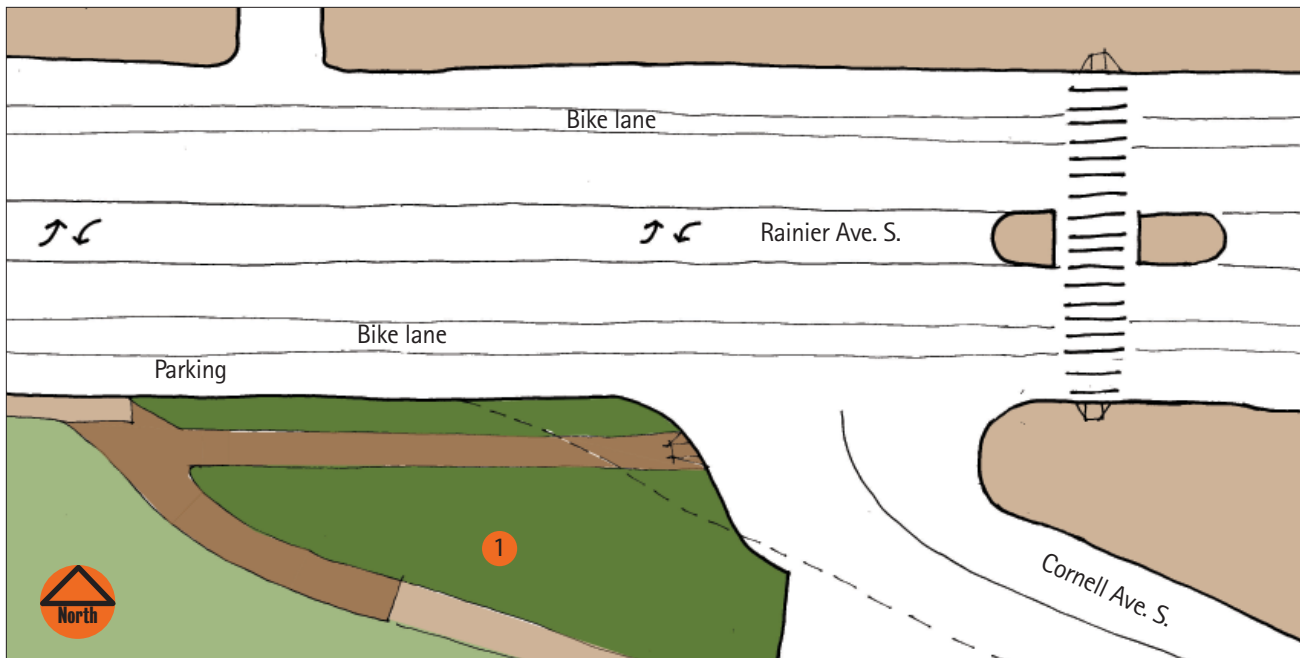
The skewed angle of the intersection of Rainier Ave. S. and Cornell Ave. S. creates challenges for motorists, pedestrians and bicyclists. Although Rainier from Ithaca Pl. S. to the south city limit was converted from a 4-lane to 3-lane cross-section with bicycle lanes, the intersection still does not function optimally. Because of the skewed angle, southbound drivers on Rainier turning right onto Cornell can make the turn without slowing, creating an uninviting environment for bicyclists in the bicycle lane and for pedestrians walking along Rainier and crossing Cornell.

A parking/bus zone lane on the west/south side of Rainier and the large gravel area on the south side of Cornell add to the conflicts for all users. Cornell is also a Metro transit route.

The marked pedestrian crossing on the north/west approach of Rainier conflicted with motorists turning left from Cornell and has been relocated to the south/east approach and median islands and curb ramps have been installed.

The pedestrian crossing of Cornell is nearly 150 feet long, partially through an undefined gravel parking area; it is not handicapped accessible. The gravel parking area serves the adjacent Lakeridge Park and its baseball field. Motorists backing out of parking spaces conflict with fast-turning traffic from Rainier to Cornell. In addition, the gravel poses problems as it spills out onto the bicycle lane.

(Project 44 continued)



Proposed

- 1 To optimize the safety for all users of the intersection, reconfigure the northwest corner of the intersection to add nearly 100 feet of sidewalk, clearly define the turning radius, make the crossing handicapped accessible, narrow the pedestrian crossing, and prevent gravel from spilling over to the bicycle lane. Add landscaping and define the parking area to reduce conflicts with through traffic. Relocate lost parking spaces in the gravel lot to the northwest side of Rainier by extending the parking lane. Work with Metro to determine optimal locations for bus zones.

45 PEDESTRIAN LIGHTING along RAINIER AVE. S.

Improve safety with pedestrian lighting along corridor.



Cost (2007\$): \$4,340,900

Ranking: Medium

Existing

Safety for pedestrians walking along and crossing Rainier Ave. S. is one of the biggest challenges in Southeast Seattle. Many segments of Rainier are poorly lit, not only for motorists, but pedestrians as well. Although most intersections have high-level street lighting, pedestrians are often in the shadows of trees.

Additionally, community members have expressed personal safety concerns about the lack of lighting near Metro bus stops. Metro does provide standard lighting at many stops.

Proposed

Along Rainier, add pedestrian scale lighting near traffic signals, at vehicular and pedestrian High Collision Locations, and near Metro bus stops to increase visibility for pedestrians. In some locations, lighting should continue around corners of key intersections, such as Holly where there are a number of facilities for elderly citizens.



46

**S. SPOKANE ST:
S. COLUMBIAN WAY to 23rd AVE. S.**

Address delays in congested corridor.

Benefits:



Modes:



Cost (2007\$): \$ NA

Ranking: Long-term



Existing

S. Columbian Way is a major connection between West Seattle, I-5 on- and off-ramps, and Beacon Hill/North Rainier. When I-5 is highly congested, drivers also use this route as a bypass to the Central District, First Hill, Capitol Hill, and Madison Valley.

Columbian and S. Spokane St, 15th Ave. S. and Spokane, and Spokane and Beacon Ave. S. are all congested intersections, but an analysis of options to improve the first two intersections for traffic suggests that the congestion would simply move to the next bottlenecks. Any major improvements in the connecting corridors could attract more drivers to exit I-5 and detour through Beacon Hill, potentially resulting in more traffic on local streets and no overall improvement.

Intersection with S. Spokane St.	2004/2006 LOS	2030 LOS (with no improvement)
S. Columbian Way	C	F
15th Ave. S.	C	D
Beacon Ave. S.	F	F

Proposed

Spokane is an example of the trade-off of what can be done to ease traffic congestion and delay along a built-up corridor. Because of limited alternate routes, drivers may be attracted to Spokane to the limits of its capacity; any new capacity would quickly be absorbed with no long-term condition improvements. Signal timing in the corridor and the geometry of the intersection of Beacon and Spokane should be studied further to determine if it's possible to reduce delays at the intersection and to help traffic move more smoothly. This should be done in the context of a decision to not increase overall capacity in the corridor by maintaining the constraints imposed by the intersections at Columbian and 15th; to ensure that no additional by-pass trips are attracted from I-5.

Beacon and Spokane, the eastern-most signalized intersection in the corridor, could be improved to reduce delays for some drivers and shorten lines of idling cars. This could improve conditions marginally, without necessarily attracting more vehicle trips to the intersection because volumes would be constrained by the capacity limits of the Columbian and 15th intersections. Improving the Beacon and Spokane intersection, however, would require widening Spokane near the intersection to separate left, through and right turning traffic. With two large apartment buildings close to the sidewalk on the north side of Spokane, and the fire station on the south side, available right-of-way is limited.

47

**S. OREGON ST. & S. COLUMBIAN WAY/
15th AVE. S.**

Improve safety at High Collision Location.

Benefits:



Modes:



Cost (2007\$): \$1,283,400

Ranking: Medium

Existing

15th Ave. S, S. Columbian Way and S. Oregon St. is a complex system of intersections. 15th, north of Oregon to Columbian and 15th is a principal arterial street and south of Orgeon it is a minor arterial street. Although Oregon is a non-arterial street, the intersection of Oregon and Columbian is a vehicular High Collision Location. Adding to the complexity of the intersection is McPherson's Fruit and Vegetable stand, a high vehicle generator, located south of the intersection with access to its corner parking lot from both 15th and Columbian.

This intersection currently operates at a level-of-service (LOS) B and is expected to continue operating at LOS B in 2030. Congestion is not an issue at this intersection, but the complexity of the intersection configuration, proximity to a small business district and school, and multiple bicycle routes in this area creates an opportunity to improve safety for all users.

2004/2006		2030 with no improvement	
LOS	Delay in seconds	LOS	Delay in seconds
B	11	B	14

Currently pedestrians can cross Columbian at one location. The pedestrian waiting area is an asphalt island surrounded by all three streets. The Oregon/15th intersection has crosswalks on all four approaches.

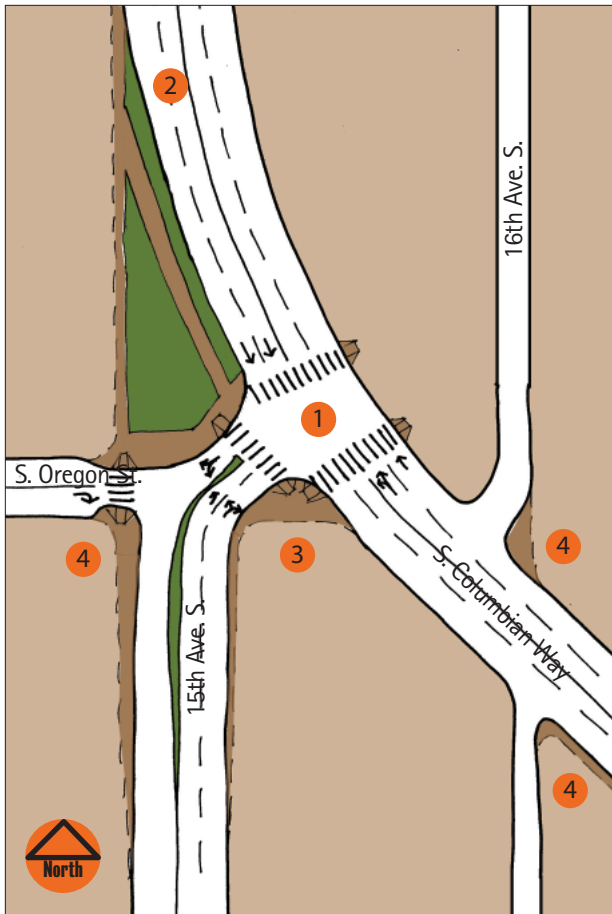
On the curve of Columbian and 15th, the curb lanes have been widened, eliminating the planting strips and the buffer between the traffic lanes and the sidewalks.

Mercer Middle School is located east of the intersection, adjacent to the Veteran's Administration Hospital parking lot, and many students cross here to access the businesses and bus stops.

The Seattle Bicycle Master Plan recommends bicycle lanes on Columbian and Oregon through the intersection, and sharrows on 15th north of the intersection.



(Project 47 continued)



Proposed

A final proposal for this intersection needs to be developed at the design stage, taking into account the need to:

- 1 Provide pedestrian crosswalks on all approaches.
- 2 Reconfigure southbound movements on 15th to reduce conflicts at 15th and Oregon, while maintaining access and parking for businesses along 15th in the partial block between Oregon and the curve.
- 3 Reconfigure 15th and Oregon to create a single intersection at Columbian to improve safety for all modes.
- 4 Narrow curb radii where possible to reduce traffic speeds on turns, and reduce pedestrian crossing distances.
- 5 If possible, narrow curb lanes and construct planting strips between traffic lanes and sidewalks, planted with trees, to improve pedestrian comfort and safety.
- 6 Review driveways/access to and from McPherson's to improve pedestrian safety on the sidewalks and in the parking lot.

2030 with proposed improvement	
LOS	Delay in seconds
B	14

4. PROJECTS

Beacon Hill

48

BEACON AVE. S. & S. COLUMBIAN WAY

Improve safety at High Collision Location.

Benefits:



Modes:



Cost (2007\$): \$618,400

Ranking: Medium

Existing

Of the intersections analyzed, Beacon Ave. S. and S. Columbian Way is the most congested signalized intersection in the study area. It currently operates at Level-of-Service F in the PM peak hour with an average delay of over three minutes. By 2030, without improvements, the delay is expected to increase to over four and a half minutes. Signalized protected left turns and high traffic volumes from all approaches are major sources of delay. Columbian Way provides access from I-5 and the West Seattle Bridge to the three major north-south corridors in the study area.

2004/2006		2030 with no improvement	
LOS	Delay in seconds	LOS	Delay in seconds
F	184	F	286

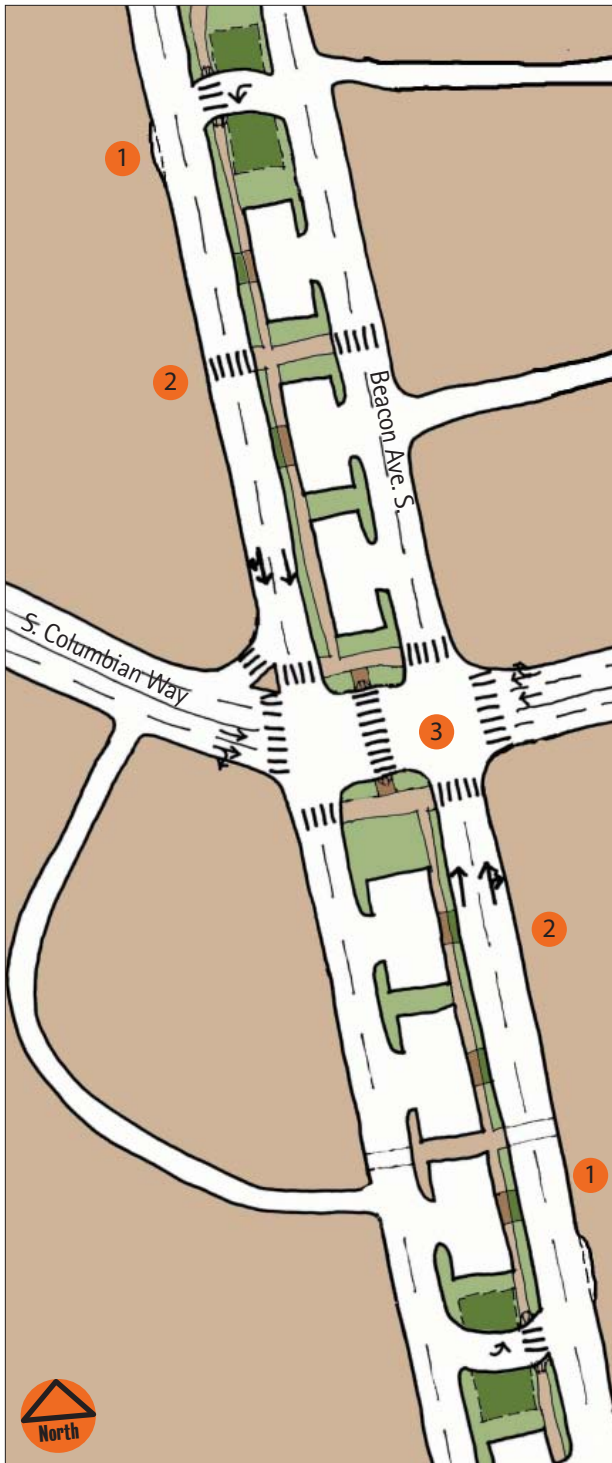
A multi-use path exists in the center of most of the Beacon median, but north and south of this intersection the median is used for parking for adjacent businesses and the path is directed to the edge of the median. Pedestrians are restricted from crossing Columbian Way from the median, so they must cross Beacon, Columbian Way and Beacon again to get back onto the median. The parking lots are accessible from both directions of Beacon. Motorists who are parked in the median lots typically jaywalk to the adjacent businesses, rather than walking to the nearest crosswalk or signal.

Beacon is a primary north-south route for bicyclists and the Seattle Bicycle Master Plan recommends bicycle lanes on Columbia, sharrows on Beacon south of the intersection, and bicycle lanes on Beacon north of the intersection.



PLS: 393

(Project 48 continued)



Proposed

- 1 Improve traffic flow by constructing an "elongated roundabout" or "U-turn Route". By rerouting the left turns from Beacon and Columbian, the traffic signal phasing is simplified, improving capacity on both streets.
- 2 Improve pedestrian safety in the median by eliminating the driveway access on the existing sidewalk side (drivers will use the "U-turn Route"). Replace the driveways with a continuous sidewalk planting strip.
- 3 Install a pedestrian crosswalk and signal connecting the two medians, as no left turns are allowed at the intersection.

2030 with proposed improvement	
LOS	Delay in seconds
B	13

4. PROJECTS
Beacon Hill

49 BEACON AVE. S. & S. ORCAS ST.

Improve safety at High Collision Location.



Cost (2007\$): \$251,600

Ranking: Medium

Existing

Beacon Ave. S. and S. Orcas St. is a vehicular High Collision Location. Of the unsignalized intersections analyzed in the study area, it is the second most congested unsignalized intersection. To the east, Orcas is an arterial cross-valley route, providing a connection between Beacon Ave and Lake Washington Blvd. Collisions at this intersection are primarily from the left turns to and from this route. To the west, Orcas is a non-arterial street serving a church on the corner and a residential area.

2004/2006		2030 with no improvement	
LOS	Delay in seconds	LOS	Delay in seconds
D	34*	F	54*

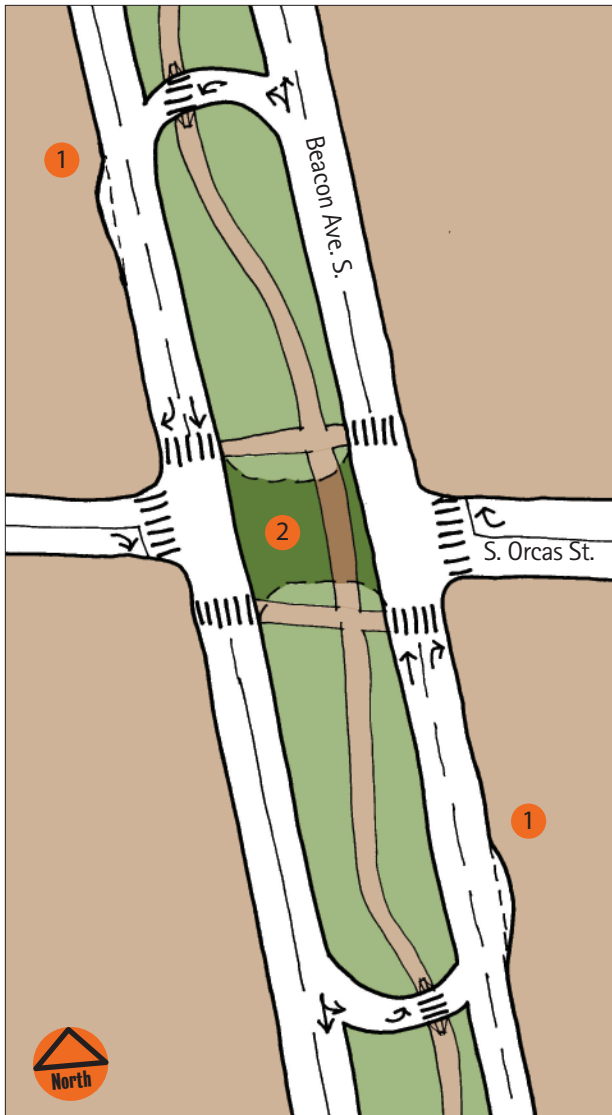
* Southbound Beacon and Orcas.

There is a multi-use path on the median. Pedestrians using the path cross Orcas in the median.

Beacon is a primary north-south route for bicyclists and the Seattle Bicycle Master Plan recommends bicycles lanes on Orcas east of Beacon and bicycle lanes on Beacon.



(Project 49 continued)



Proposed

- 1 Improve traffic flow and safety by constructing an "elongated roundabout" or "U-turn route" that re-routes through-traffic on Orcas and left-turning traffic, simplifies turning movements and reduces collisions.
- 2 Improve pedestrian safety and access by continuing the median through the intersection; pedestrians only have to cross the single "U-turn Route" lane.

2030 with proposed improvement	
LOS	Delay in seconds
A	4

4. PROJECTS

Beacon Hill

50

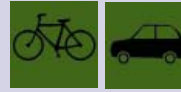
SWIFT AVE. S: 15th AVE. S. to S. WARSAW ST.

Reconfigure intersections and provide bicycle access across I-5.

Benefits:



Modes:



Cost (2007\$): \$1,702,700 without bicycle lanes

\$4,934,300 with bicycle lanes Ranking: Long-term



Existing

Swift Ave. S. between 15th Ave. S. and S. Warsaw St. provides a direct connection to I-5 and Georgetown from southeast Seattle. To the north, 15th transitions from a principal arterial to a minor arterial street at Swift. Swift is a principal arterial street between 15th and S. Myrtle Pl.

The I-5 northbound off-ramp intersects with Swift near S. Eddy St., south of S. Graham St. The I-5 northbound on-ramps are located at Swift and Graham. An I-5 overpass from the intersection of Swift and S. Albro Pl. connects to Georgetown and Airport Way S, a Major Truck Street.

Two freeway ramps and three signalized intersections within 500 yards create a congested corridor.

Swift and I-5 northbound Off-Ramps

2004/2006		2030 with no improvement	
LOS	Delay in seconds	LOS	Delay in seconds
F	90	F	160

Swift and Albro

2004/2006		2030 with no improvement	
LOS	Delay in seconds	LOS	Delay in seconds
B	11	E	59

There is a sidewalk on the east side of Swift but not on the west side although there are two bus stops along this segment.

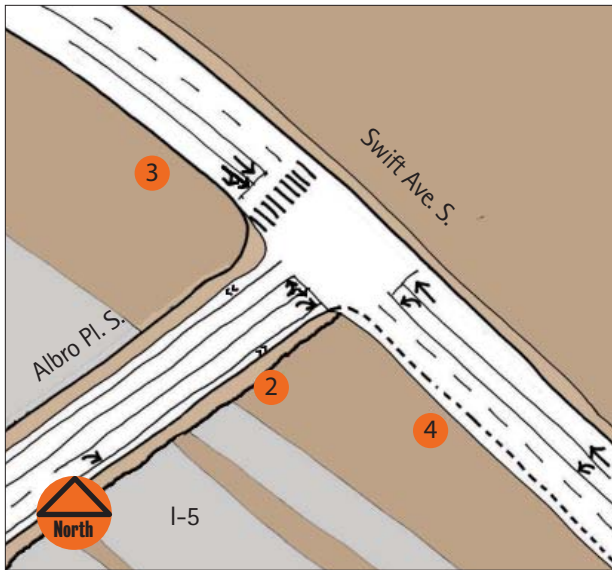
The Seattle Bicycle Master Plan calls for bicycle lanes along Swift, with a connection to the Albro overpass across I-5, to provide a route from southeast Seattle to SODO and West Seattle.

Proposed

There are many options for improvements along Swift. Each option needs to be evaluated based on which mode is a priority, cost, challenges, and potential unintended consequences of each option.

A solution that would provide access for bicyclists and pedestrians could be to widen Swift in the westbound direction and add bicycle lanes in both travel directions and a sidewalk on the west side. This would require coordination with WSDOT, as new retaining walls and fill would be required to accommodate the additional width.

(Project 50 continued)



A solution to reduce delays for vehicles entering and exiting I-5 could be to revise traffic signal operations and add queuing lane length for vehicles.

Below is an option that attempts to reduce congestion at two intersections and provide some accommodation for bicyclists by constructing sharrows. There is no accommodation for pedestrians on the west side of Swift in this proposal.

- 1 Coordinate and network signals along Swift from Albro to the I-5 northbound off-ramp to optimize traffic operations in the corridor and improve LOS.
- 2 Restripe the northeast approach of Albro to allow vehicles in the curb lane to turn right. In the southbound direction, traffic to Albro from Swift would be reduced to one lane. Add bicycle lanes in each direction on Albro. Bicycle lanes would terminate at Corgiat Dr. S. Evaluate options to continue bicycle lanes to Airport Way S.
- 3 Restripe the southeast approach of Swift and Albro to have one through-only lane and one shared through- and right-turn lane. This improvement would significantly improve the LOS at this intersection.



- 4 Widen the west side of Swift by approximately five feet between Albro and 18th Ave. S. to provide two southeast-bound lanes between Albro and Graham. This provides a minimum of 12 foot curb lanes in both directions.
- 5 Restripe the northwest approach of the Swift and I-5 northbound off-ramp intersection to have two through lanes from 150 feet south of the intersection, continuing through the intersection to Graham, to improve LOS at this intersection.

Swift and I-5 northbound Off-Ramps

2030 with proposed improvement	
LOS	Delay in seconds
D	36

Swift and Albro

2030 with proposed improvement	
LOS	Delay in seconds
B	12

51

BICYCLE ACCESS ACROSS I-5

Connect Chief Sealth Trail across I-5, connect to I-90 Trail.

Benefits:



Modes:



Cost (2007\$): \$6,799,400 to \$7,772,500, depending on design
Ranking: Medium



Existing

Currently, the Chief Sealth Trail runs from S. Gazelle St. near Kubota Gardens, north to Beacon Ave. S. near S. Dawson St. where it terminates. There are no direct connections with continuous bicycle facilities between the trail and downtown Seattle, the west side of I-5, or the I-90 Mountains to Sound trail to the north.

Future Chief Sealth Trail extensions (not yet funded) include a connection to downtown Seattle and to the south city limits. The existing Seattle City Light right-of-way continues west of Beacon, angling north to terminate at S. Oregon St. just east of I-5; after the power lines cross I-5, the right-of-way continues for a couple blocks in the median of S. Industrial Way.

Recommendation 40 of the Bicycle Master Plan calls for the City to: "Study potential locations to construct a crossing of I-5 to connect to the Chief Sealth Trail towards Downtown Seattle. The crossing could be at any

location between S Spokane Street and S Snoqualmie Street. The precise location of the pedestrian/bicycle overpass/underpass across I-5 at the west end of the future Chief Sealth Trail extension should take advantage of topography and existing infrastructure."

Proposed

- 1 Construct a bicycle/pedestrian crossing of I-5 connecting the Chief Sealth Trail towards downtown Seattle to complete this missing link.
- 2 Connect the Chief Sealth Trail to the I-90 Trail east of I-5 to complete this missing link.

52

**31st AVE. S:
YESLER WAY to S. McCLELLAN ST.**

Slow traffic and improve safety on arterial.

Benefits:

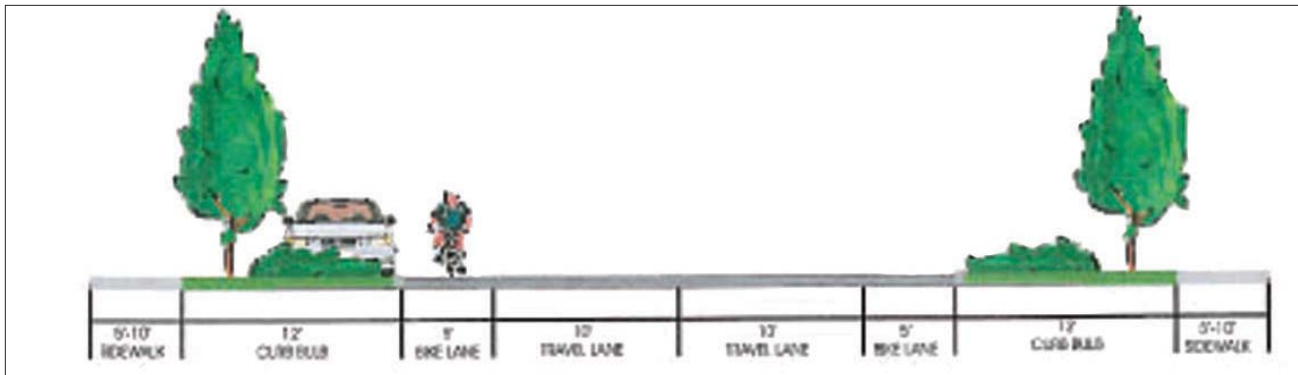


Modes:



Cost (2007\$): \$ NA

Ranking: Medium



One concept proposed for portions of 31st Ave. S.
Source: Transportation Solutions, Inc.

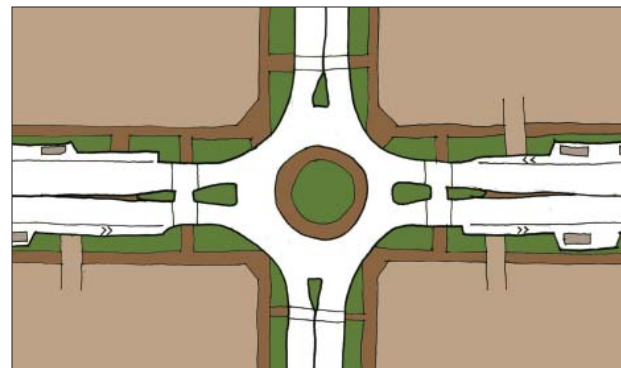
Existing

31st Ave. S. is a collector arterial street from S. McClellan St. to Yesler Way S. The community hired a transportation consultant with Neighborhood Matching Funds to analyze existing traffic conditions and develop alternatives for reducing traffic speeds along this 1.5 mile corridor. The community worked with SDOT to develop final recommendations. Approximately half of the 31st neighborhood study area is contained in the SETS area.

The street generally has two travel lanes, with parking on both sides. The curb to curb width varies between 42 and 45 feet between McClellan and S. Jackson St, except where the roadway jogs; north of Jackson the street narrows to 25 feet. The combination of wide lanes, grades and absence of traffic control devices tends to encourage motorists to exceed the 30 mph speed limit.

The sub-standard planting strip widths limit the types of street trees that can be planted. Street light poles and Metro trolley wire poles line the corridor. There are several marked crosswalks and curb bulbs along the corridor that reflect high pedestrian crossing demands. 31st is a preferred walking route for both John Muir and Leschi Elementary Schools; Metro Trolley Route 14 operates on the street.

The Seattle Bicycle Master Plan recommends bicycle lanes for most of 31st except for the segments from S. Grand St. to S. Norman St, and from Jackson to Yesler where sharrows are recommended.



Intersection concept with urban-sized roundabout, space for parking and bicycle lanes

Proposed

Options for 31st will be refined and final recommendations could include the concepts above. In the short term, SDOT will be implementing the following traffic-calming recommendations in 2007-2008:

- 1 Implement the Seattle Bicycle Master Plan recommendations.
- 2 Install radar speed signs along 31st.
- 3 Install speed cushions at 31st and S. Dearborn St.
- 4 Install curb extensions at 31st and Yesler.
- 5 Various other pedestrian safety and traffic calming projects.

53

**23rd AVE. S:
S. WAITE ST. to S. COLLEGE ST.**

Provide safe pedestrian route.

Benefits:

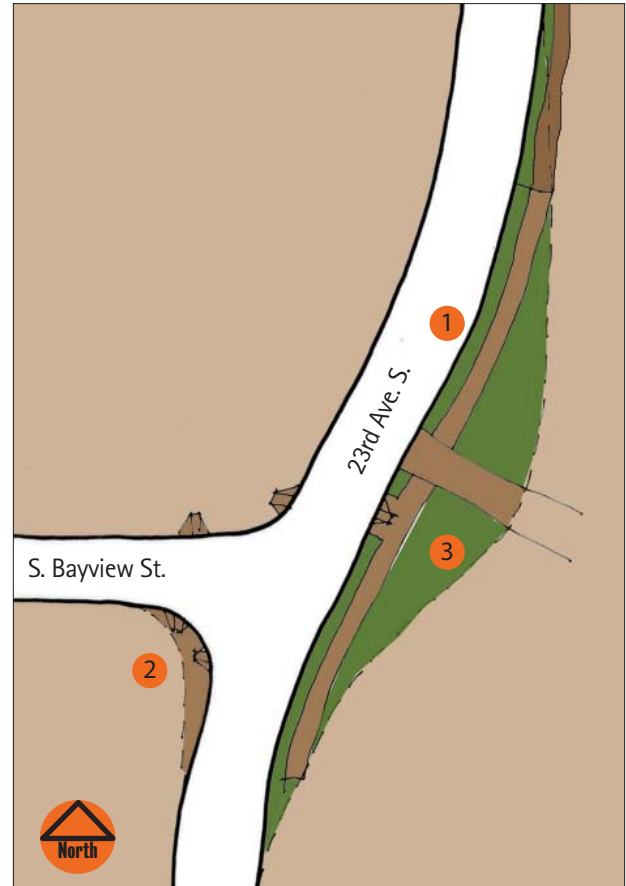


Modes:



Cost (2007\$): \$415,800

Ranking: Long-term



Existing

23rd Ave. S. is a minor arterial that provides a connection between Rainier Ave. S. and Beacon Hill, S. Spokane St, I-5 and the West Seattle Bridge. North of S. Waite St. there are no sidewalks on the east side of the street, and at S. Bayview St. the street curves creating a large undefined paved area, all of which creates an unfriendly pedestrian environment.

The Seattle Bicycle Master Plan recommends a climbing lane on 23rd from S. Hanford St. to S. College St. North of College, a bicycle lane is recommended.

Proposed

- 1** Construct curb, gutter, sidewalk and planting strip on the east side of 23rd between S. Waite St. and College to provide a walking route for pedestrians. Coordinate with Project #12, which includes improvements on 23rd between College and Rainier.
- 2** Reduce curb radius on southwest corner of Bay-view and 23rd.
- 3** Reduce impervious area creating drainage and landscaping improvements. Provide access to adjacent residence.

54 S. McCLELLAN ST. & MT. BAKER BLVD.

Improve safety at intersection and add bicycle lanes.

Benefits:

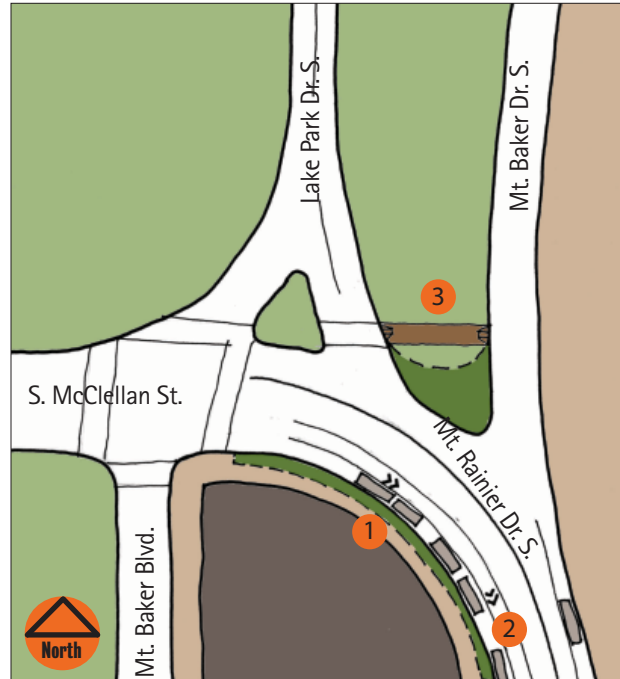


Modes:



Cost (2007\$): \$271,900

Ranking: Long-term



Existing

The intersection of S. McClellan St, Mt. Rainier Dr. S, Mt. Baker Blvd. and Lake Park Dr. S. is the center of the Mt. Baker neighborhood. On the north side is Mt. Baker Park with a renovated playground and a path to Mt. Baker Beach. On the south side is the neighborhood commercial area and the Mt. Baker Community Club, which generate significant pedestrian activity. On-street parking is provided immediately southeast of the intersection. The sidewalk is narrow with no planting strip along the curve of the street. There is no sidewalk on the east side of Mt. Rainier Dr.

The intersection is controlled by an all-way stop, but northbound traffic from Mt. Rainier Dr. has a free right turn to Lake Park Dr. Mt. Rainier Dr. curves toward the west and slopes downward as it approaches the all-way stop, limiting the sight distance. In addition, many turning movements occur just outside the all-way stop.

The Seattle Bicycle Master Plan recommends bicycle lanes on McClellan and Mt. Rainier Dr and sharrows on Lake Park Dr.

Proposed

- 1 On Mt. Rainier Dr, construct sidewalk and planting strip from the southeast corner of the intersection by moving the curb out to match the curb line approximately 150 feet south.
- 2 Shift centerline east to accommodate on-street parking, a bicycle climbing lane and to narrow the northbound lane on Mt. Rainier Dr.
- 3 Reduce curb radius at Mt. Rainier Dr. and Lake Park Dr. to define street edge and reduce speeding by motorists.

55

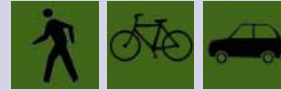
WILSON AVE. S. & S. DAWSON ST.

Construct roundabout.

Benefits:



Modes:



Cost (2007\$): \$1,092,200

Ranking: High

Existing

Wilson Ave S, S. Dawson St. and 51st Ave. S. is a six-legged, stop sign controlled intersection. The skewed approach of Wilson through this intersection results in long pedestrian crossings, as much as 75', more than double the crossing distance for a similar right-angled intersection. The northbound single lane, north of Dawson is 50' wide, which merges into a single 16' wide lane. This wide lane encourages motorists to drive around pedestrians in the crosswalk rather than waiting for them to finish the crossing.

Based on analysis, the current and projected conditions at this intersection are:

2004/2006		2030 with no improvement	
LOS	Delay in seconds	LOS	Delay in seconds
D	25	E	42

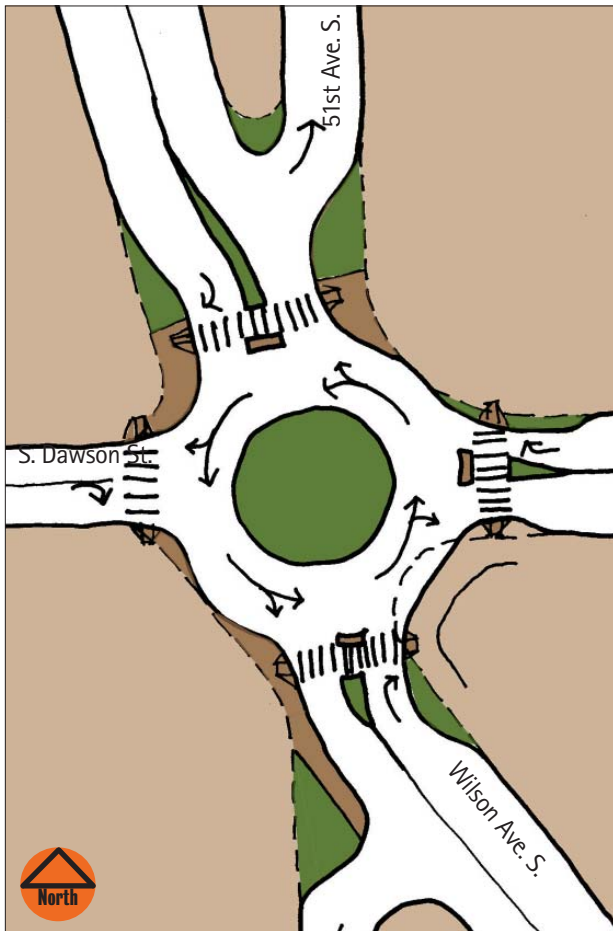
By 2030, the southbound approach on Wilson will overwhelm this intersection, creating long queue lengths and increasing greenhouse gas emissions from idling vehicles.

This intersection serves as the hub of a small neighborhood commercial center, including PCC Natural Market, restaurants, small retail and services, which provide amenities to this primarily single-family neighborhood.

This area is also a hub for all modes. Metro bus route 39 travels on both Wilson and Dawson and all three streets are recommended walking routes for Whitworth Elementary School, located five blocks to the east. Additionally, the Seattle Bicycle Master Plan recommends climbing lanes on Wilson and Dawson east of Wilson.



(Project 55 continued)



Proposed

A number of options were proposed for this intersection, including installing a traffic signal. The final recommendation is the installation of a roundabout. This proposal may require acquisition of a limited amount of right-of-way. However, the proposal would reduce the number of vehicular conflict points, significantly improve pedestrian safety by both simplifying and shortening the crossings, and provide the best level of service for both pedestrians and motorists.

The roundabout creates an additional environmental benefit by reducing greenhouse gas emissions and creating more pervious surface for landscaping potential. This option also allows for a gateway treatment for this neighborhood commercial center. Bicyclists will have the option to ride around the roundabout via the sidewalks or to ride through it within the travel lane.

2030 with proposed improvement	
LOS	Delay in seconds
A	1

56

SEWARD PARK AVE. S. & S. JUNEAU ST.

Calm traffic and improve safety near park entrance.

Benefits:

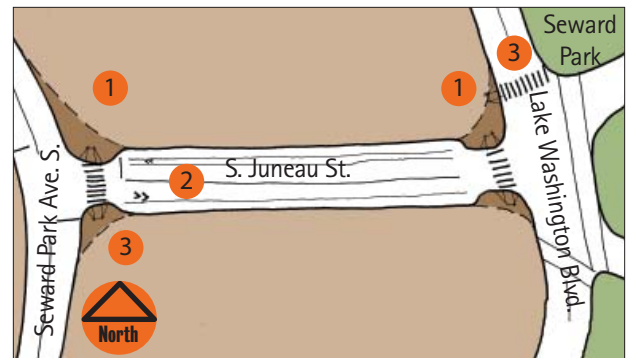


Modes:



Cost (2007\$): \$147,000

Ranking: Long-term



Existing

At the entrance to Seward Park, Lake Washington Blvd. and Seward Park Ave. S. are connected by one block of S. Juneau St, which serves drivers, bicyclists and pedestrians traveling to and from the park. Both Lake Washington Blvd. and Seward Park Ave. S. are important bicycle routes and in addition to bicycle commuters attract large numbers of recreational bicyclists. During major events at Seward Park when the on-site parking lots are full, motorists park on nearby neighborhood streets and Juneau becomes an even more important connection for people walking to and from the park.

Proposed

- 1 Reduce curb radii and construct curb extensions at all four corners to calm traffic and improve bicyclist and pedestrian safety. Ensure driveway access to residence is maintained.
- 2 Install climbing lane in the westbound direction and a sharrow in the eastbound direction. Stripe parking lanes, reminding drivers there are other users on the street.
- 3 Mark crosswalks at Lake Washington Blvd. on the south and west approaches and at Seward Park Ave. S. on the east approach.

57

**S. GRAHAM ST. & 39th AVE. S,
42nd AVE. S. & 44th AVE. S**

Improve safety along arterial street with High Collision Locations.

Benefits:



Modes:



Cost (2007\$): \$427,300

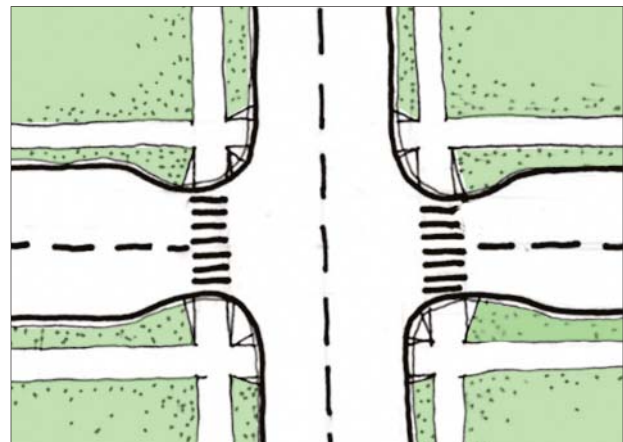
Ranking: Long-term



Existing

S. Graham St. is a minor arterial street between Rainier Ave. S. and Swift Ave. S. Graham is one lane in each direction with parking on both sides. The intersection of Graham and 42nd Ave. S. is a vehicular High Collision Location.

Major pedestrian generators include Aki Kurose Middle School, between 39th and 42nd, and Trinity Life Center at 44th.



Prototypical curb extension

Proposed

- 1 Construct curb extensions at Graham and 39th, 42nd and 44th to calm traffic and make pedestrians more visible to drivers. Install marked crosswalks.
- 2 Stripe parking lane to further encourage drivers to slow down.

58

**SEWARD PARK AVE. S:
S. DAWSON ST. to RAINIER AVE. S.**

Improve bicycle route.

Benefits:



Modes:



Cost (2007\$): \$481,300

Ranking: Long-term



Existing

Seward Park Ave. S. is an important connection in the bicycle network, as it is part of the Lake Washington loop and provides connections to many destinations including the I-90 multi-use trail. It is also used by recreational bicyclists traveling along Lake Washington and is a major connection to Bicycle Saturday and Sunday events when Lake Washington Blvd. is closed to through traffic, creating a great opportunity for young bicyclists to build skills.

The street width varies along the corridor, from 28' to 40'. Metro routes 34 and 39 operate along this corridor.

The Bicycle Master Plan makes a number of recommendations, shown in the table below.

Proposed

The Seattle Bicycle Master Plan recommends a combination of sharrows and bicycle lanes along this corridor. These improvements should be implemented with the following exceptions:

1. Between Wilson Ave. S. and S. Morgan St. where a sharrow is recommended, a bicycle lane may be possible.
2. Between Morgan and S. Holly St, where bicycle lanes are recommended, the corridor may require additional analysis and may only accommodate a sharrow. The analysis should include outreach to residents and Metro to help determine the best approach for this section of the corridor.
3. Between Holly and S. Grattan St, parking is illegal in a 15' lane, and those who park partially on the planting strip and roadway can be cited. For this section, options include marking the bicycle lanes or shifting the centerline to allow parking on one side of the street and marking sharrows.

Section	Roadway Width	Parking Use	BMP Recommendation	SETS Recommendation
S. Dawson St. to S. Juneau St.	40'	Both sides	Climbing lane	Climbing lane
S. Juneau St. to Wilson Ave. S.	30'	West side only	Climbing lane	Climbing lane
Wilson Ave. S. to S. Morgan St.	40'	Only 1/2 block; parking lane west side only	Climbing lane	Bicycle lane
S. Morgan St. to S. Holly St.	30'	Only one block; parking on west side only	Bicycle lane	Bicycle lane or Sharrow after more analysis
S. Holly St. to S. Grattan St.	30'	Not enough width for parking; parking is informal/illegal	Bicycle lane	Bicycle lane
S. Grattan St. to Rainier Ave. S.	28'	No parking anytime	Sharrow	Sharrow

59

**RENTON AVE. S. & 44th AVE. S. /
S. THISTLE ST.**

Improve safety by closing sharply angled street end at intersection.

Benefits:



Modes:



Cost (2007\$): \$322,600

Ranking: Long-term



Existing

Renton Ave. S. cuts across the grid at S. Thistle St. and 44th Ave. S. creating a skewed angle at 44th and Renton where drivers turning either left or right onto Renton do not have adequate sight distance to make a safe turn.

The Seattle Bicycle Master Plan recommends bicycle lanes on Renton. Renton is also the recommended walking route for two local elementary schools.

Proposed

- 1 Close 44th between Renton and Thistle. Provide access for residents as required. Landscape closed street area.
- 2 Construct sidewalk and connect with existing sidewalks. Landscape remaining area.

60

RENTON AVE. S. & S. RYAN ST.

Improve pedestrian safety.

Benefits:

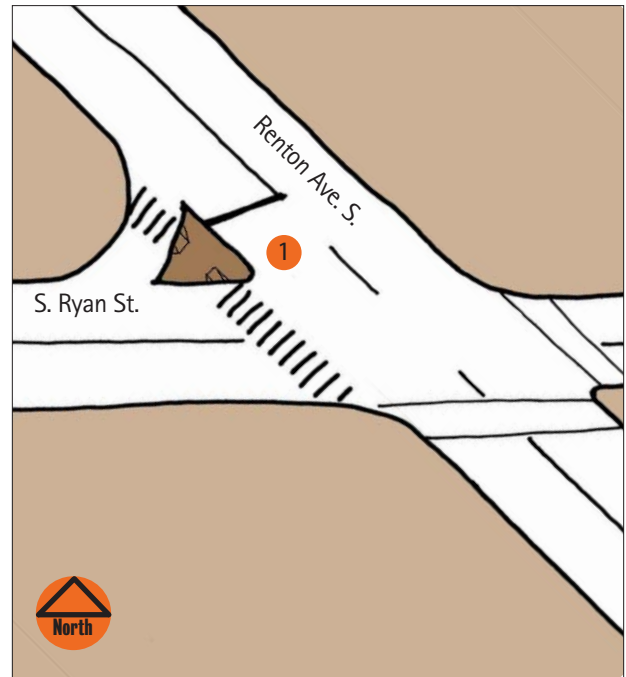


Modes:



Cost (2007\$): \$39,200

Ranking: Long-term



Existing

S. Ryan St. intersects with Renton Ave. S. at a skewed angle creating a very long pedestrian crossing of approximately 80 feet. A pedestrian-actuated signal exists on the south approach of the intersection.

On the east approach, an existing pedestrian island reduces the crossing distance and exposure time for a pedestrian in the street.

This crossing is on the recommended walking route for Emerson Elementary School.

The traffic volumes on Renton are fairly high, with over 15,000 average daily trips expected in 2030.

Proposed

- 1 Construct a pedestrian island to reduce crossing distance.

61

**WATERS AVE. S:
57th AVE S. to S. RYAN ST.**

Improve pedestrian safety.

Benefits:

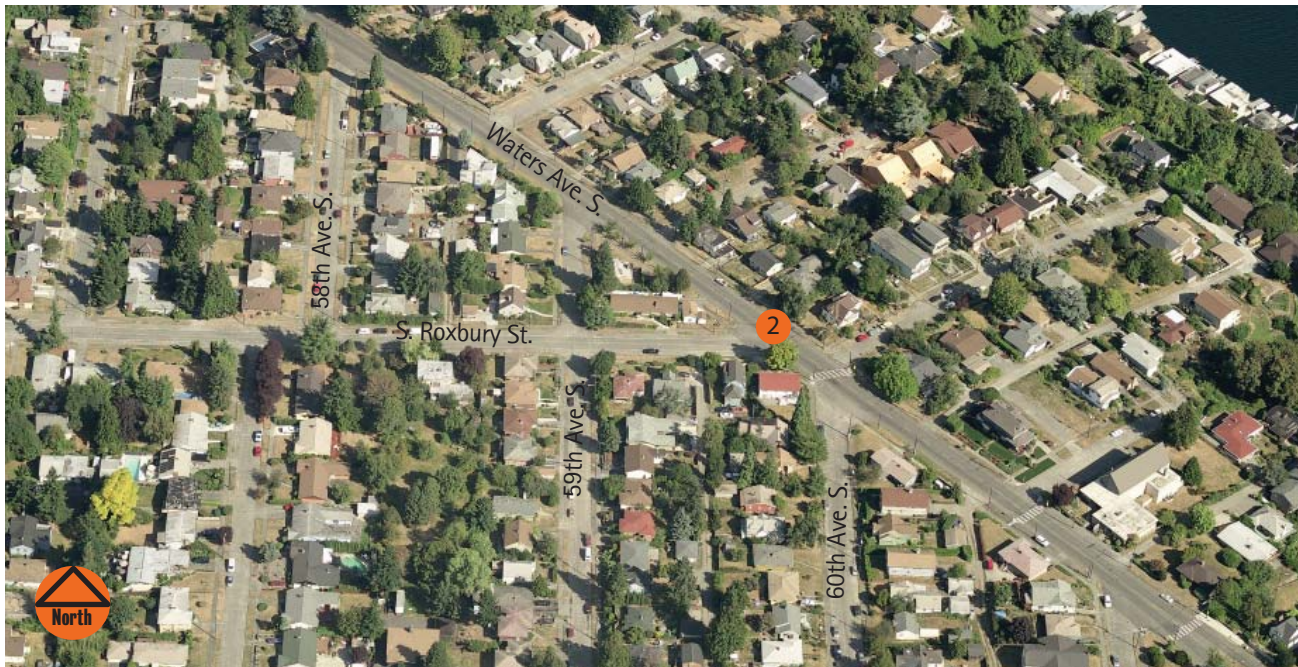


Modes:



Cost (2007\$): \$147,100

Ranking: Long-term



Existing

Waters Ave. S. is a collector arterial street parallel to and between Renton Ave. S. and Rainier Ave. S. On the east side, the cross streets meet Waters at 90 degree angles, but on the west side the grid is shifted and all streets meet at skewed angles. The result is a series of skewed intersections and mid-block crossings because of the non-matching street grids. Sight distances are limited for motorists and crossing distances can be long for pedestrians. South of 61st, Waters is divided by a landscaped median. The north- and southbound lanes are at different elevations which complicates access to and from Metro trolley stops. The trolley operates southbound on Waters as far as 64th Ave. S.

Waters is the preferred walking route for Emerson Elementary School.

The community and the Seattle Bicycle Master Plan have identified Roxbury as a corridor that could be enhanced to improve the pedestrian and bicycle environment.

Proposed

Partial view of Waters Ave. S.

- 1 Reconfigure the intersections on the west side of Waters to right angles at: 59th, 60th, 62nd, 63rd, 65th, and 66th (not shown above).
- 2 Add curb extensions to the north and south side of Roxbury, reducing the pedestrian crossing distance.

PLS:

4. PROJECTS

Transit

Transit Recommendations

SETS includes eight transit-specific project recommendations that fall into three key areas:

Speed and reliability: Make changes that improve the operation of existing bus routes to provide better service for riders and to make the best use of available resources.

Access: Get riders to and from light rail stations.

Future corridors: Preserve future corridors for possible new bus routes and/or streetcars.

None of these recommendations can be implemented by the City alone, although the City can cooperate, assist, and in some cases help pay for improvements.

Note: Because the transit recommendations require significant coordination between the City and other agencies they are not evaluated or ranked with City-controlled projects.



"Yield" sign illuminates as bus driver moves back into traffic lane. See Recommendation T66.

T62

RAINIER AVE. S: BUS SIGNAL PRIORITY and COMPLETE STREETS

Improve transit speed and reliability.

Existing

Currently over 11,000 people a day board and alight from buses operating on Rainier Ave. S. Seattle's Transportation Strategic Plan includes strategies to improve the speed and reliability of bus service. The Seattle Transit Plan defines a set of Urban Village Transit Network (UVTN) corridors as the immediate priority for improvements. Rainier is a UVTN corridor and currently has a signal priority system in place along limited portions of the corridor.

A typical city bus spends about half the time traveling, and half the time loading and unloading passengers. Signal priority allows a percentage of buses to influence traffic signals. This can be used to reduce delays both while traveling and while merging back into traffic from bus stops. When a bus is approaching an intersection, signal priority can be used to keep the light green long enough to allow the bus to get through the traffic signal.

SETS Project #29 recommends a Complete Street four-lane to three-lane conversion on Rainier between S. Alaska St. and S. Cloverdale St. This project needs to be designed and implemented in a way that will maintain or improve transit speed and reliability on Rainier.

Proposed

Install updated transit signal priority system on Rainier from S. Henderson St. to I-90, to improve bus speed and reliability in the corridor. Coordinate the transit signal priority project with the design, engineering and implementation of the Complete Streets project to ensure that bus stops are appropriately placed and designed and that signals are operated to optimize speed and reliability for buses while meeting the needs of other users of the street and adjacent land uses.

T63

STUDY AREA: BUS STOP LOCATION and CONSOLIDATION

Improve transit speed and reliability.

Existing

A typical city bus spends about half the time traveling and half the time loading and unloading passengers at stops. Historically city bus stops have been placed approximately two blocks apart for the convenience of people walking to and from the bus. There is a constant tension, however, between the spacing of bus stops and the speed and reliability of transit service. When stops are close together the bus stops more often and in addition to the time to load and unload passengers, the bus is delayed more frequently trying to pull back into traffic. Increasing stop spacing to four to five blocks reduces the total number of stops by about half, while requiring some riders to walk an extra two and one-half minutes to access their stop.

Proposed

Reduce bus loading times through stop consolidation. Review the locations of bus stops throughout Southeast Seattle and consolidate stops to reduce the time buses spend at stops. In determining optimal stop locations consider Seattle Transit Plan recommendations: On and off passenger counts, proximity of activity generators, and availability of safe street crossings for people walking to and from bus stops.

T64

RAINIER AVE. S. & MARTIN LUTHER KING JR. WAY S: BUS QUEUE JUMP

Improve transit speed and reliability.

Existing

Currently there is a bus stop on Rainier Ave. S. northbound just south of Mt. Baker Blvd, which serves riders from Franklin High School and others. Buses that pull into this stop before continuing north on Rainier often find the through lanes blocked with other vehicles waiting for the traffic signal at Rainier and Martin Luther King Jr. Way S. However, the buses can drive forward in what becomes the right turn lane to MLK, while waiting for a gap in traffic to continue north on Rainier.

Proposed

Create a northbound queue jump on Rainier at MLK that would allow buses priority over other vehicles at this intersection, to improve transit speed and reliability. This could be done by converting the right turn lane into a right-turn and transit-only-through-lane, with a right-turn-and-buses-only signal that would allow buses to continue north on Rainier ahead of other traffic.

4. PROJECTS

Transit

T65

STUDY AREA: FARE PAYMENT METHODS AND BOARDING

Improve transit speed and reliability.

Existing

Currently, because of the downtown Free Ride zone, riders in Seattle pay when boarding if the bus is heading into downtown, and pay when leaving if the bus is heading out of downtown. To enforce this policy, outside of downtown buses generally load and unload through the front door only. In the afternoon peak, especially for buses packed with people leaving downtown, riders have to navigate through standing passengers to get to the farebox. Riders waiting to board cannot do so until everyone exiting has left the bus. When buses are so full that it is impossible for people in the back to make it to the front, the driver opens the back door and passengers exit, walk to the front door, board and pay their fare or show a pass or transfer and exit again, all before waiting passengers can board.

Proposed

Reduce bus loading times through all-door loading, supported by new fare payment policies and mechanisms. Link light rail will operate with a barrier-free proof-of-payment system with fare inspectors, introducing this type of operation to the region.

Specific actions requiring coordination with King County Metro:

Modify fare payment: Implement a pay-as-you-board, proof-of-payment system for all service in Seattle. At a minimum, the proof-of-payment system should operate during high ridership hours. Cash-paying riders would board at the front door and get a transfer as proof-of-payment. All other riders could board at all doors. Roving fare inspectors would enforce payment and also provide additional security on the buses.

Install on-street fare machines: Establish fare machines at major stops where riders could purchase tickets with cash or credit cards.

Allow all-door loading: Allow riders to board and alight at all doors at all stops.

T66

STUDY AREA: HELP BUSES MERGE INTO TRAFFIC

Improve transit speed and reliability.

Existing

About half of bus travel time is spent in motion, and half is spent at bus stops. In addition to the time required to load and unload passengers, buses are often delayed at stops because of the difficulty of merging back into traffic. In 1993, Washington became the first state to pass legislation requiring drivers to yield to buses that have signaled an intention to reenter the traffic flow (RCW 46.61.220). The Seattle Municipal Code (SMC 11.58.275) also requires drivers "to yield the right-of-way to a transit vehicle traveling in the same direction that has signaled and is re-entering the traffic flow." Similar laws passed subsequently in Oregon and California added a requirement that buses have an illuminated flashing yield sign on the rear of the bus to alert drivers of their intention to merge. In King County only about 12 percent of drivers yield to buses. Experience from other operators suggests that the most effective programs rely on flashing signs on the back of the bus, rather than simply decals and public information campaigns.

Proposed

Use engineering, education and enforcement to speed buses merging into traffic from bus stops. Work with King County Metro to install flashing merge signs on the backs of all buses; support a public information campaign to educate drivers about the law and encourage them to let buses merge back into traffic; and work with the Seattle Police Department on an enforcement campaign to support this change in driver behavior.

T67 STUDY AREA:
BETTER BUS STOPS

Improve transit speed and reliability.

Existing

The quality of bus stops varies greatly throughout the city. Southeast Seattle is no exception, although most stops in the area include, at a minimum, a paved area where riders can board and alight. The design of stops affects how quickly passengers can board and exit the bus; many stops in southeast Seattle could be improved to speed boarding.

Proposed

Reduce bus loading times through stop design. Work with King County Metro to develop optimal bus stop designs that speed boarding and alighting, such as raised curbs that are level with low-floor bus floors. Ensure that bus stops are free of obstructions. Build better bus stops, with highest use stops receiving the highest priority. Coordinate improvement of lower priority stops with other projects at the same location. In some locations, bus bulbs can effectively reduce dwell time while providing more and better space for waiting passengers.

T68 RAINIER BEACH:
**BUS CONNECTIONS TO
HENDERSON STATION**

Provide convenient access to Link light rail.

Existing

Sound Transit, King County Metro and the City of Seattle have been cooperating for years to design and implement the physical facilities and services to ensure that riders can get to and from light rail stations by foot, bike, and bus. Multi-modal projects in this study address access at each of the stations in Southeast Seattle: Beacon Hill, Mt. Baker, Columbia City and Othello Stations.

The Henderson Station, at Martin Luther King Jr. Way S. and S. Henderson St, is almost 1/2 mile from the center of the urban village. Henderson has recently been refurbished to offer a good pedestrian connection and some buses will be routed along Henderson to connect to the station, but others will continue on their present routes to avoid diverting riders out-of-direction. It is not yet clear if current planned routing will provide adequate frequency between the Henderson Station and the core of the Rainier Beach urban village.

Proposed

Work with King County Metro to review bus routing between the Rainier Beach business district, Rainier Beach High School and the Community Center and public library, all centered between Rainier, Henderson, and Seward Park Ave. S. and the Henderson Station. Identify adequate layover at the station to support desired service levels.

4. PROJECTS

Transit

T69

S. GRAHAM ST: EAST – WEST BUS CORRIDOR

Preserve transit corridors for future growth.

Existing

Constrained by the topographical challenges common to all of Seattle, there are few east-west corridors in Southeast Seattle with streets suitable for bus operations. Currently there are only four bus routes that operate at least partially east-west in eight miles. S. Graham St. is one of the few east-west streets that connects directly from Swift Ave. S, parallel to I-5, all the way to Seward Park Ave S. The conditions of the street are adequate to operate buses, with good paving, sidewalks, and room for bus stops.

Proposed

Preserve Graham as a “possible future transit corridor” and ensure that any changes or improvements to the street maintain its potential to carry buses.

T70

RAINIER AVE. S. & 23RD AVE. S: PRESERVE STREETCAR CORRIDORS

Preserve transit corridors for future growth.

Existing

SDOT has been coordinating with the Seattle Streetcar Alliance and public agencies to develop a conceptual framework for expanding streetcar service in Seattle. Among the streets under consideration for future streetcar extensions are Rainier Avenue S. and 23rd Avenue S.

Proposed

Coordinate design and implementation of transportation projects in Southeast Seattle with planning for future streetcar lines and extensions; as corridors are identified, they should be preserved.

ST71

STUDY AREA: STREET TYPES, OVERLAYS AND DESIGNATIONS

Develop consistent street designation program.

Existing

Seattle addresses the multiple uses of streets through a combination of classifications, street types, designations and overlays. Currently, the application of street classifications, types and overlays is inconsistent for some of the streets in southeast Seattle.

Classifications define how the street functions as a travel corridor. In Seattle streets are classified from heaviest to lightest traffic use, starting with Interstate Freeways and continuing all the way to alleys.

Street Types relate to street use and design features that support adjacent land uses. Examples include Main Streets, Mixed Use Streets, and Neighborhood Green Streets.

There are also overlays: Station Area Overlays, for example, restrict new auto-oriented uses surrounding light rail stations; Principal Pedestrian Streets are designed to support shopping districts.

Street classifications, types and overlays define how streets will be built and operated which, in turn, defines the expectations of adjacent land owners, residents and businesses. Along with parcel zoning, street designations also define what can and cannot occur as new projects are built and existing parcels redeveloped.

Proposed

Review the street types, overlays and designations as they are currently applied to streets in southeast Seattle and, working with the community, businesses, and property owners, develop a consistent program of street types, overlays and designations for southeast Seattle.

ST72

STUDY AREA: SEA STREETS

Develop and implement SEA Streets Plan.

Existing

Street Edge Alternative (SEA) Streets is a pilot project developed by Seattle Public Utilities to improve water quality by reducing the amount of paved surfaces and introducing natural drainage. Early projects have reduced stormwater runoff into storm sewers by 99 percent. There are many streets in southeast Seattle today without curbs and gutters where SEA Streets could be constructed.

Proposed

Work with Seattle Public Utilities to prepare a SEA Streets plan for southeast Seattle and implement SEA Streets defined in the plan.



5. Project Evaluation

5. PROJECT EVALUATION

Project Benefits

Project Benefits

The Southeast Transportation Study includes recommendations to address the current and future transportation needs of Southeast Seattle. These recommendations, or projects, were developed to provide multiple benefits to Southeast Seattle, to Seattle as a whole, and to the larger region. A goal of this study is a transportation system that functions well on all levels – from moving freight efficiently on highways to improving safety on local residential streets.

Consistency with CIP and TSP

Seattle's Capital Improvement Program (CIP) uses a 100-point scoring system for discretionary projects that considers and weights seven major criteria:

- Safety
- Preserving and maintaining infrastructure
- Cost effectiveness or cost avoidance
- Mobility improvement
- Economic development
- Comprehensive Plan/Urban Village and land use strategy
- Improving the environment

These seven criteria and how they were used in project evaluation is discussed in the following section.

The Transportation Strategic Plan (TSP) has three major goals – Improve safety; Provide mobility and access through transportation choices; Preserve and maintain transportation infrastructure – and eleven strategies against which projects are measured:

- Make the best use of the streets we have
- Increase transportation choices
- Make transit a real choice
- Encourage walking
- Encourage biking
- Price and manage parking wisely
- Move goods and services
- Improve the environment
- Improve operations and maintenance
- Connect the region
- Leverage resources

Finally, a unique but complementary set of goals was developed for SETS that addresses the specific conditions of Southeast Seattle, including the implementation of light rail:

- Improve mobility and safety for the diverse needs of Southeast Seattle
- Improve the transportation network with a particular focus on connections to the new light rail system
- Support the growth to enhance neighborhood livability
- Make cost effective investments to maintain existing roads and build on other existing efforts
- Prioritize transportation improvements that support the City's Comprehensive Plan as well as the strategies and actions defined in the Seattle Transportation Strategic Plan Update

The combined goals, strategies and criteria of each of these have been distilled into five areas to highlight, for the purposes of public discussion, the external benefits of the SETS projects.

Following is a summary of each benefit. The project descriptions include icons as a shorthand method for showing which benefits each project will provide.

"Most people will not routinely use alternatives to driving alone unless they have viable choices that provide advantages in terms of travel time, cost, reliability, and convenience. A balanced, well-designed transportation system that allows people to get around by transit, bicycle, and walking is critical to making livable communities."

-Seattle Transportation Strategic Plan



Improves Safety

The Seattle Transportation Strategic Plan notes: "SDOT's role as manager of Seattle's transportation system is to operate and maintain this system to support public health and safety." The transportation system includes all modes of travel – cars, trucks, buses, trains, bicycles and feet.

Projects that improve safety range from the construction of a curb extension (pedestrian safety) to changing road configurations to reduce motorists' speed (vehicle safety). Since this is a high priority for the City almost all of the recommended projects improve safety.



Improves Mobility and Increases Transportation Choices

Mobility is a traditional transportation evaluation measures that historically has meant "more is more" – that is the more trips the system can accommodate the greater the benefit. By combining mobility with choices we preserve the idea that the ability to travel is important and has value, but tie it to walking, biking and transit as better choices for individuals, communities, and the environment. In Southeast Seattle, where there is a particularly high number of residents who do not own automobiles, are too young to drive, and/or are disabled, providing effective and efficient travel options is critical.

Projects that provide this benefit include improvements to streets and sidewalks connecting to light rail stations or key bus stops. Bicycle access, such as a route across I-5, also increases transportation choices.



Improves Urban Village Livability and Vitality

The Comprehensive Plan ties transportation policies to land use and neighborhood growth. Urban villages were designated in the Comprehensive Plan with the goal of creating areas that are best served by walking, cycling, and transit. Transportation policies support this by improving the infrastructure in urban villages including streets, sidewalks and bicycle facilities.

Projects that support this benefit include recommendations that support urban village strategies and enhance neighborhood connections. Projects that have an economic benefit to the community are also included.



Improves Access to Transit

Although this is similar to "Improving Mobility and Increasing Transportation Choices", this benefit is particularly important to SETS because it address one of the study goals – to improve the transportation network with a particular focus on connections to the new light rail system.

Martin Luther King Jr. Way S. is not included in this study due to enormous investment already being made to rebuild the street from end-to-end for light rail. However, projects that provide pedestrian and bicycle links to light rail and other transit-related projects are included. This includes new pedestrian-activated signals near stations, lighting improvements along corridors connecting business districts to stations, and bike lanes/sharrows leading to transit facilities.



Improves the Environment and uses Sustainable Practices

The Comprehensive Plan has a goal to "Promote healthy neighborhoods with a transportation system that protects and improves environmental quality". This can be achieved through a variety of ways including reduction of air, water, and noise pollution from vehicles; promoting alternative fuel sources; and designing streets that promote healthy environmental benefits.

Projects that support this benefit include those that significantly reduce the amount of pavement as well as projects that include significant landscaping (adding street trees).



Reduces Congestion and Delay

SETS analyzed 47 intersections and developed a level of service analysis for each intersection based on current conditions and what can be expected in the year 2030. There are a number of signalized and unsignalized intersections that currently have significant delays, and that are expected to get worse by 2030. Recommendations were made to improve several of these intersections and reduce the congestion and delay. Any intersections that were recommended for improvements also include recommendations for pedestrians and bicyclists.

5. PROJECT EVALUATION

Evaluation Criteria

Evaluating Projects

The evaluation methodology for this study builds on the goals and objectives of Seattle's Transportation Strategic Plan (TSP), SDOT's project prioritization process. It will allow proposed transportation system improvements to be evaluated in a systematic manner.

TSP goals and objectives

SDOT's major goals, established in the Transportation Strategic Plan (TSP), are to:

- Improve safety
- Provide mobility and access through transportation choices
- Preserve and maintain transportation infrastructure

The **safety goal** is to reduce vehicle, pedestrian and bicycle collisions.

Mobility and access goals are to: create more livable urban centers by encouraging a mode shift to transit, walking and biking; improve the movement of goods and services; promote healthy neighborhoods through a transportation system that protects and improves environmental quality; and improve mobility by reducing congestion through construction zones.

Preserve and maintain transportation infrastructure goals are: to preserve and maintain arterial pavement, bridges, and transportation control devices; and to improve the environment by protecting and enhancing the quality of the urban forest.



Projects that provide options to driving meet multiple criteria including Mobility and Comp Plan.

Consistency with CIP

Seattle's Capital Improvement Program (CIP) uses a 100-point scoring system for discretionary projects that considers and weights seven major criteria.

- Safety
- Preserving and maintaining infrastructure
- Cost effectiveness or cost avoidance
- Mobility improvement
- Economic development
- Comprehensive Plan/Urban Village and land use strategy
- Improving the environment

Evaluation Criteria for SETS

The evaluation criteria for SETS adopt the SDOT 100-point scoring system and define a project scoring process consistent with SETS goals (see previous page). The scoring process is simplified, with each project scored on a positive/negative scale, ranging from +5 to -5. This creates an ability to score a project negatively in some areas if its probable effects would be to worsen an existing situation. The table shows the maximum points that any proposed action can receive based on the weights and the point score. Very few projects will score high in all areas. A project that makes neighborhoods more livable by reducing through traffic may reduce vehicle mobility, while a project that rates high on reducing crashes may slow everyone down. For most projects, therefore, the highest total score is likely to be about half the available points.

Evaluation Criteria	Score	Weight	Maximum Points
Safety and Security	-5 to +5	4	20
Mobility	-5 to +5	3	15
Infrastructure Preservation/Maintenance	-5 to +5	3	15
Cost-effectiveness and Implementation Feasibility	-5 to +5	3	15
Comprehensive Plan / Urban Village Strategy	-5 to +5	3	15
Improve the Environment	-5 to +5	2	10
Economic Development	-5 to +5	2	10
Total Points			100

Evaluation Criteria Definitions

Safety and Security

For SETS, safety and security will address both crashes, which are emphasized in the SDOT Project Prioritization Criteria, and improvements through urban design and program improvements. The criteria for safety by mode are:

Pedestrians

- Incorporate crime prevention through environmental and streetscape design principles
- Minimize cut-through traffic on residential streets.
- Provide appropriate separation between pedestrians, bikes and vehicles
- Provide safe pedestrian crossings
- Reduce barriers to pedestrian travel
- Improve safety for children traveling and playing on neighborhood streets

Bicyclists

- Improve facilities for bicyclists
- Improve surface conditions on bike routes: pavement, drainage and storm drain covers, street debris
- Address intersections where vehicles' and bicyclists' usage and conflict is high
- Increase education\awareness about cyclists' rules and rights

Vehicles

- Address high collision locations
- Improve drivers' visibility
- Reduce vehicle/pedestrian/cyclist conflicts



Bicyclists often opt to ride on sidewalks because they feel safer. This can create conflicts with pedestrians.

Transit

- Incorporate crime prevention through environmental and streetscape design principles
- Provide safe access to and from light rail stations and bus stops

Mobility

The mobility score gauges a project or program's capacity to move pedestrians, cyclists, transit, vehicles, and freight.

All Modes

- Move large numbers of system users across all modes
- Enhance and increase pedestrian, transit and bicycle travel options
- Make bicycling, walking and transit more attractive and competitive with SOV travel
- Address the special mobility needs of disabled, immigrants, children and elderly populations

Pedestrians

- Enhance the comfort of pedestrian travel, particularly for walking-dependent populations
- Improve pedestrian access to key activity centers such as transit facilities, commercial centers, schools, parks, community and cultural facilities
- Improve pedestrian connectivity between and within the neighborhoods and the urban village centers in the study area
- Reduce barriers to pedestrian travel such as barriers posed by drainage and other infrastructure deficiencies
- Improve safety for children traveling on neighborhood streets

Bicyclists

- Improve facilities for bicyclists
- Improve surface conditions on bicycle routes: pavement, drainage and storm drain covers, street debris
- Address intersections where vehicle and bicyclist usage and conflict is high
- Increase education\awareness about bicyclists' rules and rights
- Improve bicycle connectivity between and within the neighborhoods and the urban village centers in the study area

5. PROJECT EVALUATION

Evaluation Criteria

Vehicles

- Maintain vehicle throughput on arterial streets
- Improve roadway and intersection geometry to reduce collisions, speeding, and weaving movements
- Improve wayfinding for drivers such as street signage and regulatory signage

Freight

- Improve arterial freight routes
- Improve roadway and intersection geometry to accommodate trucks and necessary truck turning movements
- Improve truck loading facilities for deliveries to businesses and stores
- Improve/maintain connectivity among freight routes

Transit

- Improve access to / from transit stops and stations
- Improve quality of transit stops, including safety, comfort and convenience
- Improves speed and reliability of transit vehicles
- Improve bus stop performance for buses, such as reducing merge time

Infrastructure Preservation/ Maintenance

- Improve the condition of the sidewalks and streets designated for improvements including related drainage improvements
- Reduce the backlog of deferred maintenance of sidewalks and streets



Projects providing access to bike and pedestrian paths meet many of the evaluation criteria.

Cost-Effectiveness & Implementation Feasibility

- Have a high cost-benefit ratio (Note: SETS will not calculate a detailed cost-benefit ratio for each project. This will be a qualitative assessment.)
- Have a high probability that it would be financed with outside funding sources such as federal and state grants, and private contributions
- Have a high probability that it would be directly implemented by other agencies such as King County Metro, Sound Transit, or WSDOT in the next ten years
- Have a high probability that it would be financed with existing City funding resources
- Have a high probability that it would be funded with new funding sources that would require approval by City Council

Support Comprehensive Plan and Urban Village Strategy

- Support adopted Neighborhood Plans, Station Area Plans and Urban Village strategy
- Support housing growth and businesses by providing improved transportation access (pedestrians, transit and vehicles) for customers, employees and residents

Improve the Environment

- Improve air quality
- Reduce noise
- Provide positive impacts to critical natural areas
- Include sustainable design features such as natural drainage systems

Economic Development

- Provides access to business districts and/or employers
- Provides infrastructure to support new employment

Project Evaluation Results

The evaluation criteria were applied to the projects in a multi-step process. Early in the study, project staff and community members identified over 500 potential "actions", based on past studies and new work. "Actions" included specific projects and programs, as well as general ideas to improve transportation in the area. This list was then narrowed, by combining overlapping actions and by eliminating those that had already been completed or were currently underway. Projects that did not meet the specific goals of the Southeast Transportation Study or had few benefits were eliminated. The project team conducted a needs assessment, resulting in the addition of more actions. Actions were given consistent descriptions and renamed 'projects'. The remaining projects were then developed in more detail, in cooperation with a broad cross-section of SDOT staff, and discussed with members of the Core Community Team and other stakeholders. This was an ongoing, iterative process as projects were refined and modified.

Core Community Team Project Evaluation

Sixty-three projects were ultimately formally submitted to the Core Community Team (CCT) for review and comment. At that time, the project cost estimates had not yet been prepared and CCT members did not have cost information to inform their ratings. In response to CCT comments and suggestions, some projects were refined and modified.

SDOT Project Evaluation

After the final project list revisions subsequent to the CCT review, the project team then prepared preliminary cost estimates for each of the projects. The cost methodology is detailed in the Technical Summaries section of this report, and the estimates are included on the project sheets.

SDOT evaluated each project on the seven evaluation criteria, with a possible maximum score of 100. Project descriptions, cost estimates, and preliminary project designs provided the basis for the evaluation.

High/Medium/Long-Term

The projects were arrayed from the highest scoring to lowest scoring, and assigned an overall priority of High, Medium or Long-term, with roughly a third of the projects in each category. It's important to note that a rating of "long-term" is relative; all of the SETS recommended projects are "above average" because projects that were "below average" were screened out earlier in the process.

Project Ranking and Implementation

If funds are available, all of the projects merit implementation. The recommended order of implementation is included in the table below. Because of funding constraints and other issues, not all projects will be implemented in the short-term and, of those that are, the projects will not be implemented in perfect priority order. It is likely that some projects with a lower rating may be implemented before projects with a higher rating, particularly where a project can be leveraged with other work scheduled to be done in the same location, for example a repaving project.

Table 5: Project Rankings in Priority Order

Project #	Location	Rating
29	Rainier Ave. S: Complete Street	High
16	Renton Ave. S. & 51st Ave. S. / S. Roxbury St.	High
26	Rainier Ave. S. & S. Genesee St.	High
32	Rainier Ave. S: Hillman City	High
24	Rainier Ave. S. & MLK	High
41	Rainier Ave. S: 52nd Ave. S. to Ithaca Pl. S.	High
3	Beacon Ave. S. & S. Lander St. / 16th Ave. S. / 17th Ave. S.	High
22	Rainier Ave. S. & 23rd Ave. S.	High
30	Rainier Ave. S. & 39th Ave. S.	High
40	Rainier Ave. S. & 51st Ave. S. / Sturtevant Ave. S.	High
25	Rainier Ave. S. & S. Walden St.	High
7	Beacon Ave. S: 14th Ave. S. to S. Stevens St.	High
10	S. McClellan St: 23rd Ave. S. to Rainier Ave. S.	High
27	Rainier Ave. S. & S. Oregon St.	High
2	15th Ave S. - Beacon Ave. S. to S. Stevens St. (assumes four-way stop, not traffic signal)	High
42	Rainier Ave. S. & Seward Park Ave. S.	High
43	Rainier Ave. S. & 57th Ave. S.	High
5	Beacon Ave. S. & 17th Ave. S.	High
8	43rd Ave. S. & S. Othello St.	High
55	Wilson Ave. S. & S. Dawson St.	High

continued on the following page

5. PROJECT EVALUATION

Results

Table 5, continued:
Project Rankings in Priority Order

Project #	Location	Rating
13	MLK: S. Bayview St. to S. McClellan St.	Medium
51	Bicycle access across I-5	Medium
47	S. Oregon St. & Columbian Way S. / 15th Ave. S.	Medium
6	Beacon Ave. S. & S. Stevens St.	Medium
12	S. College St: 22nd Ave. S. to Rainier Ave. S.	Medium
17	Rainier Ave. S. & S. Dearborn St.	Medium
38	Rainier Ave. S. & Fisher Pl. S.	Medium
39	Rainier Ave. S. & 52nd Ave. S. / Mapes Walkway	Medium
48	Beacon Ave. S. & Columbian Way S.	Medium
11	S. McClellan St: Rainier Ave. S. to Mt. Baker Blvd.	Medium
28	Rainier Ave. S: S. Genesee St. to S. Alaska St.	Medium
49	Beacon Ave. S. & S. Orcas St.	Medium
31	Rainier Ave. S. & 42nd Ave. S. / S. Brandon St.	Medium
36	Rainier Ave. S. & S. Rose St. / Wabash Pl. S.	Medium
9	Renton Ave. S. & 43rd Ave. S.	Medium
45	Pedestrian scale lighting along Rainier Ave. S.	Medium
14	S. Alaska St: Rainier Ave. S. to MLK	Medium
1	Beacon Ave. S. & 14th Ave. S.	Medium
33	Rainier Ave. S. & S. Graham St. / 46th Ave. S.	Medium
19	Rainier Ave. S. & S. Massachusetts St.	Medium
52	31st Ave. S: Yesler Way to S. McClellan St.	Medium
4	Beacon Ave. S. & S. McClellan St.	Long-term
57	S. Graham St. & 39th Ave. S, 42nd Ave. S, 44th Ave. S.	Long-term
23	Rainier Ave. S. & S. Walker St.	Long-term
44	Rainier Ave. S. & Cornell Ave. S.	Long-term

Project #	Location	Rating
21	Rainier Ave. S. & 22nd Ave. S., S. Holgate St. and S. Plum St.	Long-term
37	Rainier Ave. S. & S. Thistle St. / Rainier Pl. S.	Long-term
35	Rainier Ave. S. & S. Holly St.	Long-term
18	Rainier Ave. S. & I-90 ramps	Long-term
20	Rainier Ave. S. & 21st Ave. S., S. State St. and S. Grand St.	Long-term
58	Seward Park Ave. S: S. Dawson St. to Rainier Ave. S.	Long-term
34	Rainier Ave. S. & S. Morgan St. / 47th Ave. S.	Long-term
15	57th Ave. S. near S. Fletcher St.	Long-term
61	Waters Ave. S: 57th Ave. S. to S. Ryan St.	Long-term
60	Renton Ave. S. & S. Ryan St.	Long-term
54	S. McClellan St. & Mt. Baker Blvd.	Long-term
50	Swift Ave. S. & I-5 NB ramp, S. Graham St., Albro Pl. S.	Long-term
53	23rd Ave S: S. Waite St. to S. College St.	Long-term
59	Renton Ave. S. & 44th Ave. S. / S. Thistle St.	Long-term
56	Seward Park Ave. S. & S. Juneau St.	Long-term
46	S. Spokane St: Columbian Way S. to 23rd Ave. S.	Long-term

Core Community Team Project Evaluation Results

Sixty-three draft project recommendations were sent to 25 members of the Core Community Team (CCT) for evaluation. Over one dozen individuals representing Southeast Seattle organizations responded.

CCT members were asked to rate projects as "high", "medium", or "low" and to prioritize their top five projects. CCT members were encouraged to rate as many or as few projects as they wished; many chose to evaluate only projects located in a geographic area they are familiar with. CCT members were also encouraged to comment on the project recommendations, in addition to their ratings. Most comments supported the projects. In some instances project recommendations were revised to reflect feedback from CCT members.

There were no prescribed evaluation criteria for CCT members to follow. Members were asked to consider the study's purpose and goals and had previously been briefed on the SDOT evaluation criteria.

The study's goals are to:

- Improve mobility and safety for the diverse needs of Southeast Seattle.
- Improve the transportation network with a particular focus on connections to the new light rail system.
- Support the growth to enhance neighborhood livability.
- Make cost effective investments to maintain existing roads and build on other existing efforts.
- Prioritize transportation improvements that support the City's Comprehensive Plan as well as the strategies and actions defined in the Seattle Transportation Strategic Plan Update.

The Purpose and Goals were achieved by a strategy to focus planning efforts in the following areas:

- Within 1/2 mile of Link light rail stations
- Major commercial/residential hubs – Urban Villages
- Major east-west connectors
- Major north-south roadways
- MLK along the light rail route is not included because street improvements are already underway

The following organizations/community members submitted project evaluations:

- Seattle Bicycle Advisory Board
- Filipino Community Center
- Columbia City Business Association
- Rainier Beach Merchants Association
- HomeSight
- Rainier/Othello Safety Association
- Douglass Chappell, Beacon Hill
- Rainier Chamber of Commerce
- Hillman City Business Association
- Hillman City Neighborhood Group
- South Beacon Hill Neighborhood Association

5. PROJECT EVALUATION
Core Community Team Evaluation Results

The following projects received the most "High" ratings:

No.	Location	Project Description
45	Pedestrian lighting along Rainier Ave. S.	Improve safety with pedestrian lighting along corridor
17	Rainier Ave. S. & S. Dearborn St.	Reduce delay, improve safety and add bicycle/pedestrian access at congested High Collision Location
22	Rainier Ave. S. & 23 rd Ave. S.	Improve safety at High Collision Location
24	Rainier Ave. S. & Martin Luther King Jr. Way S.	Improve safety at intersection
29	Rainier Ave. S: S. Alaska St. to S. Cloverdale St.	Convert four-lanes to three-lanes and construct Complete Street
32	Rainier Ave. S: S. Lucille St. to S. Mead St. (Hillman City)	Add urban design features and improve pedestrian safety in business district
47	S. Oregon St, Columbian Way S, & 15 th Ave. S.	Improve safety at High Collision Location
16	Renton Ave. S. & 51 st Ave. S./S. Roxbury St.	Construct roundabout at High Collision Location

However, when asked to rank the top five projects, the results are different. Project #29, Convert Rainier Ave. S. from four-lanes to three-lanes and construct a Complete Street between S. Alaska St. and S. Cloverdale St. received the highest number of top rankings (#1) of all projects. Weights were applied to the ranking order (#1 project received 5, #2 project received 4, etc). Below are the top ten weighted projects.

No.	Location	Project Description
29	Rainier Ave. S: S. Alaska St. to S. Cloverdale St.	Consider long-range conversion from four-lanes to three-lanes; improve transit speed and reliability
3	Beacon Ave. S. & S. Lander St.	Modify street to create public plaza and designate one-way street
32	Rainier Ave. S: S. Lucille St. to S. Mead St. (Hillman City)	Add urban design features and improve pedestrian safety in business district
2	15 th Ave. S: Beacon Ave. S. to S. Stevens St.	Calm traffic and add urban design in corridor with High Accident Location
33	Rainier Ave. S. & S. Graham St./46 th Ave. S.	Improve safety at High Collision Location
26	Rainier Ave. S. & S. Genesee St.	Improve safety at High Collision Location
41	Rainier Ave. S: 52 nd Ave. S. to Ithaca Pl. S.	Improve safety and accessibility in urban village corridor
10	S. McClellan St: 23 rd Ave. S. to Rainier Ave. S.	Add missing sidewalk link
17	Rainier Ave. S. & S. Dearborn St.	Reduce delay, improve safety and add bicycle/pedestrian access at congested High Collision Location
43	Rainier Ave. S. & 57 th Ave. S.	Improve safety at intersection

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6. Fundings



Funding and Implementing the Strategy

One of the key challenges in developing a long-range sub-area transportation plan is to identify how the recommended programs and projects could be fully implemented by the horizon year. In the case of the Southeast Transportation Study (SETS), this year is 2030. SETS would require approximately \$67 million to complete all of the High, Medium, and Long-Term Priority projects.

To successfully meet this challenge, SDOT must have a mechanism in place for moving the study recommendations from the planning to design and implementation stages. This process involves two critical steps.

First, individual projects must be prioritized either within the SDOT Capital Improvement Program (CIP) – which typically includes the larger, more complex and costly projects – or within an individual SDOT annual operational program such as:

- Pedestrian and Bicycle
- Neighborhood Traffic Calming
- Arterial Streets Traffic Operations
- Parking Management

Second, funding must be secured for each project. Funding can come from multiple sources such as the City's General Fund, partner agencies, private development, and/or external grants. Funds from various sources may be combined to meet total project costs. For larger projects, funding may be dedicated to a project over a period of several years. Smaller, less expensive projects are often built within a one- to two-year timeframe.

To be credible, a funding strategy must identify fiscal sources, forecast the potential and feasible funding levels available to implement City transportation projects, and be based on accurate project cost estimates.

Existing and Potential Funding Sources

The City of Seattle has historically funded transportation programs through gas tax revenues dedicated to transportation purposes, other local funds, grants, loans, and developer contributions. Some previous funding sources, including a Street Utility Tax and Vehicle License fees, are no longer available to the City as a funding source. Figure 23 shows historical transportation funding sources since 1995.

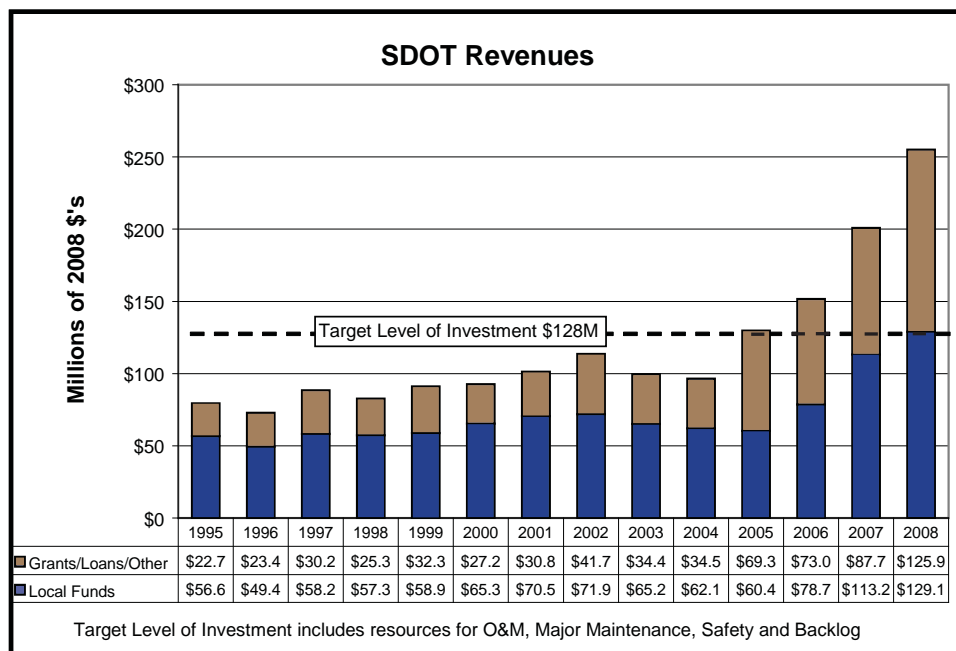


Figure 23. Local and Grant Funds

Local Funds

Local revenues make up the largest part of Seattle's transportation budget and include:

- The City's **General Fund**, which includes sales and property taxes and can be used for many types of transportation projects
- The **Cumulative Reserve Fund**, which is designated for maintenance of the transportation system
- The City's share of the **state gas tax**, which is designated for highway purposes
- The recently implemented **commercial parking and employee hours taxes**

Bridging the Gap Funds

Bridging the Gap is a voter-approved nine-year funding plan for transportation maintenance, pedestrian, transit and bicycle projects. A total of over half a billion dollars will be raised through:

- An increase in the **property tax levy lid**
- A **commercial parking tax**
- An **employee hours tax**

Although these funds are considered to be local funds, there is a list of specific projects and programs the voters expect to be funded by the plan. In large part, Bridging the Gap makes up for the vehicle licensing fees and street utility tax revenues that are no longer collected. Figure 24 shows the level of local

transportation funds since 1995 and the effect of Bridging the Gap funds in 2007, the first year of the program.

Grant Funds

Grant funds are available from the Federal and State governments for the construction and maintenance of roadways. Historically, Seattle has secured between \$20 million and \$40 million in grant funds annually. SDOT maintains a grant match reserve fund to provide a local match for potential new grants. Projects that are candidates for grant funds must be competitive against the granting agency's criteria, which have specific areas of emphasis, such as accident reduction, pedestrian safety, etc.

Partnership Funds

Occasionally there are projects from cooperating agencies or departments that can help fund and implement City transportation improvements. Proposed extensions of Sound Transit light rail or highway projects by WSDOT may offer opportunities to incorporate recommendations from this report. Work conducted by other City departments in the rights-of-way (e.g., Seattle Public Utilities, Seattle City Light) may offer similar opportunities.

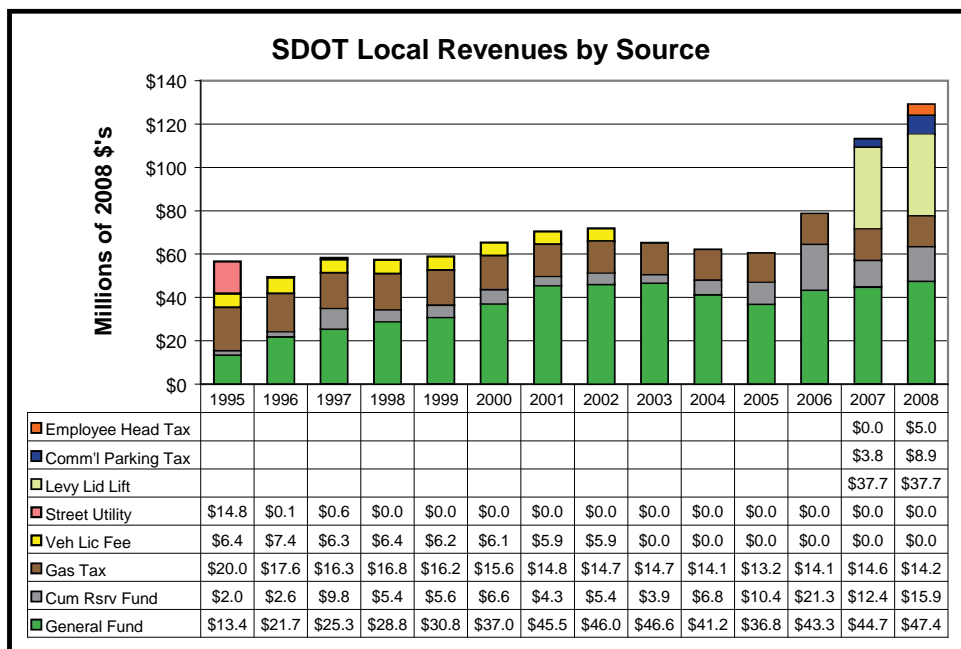


Figure 24. Local Funding Sources

6. FUNDING

Potential Transportation Funding Sources

Other Potential Sources

The **Washington State Legislature** has approved a number of revenue sources that, with voter approval, can be used to fund transportation improvements. These revenue sources vary with regards to whether they are available on a regional, countywide or citywide basis.

Local Option Fuel Tax can be implemented on a county level only and would be restricted to roadway projects. With voter approval, an additional 10% of the statewide fuel tax could be collected.

Local Option Vehicle License Fee can be set up within a citywide or countywide Transportation Benefit District. Funds may be used for a variety of transportation projects. With voter approval, up to \$100 per vehicle can be collected annually under this fee.

Transportation Impact Fees can be applied to an entire city or targeted to a sub-area to help address the traffic impacts related to new development.

Revenue Forecasts

A review of existing and potential funding sources highlights the variability and uncertainty involved with City transportation revenues. Forecasts through the horizon year 2030, therefore, must make clear the assumptions used and identify a range of potential SDOT transportation revenues to provide a reasonable framework for setting future expectations.

Assumptions

Key assumptions for this analysis include:

- Expiration/renewal of Bridging the Gap funds: This analysis presents one scenario where Bridging the Gap is discontinued after the initial nine years (2015) and a second scenario that assumes the continuation of funding for an additional nine years (thru 2024)
- Existing funding levels for SDOT programs based on the City's 2007-2012 Capital Improvement Plan
- Continuation of grant funding and appropriations at \$20 million per year
- Funding for major projects, such as the Alaskan Way Viaduct, is not included

City Funding

A total range of \$2.2 billion to \$3.1 billion is projected to be available between 2008-2030 for constructing, operating and maintaining the City's transportation system. The lower figure assumes expiration of Bridging the Gap in 2015, while the larger figure assumes it is renewed for another nine years.

The majority of this funding is anticipated to be spent on operations and maintenance activities; only a portion of the total funds would be available for new projects, such as those recommended in SETS. A small portion of maintenance funding could be assumed to be able to implement improvement projects, such as when a pavement resurfacing project could stripe a new bike lane.

SDOT Project Selection Process

Upon identifying a range of potential future revenues to implement transportation improvements citywide, it is important to understand how project recommendations are prioritized and which programs are most likely to be responsible for implementation.

Capital Improvement Program (CIP)

Each year, the City updates its six-year capital budget (CIP) to identify likely funding sources for the highest priority projects and programs within forecasted revenue. While the CIP identifies potential funding over a six-year period, funding is only committed when the City Council adopts the annual budget.

Within the CIP, a significant amount of funding is dedicated to annual operational programs which in turn fund the majority of small-scale projects, such as bicycle improvements or traffic calming measures. The remainder of the CIP funding is targeted to individual large-scale capital projects. SDOT uses the following multi-step process to prioritize projects for inclusion in the CIP:

Step 1. Identification of Transportation Needs.

SETS will be one of many sources that identifies projects (and programs) to address existing and future transportation needs in Seattle. Other sources include SDOT's existing backlog of major maintenance and replacement projects, projects in the current CIP that require additional funding, projects from other planning studies, projects identified by operational program managers, and projects developed in coordination with partner agencies, such as WSDOT, Sound Transit, and King County Metro.

Step 2. Initial Rating of Projects.

Each project is evaluated and rated on its merits using criteria that reflect the City's Comprehensive Plan goals:

- Safety
- Preserving and maintaining infrastructure
- Cost effectiveness or cost avoidance
- Mobility improvement
- Economic development
- Comprehensive Plan/Urban Village land use strategy
- Improving the environment

SETS projects were evaluated using these categories to help determine how well the projects for Southeast Seattle meet the criteria.

Step 3. Prioritizing Projects for Implementation.

After projects are rated based on their ability to further City goals, the projects' overall priority ranking is established using the following considerations:

- Funding availability
- Interagency coordination
- Geographic balance
- Constituent support

Other SDOT Programs

While the above discussion describes how individual projects are prioritized within the six-year CIP, other SDOT programs such as the Pedestrian and Bicycle Program, Traffic Signals, Neighborhood Traffic Calming, Arterial Traffic Operations, and Parking Management have also designed their own criteria and prioritization system for ranking and implementing small-scale improvements. The prioritization systems parallel the one used for the CIP in that after needs identification, they are rated on their ability to meet various City goals and then are prioritized based on a second set of considerations to maximize funding leveraging opportunities and ensure equity across the City. These programs will utilize appropriate project recommendations from SETS to develop their annual work programs.

Modal Plans

The City's **Bicycle Master Plan (BMP)** will guide funding for bicycle projects throughout the City. SETS further defines recommendations from the Bicycle Master Plan and completes the analysis of projects and areas where additional analysis was called for. Bicycle elements of SETS will be implemented through funding opportunities identified in the BMP including:

- General Fund
- Bridging the Gap funding
- Bicycle Grant Matching funds
- Bicycle Spot Improvement Program

Similarly, the **Seattle Pedestrian Master Plan** will be prepared in 2008 and will likely prioritize and set aside funding for implementing pedestrian projects throughout the city. SETS includes a number of pedestrian improvements which can be rolled into the plan's project recommendations.

In addition, there may be opportunities where SDOT can leverage City resources by collaborating with other area projects. For example, Seattle City Light's underground utility work or Seattle Public Utilities low-impact development program may provide an opportunity to complete a SETS project.

Conclusion

As this chapter describes, there is a range of potential SDOT transportation revenues that may be available to implement projects over the next 23 years. A total of \$2.2 billion to \$3.1 billion (2008 dollars) is projected to be available over the 2008-2030 period for constructing, operating, and maintaining the City's entire transportation system.

With a host of transportation maintenance needs city-wide, it will be a tall - but certainly feasible - challenge to implement all of the SETS recommendations by 2030. The finance description included in the preceding pages estimates future revenues that may be available for SETS implementation, while at the same time acknowledging the uncertainty involved in predicting future funding levels. Revenue streams are dependent on the health of the national and local economies, renewal of current local levies such as Bridging the Gap, and national and state policies as they affect grant programs. These variables all determine the amount of funding that will ultimately be available to implement recommended projects from the Southeast Transportation Study (SETS).

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7. Technical Summaries



Projecting future travel

In transportation planning, travel demand models are commonly used to study the travel patterns of people and freight.

Travel demand models are based on the practical relationships between socioeconomic characteristics, land uses, and travel patterns. By approximating future travel patterns, models make it possible to assess the implications of growth, to compare alternative transportation solutions, and to provide a testing ground for changes in transportation policy.

How the model works

The key steps in travel demand modeling are:

Trip generation: The area to be studied is divided into a set of zones called Traffic Analysis Zones and the model estimates the potential number of trips beginning (productions) and ending (attractions) in each zone. The trip productions are based largely on estimates of the numbers of trips made by the average household (trip generation rates), for various residential land use types, developed from local and national surveys. Trip attractions are based on employment by land use category, student enrollment and special generators such as an airport.

Trip distribution: The model joins trip productions with trip attractions among the Traffic Analysis Zones throughout the region. Trip distribution does not identify whether the trip is made by car, walking, bike or transit, it simply says where each trip begins and ends.

Mode choice model: The model then "splits" trips among the most likely travel modes such as driving, transit, carpooling, bicycling or walking. Considering trip variables such as auto operating costs, transit fares, routes, travel time, waiting time and parking costs, the model estimates how many trips will be made by each travel mode. For all transit trips, the model also estimates how many people will walk and how many people will drive to get to the transit stop.

Traffic assignment model: Finally, the model determines the fastest paths or routes for each trip and assigns the traffic volume or transit ridership to those routes. The process considers the likely effect of congestion and delays on the most heavily-used facilities and diverts trips to other, less congested links.

Trip Purpose

The trip generation model divides trips by seven trip purposes. The first five assume that the traveler starts from home; they are: Home-based work; Home-based college; Home-based school; Home-based shop; Home-based other. The last two assume that the traveler starts from some place other than their home, for example makes a trip during the day starting from their job; these are: Non-home-based work; Non-home-based other.

Puget Sound Data

The home-based and non-home-based trip production and attraction models were updated using 1999 household travel surveys. (A 2006 household travel survey was recently completed, but was not available in time for the travel modeling work in this study.)

Trip purposes are defined by the activities reported in the household survey at the origin and destination of each trip. If a person's trip has one end at home and one end at work with no stops in between, then this trip is defined as a home-based work trip. If a person's trip begins at home, then involves stopping at the store to buy groceries and continues on to work, this set of trips is defined as a home-based shopping trip and a non-home-based trip. Home-based other trips include activities for visiting, free-time, personal business, and appointments. Non-home-based trips include any trips that begin and end at places other than home.

Trip production models for home-based trips were estimated using household travel survey data in the Puget Sound region. These models were developed from 5,387 households in the survey, out of a total of 6,000 (90 percent) processed to ensure that the data were complete and logical, based on a series of validation tests. The models were estimated for each trip purpose separately. Table 1 provides an overview of trip rates by purpose for households, persons and employees. The table shows that in the average household, all the people living there make almost ten trips a day, and that the average individual makes just under four trips a day. Looking at the data from a workplace perspective, the average number of trips for each worker is just over seven. This is higher than the average number of trips per person for all people, because people who are not working, whether too young, or retired or unemployed, travel less than people do work and have to commute to a job each day.

Trip Distribution Model

The trip distribution model is the second of the four primary model components identified as part of the four-step modeling process. The trip distribution models estimate the number of trips from one zone to other zones, and repeat the process for all zones. The trips are estimated as a function of the travel impedance such as travel time or distance from one zone to another.

Trip distribution model results are the trip tables by trip purpose. These can be summarized by the average trip length in both miles (distance) and minutes (travel time). Table 6 presents a summary of the trip distribution results for the daily trip tables. Average speeds are calculated from the distance and travel time for each purpose. Changes in trip distance reflect changes in chosen routes due to congestion, and changes in travel time reflect changes in chosen routes, as well as changes in time caused by the congestion.

Table 6: Trip Rates by Purpose - Central Puget Sound

Trip Purpose	Trips Per Household	Trips Per Person	Trips Per Employee
Home-Based Work	1.55	0.61	1.13
Home-Based College	0.08	0.03	0.06
Home-Based School	0.69	0.27	0.51
Home-Based Shop	1.11	0.44	0.82
Home-Based Other	3.44	1.35	2.53
Non-Home-Based Work	0.88	0.34	0.65
Non-Home-Based Other	2.16	0.85	1.59
Total Person Trips	9.91	3.88	7.27

Table 7: Total Trips by Purpose Results for Central Puget Sound

Trip Purpose	Daily Trips in Region	Average Miles	Average Minutes	Average Speed
Home-based work	1,984,481	12.50	25.58	29.3
Home-based college	98,030	9.15	19.84	27.7
Home-based school	883,724	4.06	11.54	21.1
Home-based shop	1,427,492	6.17	13.72	27.0
Home-based other	4,418,377	6.61	15.10	26.3
Non-Home-Based Work	1,129,434	6.26	14.11	26.6
Non-Home-Based Other	2,774,412	7.08	14.88	28.5
Total Person Trips	12,715,950	7.39	16.23	27.3

7. TECHNICAL SUMMARY

Traffic Modeling Results

Mode Choice Model

The mode choice model is the third stage of the four-step travel demand modeling process. Productions and attractions of the trip generation model are linked in trip distribution, creating zone-to-zone person-trip movements. These trips are then divided among the available travel modes through the application of the mode choice model.

Mode choice models can be used to analyze the effects of changes in policy, or changes in population and employment and characteristics. A wide range of transportation policies can be evaluated through the application of the behavioral-based mode choice models. Examples include scenarios evaluating the effectiveness of high-occupancy vehicle (HOV) lanes, toll-ways, rail transit, exclusive bus lanes, and changes in the price of parking.

Mode choice models are often used to look at how people commute to work. The mode choice model for the home-based work trips produces the following modes of transportation:

- Drive alone – Single-occupancy auto trips
- Shared ride 2 – Double-occupancy auto trips
- Shared ride 3+ – Auto trips with three or more occupants
- Transit – Walk access
- Transit – Auto access
- Bicycle
- Walk

The model predicts numbers of trips between every zone, and then these trips are divided between the road and transit network for further analysis. A regional summary of trips by various modes and trip purposes produced by the mode choice model for 2000 conditions is shown in Table 8.

Table 8: Regional Person Trips in 2000 for Central Puget Sound

Trip Purpose	Drive Alone	Shared Ride 2 People	Shared Ride 3+ People	Transit Walk to stop	Transit Drive to stop	Walk	Bike	Total
Work, to and from home	1,574,751	124,051	25,196	139,798	32,839	56,515	31,329	1,984,479
	79.4%	6.3%	1.3%	7.0%	1.7%	2.8%	1.6%	
College, to and from home	54,062	10,635		19,121		8,324	5,887	98,030
	55.1%	10.8%		19.5%		8.5%	6.0%	
School, to and from home	20,779	135,332	217,786			509,826		883,724
	2.4%	15.3%	24.6%			57.7%		
Non-work, to and from home	2,571,845	1,697,123	1,183,116	111,337		297,597	60,106	5,921,123
	43.4%	28.7%	20.0%	1.9%		5.0%	1.0%	
Trip that starts and ends away from home	1,937,757	962,933	645,323	81,587		268,151	28,028	3,923,779
	49.4%	24.5%	16.4%	2.1%		6.8%	0.7%	
TOTALS	6,159,195	2,930,074	2,071,420	351,842	32,839	1,140,413	125,350	12,811,134
	48.1%	22.9%	16.2%	2.7%	0.3%	8.9%	1.0%	

Trip Assignment Model

The trip assignment model is the last of the four primary model components identified as part of the four-step modeling process. The trip assignment model estimates the volume on each link in the transportation system for both highway and transit modes. In addition, the trip assignment model generates specific performance measures, such as the congested speed or travel time on a highway link or the boardings and alightings on a transit route. Trip assignment is performed separately for each mode (auto and transit) and time period (a.m. peak, off-peak, p.m. peak, evening, and night). For this study, transit trips were not analyzed in the trip assignment model.

Modeling traffic at intersections

Based on professional judgment regarding which intersections in southeast Seattle are likely to be most congested now and in the future, the study selected 47 intersections for detailed analysis. To calculate intersection levels of service, the following traffic data were assembled:

- Vehicle volumes for all movements
- Signal cycle length and specific signal operation such as signal phasing and length of green time
- Intersection geometry such as availability of left turn pocket and its length
- On-street parking
- Width of traffic lanes
- Pedestrian volumes
- Heavy vehicle volumes such as buses and trucks

Upon completing all of these steps, the congested intersections in the study area were identified. The most congested intersections of those analyzed are discussed in the Vehicles Section. The maps on the following pages show the results for all intersections studied.

Modeling improvements at congested intersections

Based on the analysis of projected 2030 peak-hour conditions at the 47 intersections studied, the most congested intersections were identified as candidates for improvements to reduce vehicle delay. Each of these was reviewed with a large working group made up of the project team along with SDOT staff from various divisions.

Ultimately, the project team decided to propose improvements at ten of the intersections:

- Rainier Ave. S. and S. Dearborn St.
- Rainier Ave. S. and 23rd Ave. S.
- Beacon Ave. S. and S. Spokane St.
- Beacon Ave S. and S. Columbian Way
- Swift Ave. S. and I-5 Northbound Off-Ramp
- Swift Ave. S. and S. Albro Place
- 15th Ave S. and S. McClellan St.
- Wilson Ave. S. and S. Dawson St.
- 15th Ave. S. and S. Columbian Way

Conceptual designs were developed for each of these locations and the intersections were then evaluated again to determine likely delay in 2030 with the improvements in place. In all cases, significant reductions in delay were projected.

Final project recommendations

As work continued on SETS, some of the original conceptual designs for the congested intersections were modified and the modified designs were not re-evaluated. Refer to specific project sheets for modeling results, or see Appendices for full documentation.

7. TECHNICAL SUMMARY

Traffic Modeling Results

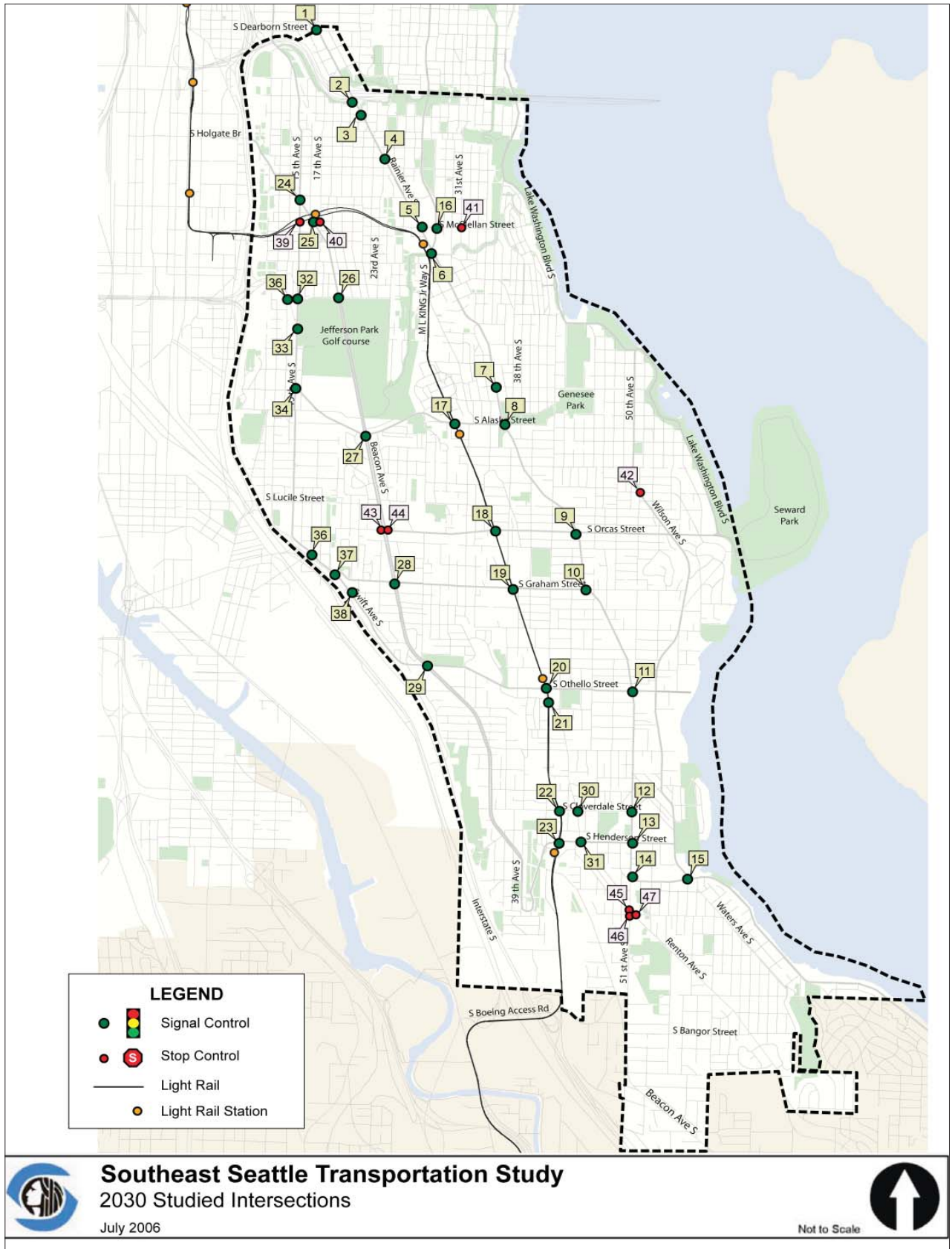


Figure 25: Intersections analyzed for 2030 performance
 Source: Mirai

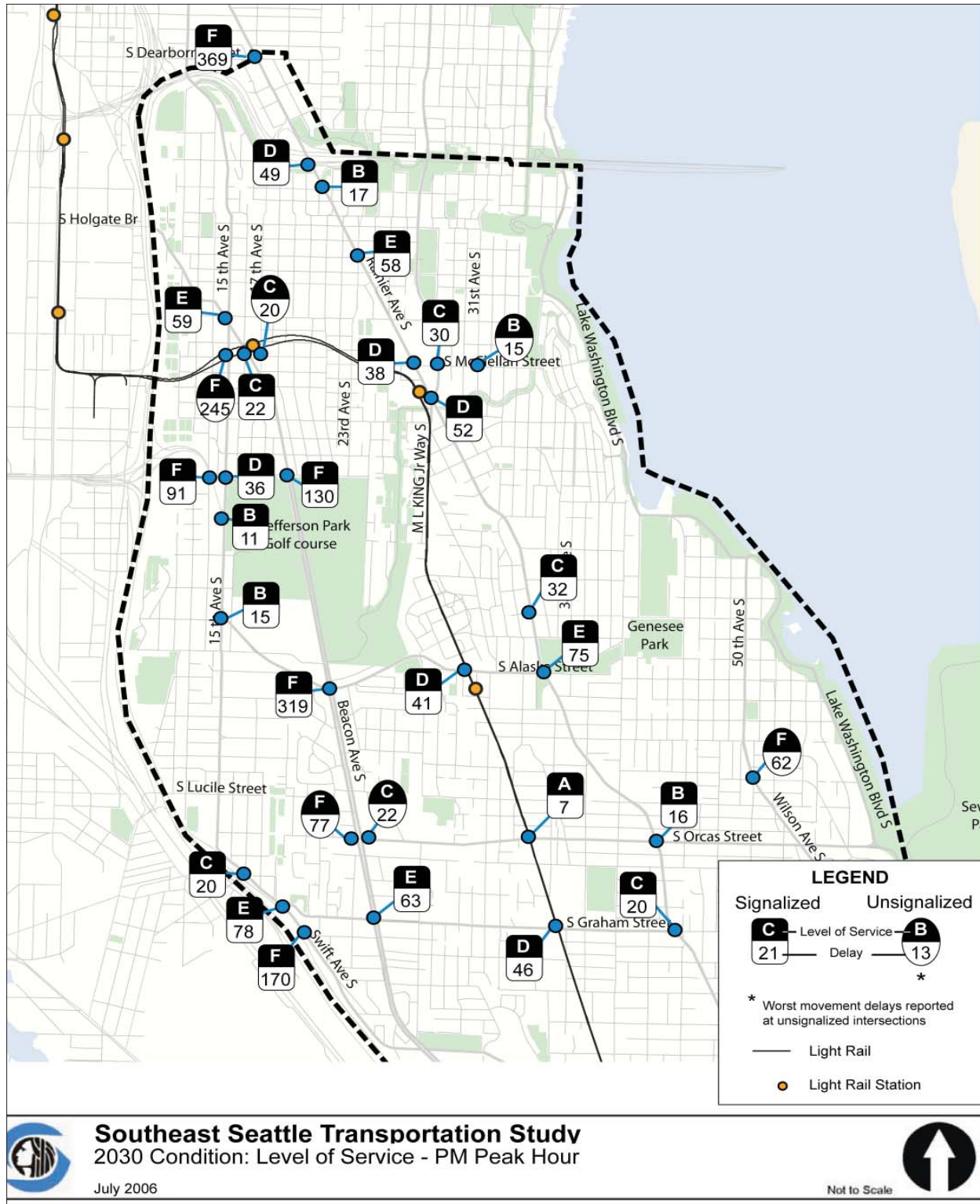


Figure 26: North Study Area - Intersection Analysis Results:
Peak Hour 2030 Level-of-Service and Seconds of Delay
Source: Mirai

7. TECHNICAL SUMMARY
Traffic Modeling Results

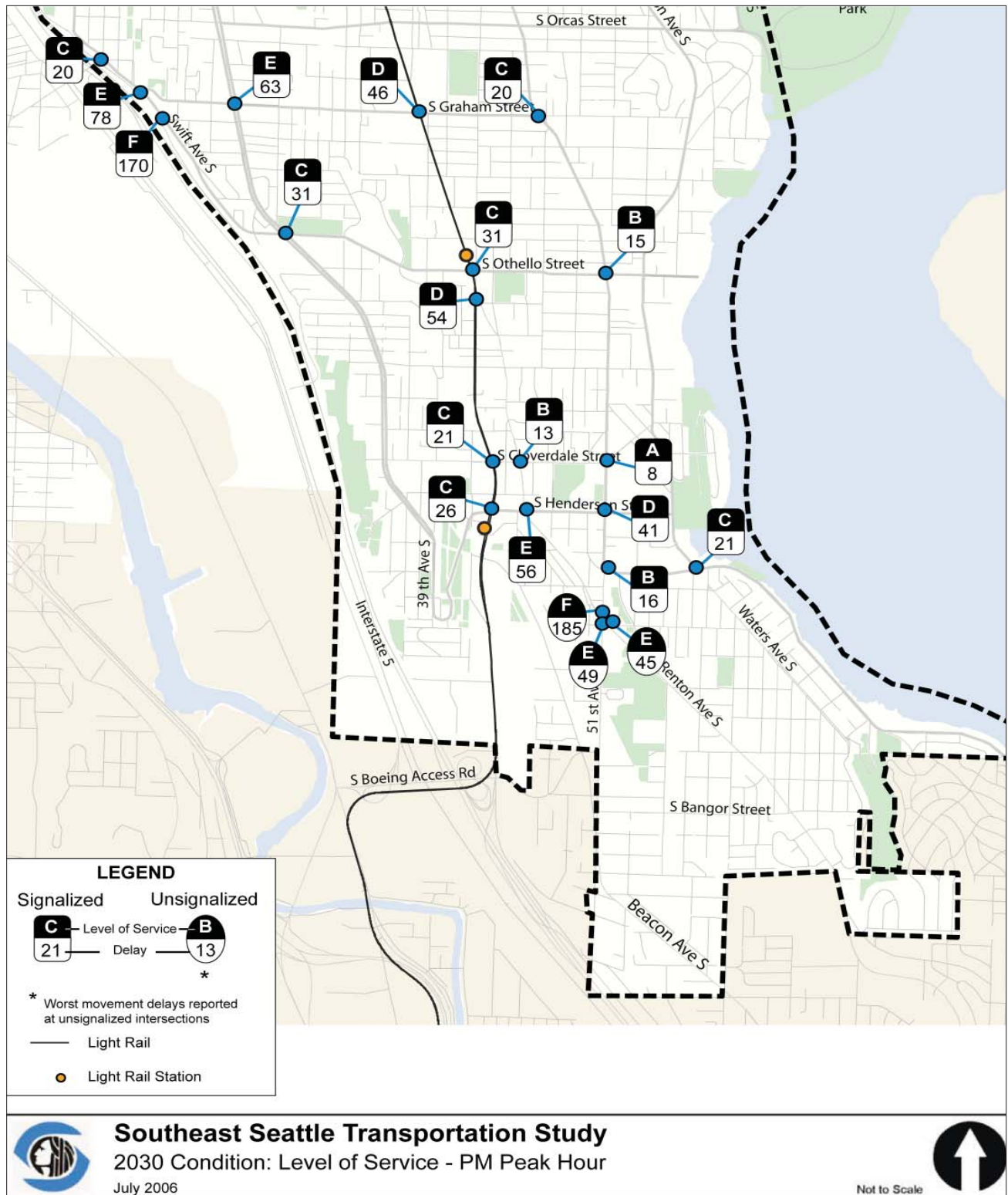


Figure 27: South Study Area - Intersection Analysis Results:
 Peak Hour 2030 Level-of-Service and Seconds of Delay
 Source: Mirai

Cost Estimates

The project recommendations prepared for this study vary greatly with regards to level of detail. Some projects, such as Project #51, bicycle access across I-5, are too preliminary to detail the type of structure necessary or where it might be built. For others, such as Project #5, reconfigure the intersection of Beacon Ave. S. and 17th Ave. S, more detailed concepts have been developed, but no formal design work has been done.

Developing cost estimates for the recommended projects, therefore, can only be done at a sketch planning level of detail. The resulting estimates are rough figures, helpful in giving SDOT and the public a general idea of the order of magnitude of project costs, as well as how projects might compare to each other. It is important to note, however, that final project costs will depend on the final designs prepared for each of the recommended projects, which may vary substantially from the conceptual designs presented here.

How cost estimating is done

When a project is ready to go out to bid, Seattle Department of Transportation (SDOT) prepares a detailed cost estimate based on literally hundreds of individual elements. Each element is assigned a 'unit cost' which is multiplied by a 'quantity' to calculate the estimate. Unit costs are adjusted periodically to reflect actual market conditions. Quantities are developed as part of the design work and are most commonly measured in square feet, lineal feet, square yards, cubic yards, or on a per item basis.

A few examples of 2007 unit prices applied to SDOT projects illustrate the complexity of the cost estimating process and why detailed designs are required to prepare detailed estimates:

- Pavement, cement concrete CL 6.5 (12 in): \$110 per square yard. (In all there are 29 different types of concrete pavement that might be specified.)
- Gate valve for water main, 4 inch: \$500 each. (There are five sizes of gate valves, seven sizes of butterfly valves, and one type of valve box.)
- Erosion control topsoil Type A: \$50 per cubic yard. (There are only two types of topsoil.)
- Roadside planting, coniferous evergreen tree, 8 ft to 10 ft: \$230 each. (Thirteen different types/sizes of trees are specified.)
- Temporary traffic control: \$60 per hour.

Cost estimates for SETS projects












SETS project costs were estimated in 2007 dollars based on a simplified schedule of unit costs. For example, instead of more than thirty possible storm drain and sanitary sewer elements, SETS aggregated estimates into two categories, "Storm Drainage – New" and "Storm Drainage – Modify" and assigned each a single cost per lineal foot. Similarly, "Landscaping, Irrigation, Planters and Restoration" is single unit cost item, calculated by lineal foot.

Quantities for SETS projects were estimated based on conceptual sketches, supplemented where available by SDOT's existing sketches of the right-of-way. Unit costs include material and labor. If additional right-of-way is needed to construct a project, right-of-way purchase costs are calculated based on square feet. Costs for mobilization, traffic control, and contingency are all calculated as a percentage of construction costs. Engineering/management is calculated as a percentage of construction and right-of-way costs. Surveying and design are not included in the project cost estimates.

8. Project Matrix



8. PROJECT MATRIX

Project #	Location	Project description	MODE				BENEFIT							
														
1	Beacon Ave. S. & 14th Ave. S.	North Beacon Hill Urban Village Improve safety at intersection	●	●	●	●	●	●	●	●	●	●	●	●
2	15th Ave S. - Beacon Ave. S. to S. Stevens St.	North Beacon Hill Urban Village Calm traffic and add urban design in corridor with High Collision Location	●	●	●	●	●	●	●	●	●	●	●	●
3	Beacon Ave. S. & S. Lander St.	North Beacon Hill Urban Village Modify street to create public plaza and designate one-way street	●			●	●	●	●	●	●	●	●	●
4	Beacon Ave. S. & S. McClellan St.	North Beacon Hill Urban Village Add missing sidewalk link	●			●	●	●	●	●	●	●	●	●
5	Beacon Ave. S. & 17th Ave. S.	North Beacon Hill Urban Village Improve safety at intersection	●	●	●	●	●	●	●	●	●	●	●	●
6	Beacon Ave. S. & S. Stevens St.	North Beacon Hill Urban Village Improve safety at High Collision Location	●	●	●	●	●	●	●	●	●	●	●	●
7	Beacon Ave. S: 14th Ave. S. to S. Stevens St.	North Beacon Hill Urban Village Improve streetscape	●	●	●	●	●	●	●	●	●	●	●	●
8	43rd Ave. S. & S. Othello St.	MLK at Holly Urban Village Improve safety at High Collision Location	●	●		●	●	●	●	●	●	●	●	●
9	Renon Ave. S. & 43rd Ave S.	MLK at Holly Urban Village Improve safety at intersection and create safe pedestrian/ bicycle route to light rail station	●	●		●	●	●	●	●	●	●	●	●





















Project #	Location	Project description	MODE				BENEFIT							
														
10	S. McClellan St: 23rd Ave. S. to Rainier Ave. S.	North Rainier Urban Village Add missing sidewalk link	●		●	●	●	●	●	●				
11	S. McClellan St: Rainier Ave. S. to Mt. Baker Blvd.	North Rainier Urban Village Calm traffic, improve streetscape	●	●		●	●	●	●	●				
12	S. College St: 22nd Ave. S. to Rainier Ave. S.	North Rainier Urban Village Improve safety at two High Collision Locations	●		●							●		
13	MLK: S. Massachusetts St. to S. McClellan St.	North Rainier Urban Village Construct non-motorized trail	●	●						●	●			
14	S. Alaska St: MLK to Rainier Ave. S.	Columbia City Urban Village Improve streetscape	●			●				●	●			
15	57th Ave. S. near S. Fletcher St.	Rainier Beach Urban Village Improve safety and calm traffic at intersection	●		●					●				
16	Renton Ave. S. & S. Roxbury St. / 51st Ave. S.	Rainier Beach Urban Village Construct roundabout at High Collision Location	●		●					●			●	
17	Rainier Ave. S. & S. Dearborn St.	Rainier Reduce delay, improve safety and add bicycle/pedestrian access at congested High Collision Location	●	●	●					●			●	
18	Rainier Ave. S. & I-90 ramps	Rainier Improve safety at freeway access ramps	●		●					●			●	

Table 9: Project Matrix

Refer to Page 176 for Benefit descriptions.

8. PROJECT MATRIX

Project #	Location	Project description	MODE				BENEFIT								
															
19	Rainier Ave. S. Et S. Massachusetts St.	Rainier Improve safety at intersection	●	●	●	●	●	●	●	●	●	●	●	●	●
20	Rainier Ave. S. Et 21st Ave. S., S. State St. and S. Grand St.	Rainier Improve safety at intersection	●	●	●	●	●	●	●	●	●	●	●	●	●
21	Rainier Ave. S. Et 22nd Ave. S., S. Holgate St. and S. Plum St.	Rainier Improve safety, reduce turning speeds at intersection	●	●	●	●	●	●	●	●	●	●	●	●	●
22	Rainier Ave. S. Et 23rd Ave. S.	Rainier Improve safety at High Collision Location	●	●	●	●	●	●	●	●	●	●	●	●	●
23	Rainier Ave. S. Et S. Walker St.	Rainier Improve safety, reduce pavement and add landscaping at intersection	●	●	●	●	●	●	●	●	●	●	●	●	●
24	Rainier Ave. S. Et Martin Luther King Jr. Way S.	Rainier Improve safety at intersection	●	●	●	●	●	●	●	●	●	●	●	●	●
25	Rainier Ave. S. Et S. Walden St.	Rainier Add pedestrian lead to signal at High Collision Location	●	●	●	●	●	●	●	●	●	●	●	●	●
26	Rainier Ave. S. Et S. Genesee St.	Rainier Improve safety at High Collision Location	●	●	●	●	●	●	●	●	●	●	●	●	●
27	Rainier Ave. S. Et S. Oregon St.	Rainier Add pedestrian signal at High Collision Location	●	●	●	●	●	●	●	●	●	●	●	●	●























Project #	Location	Project description	MODE				BENEFIT									
																
28	Rainier Ave. S. to S. Genesee St. to S. Alaska St.	Rainier Reconfigure traffic lanes for on-street parking	●		●	●	●		●							
29	Rainier Ave. S. to S. Alaska St. to S. Cloverdale St.	Rainier Consider long-range conversion from four-lanes to three-lanes; improve transit speed and reliability	●	●	●	●	●		●	●	●	●				
30	Rainier Ave. S. & 39th Ave. S.	Rainier Add pedestrian signal at High Collision Location	●			●			●	●	●					
31	Rainier Ave. S. & 42nd Ave. S. / S. Brandon St.	Rainier Realign intersection	●		●	●			●	●	●	●				
32	Rainier Ave. S. to S. Lucille St. to S. Juneau St. (Hillman City)	Rainier Add urban design features and improve pedestrian safety in business district	●	●	●	●			●	●	●	●				
33	Rainier Ave. S. & S. Graham St. / 46th Ave. S.	Rainier Improve safety at High Collision Location	●		●	●			●	●	●	●				
34	Rainier Ave. S. & S. Morgan St. / 47th Ave. S.	Rainier Improve safety at intersection	●		●	●			●	●	●	●				
35	Rainier Ave. S. & S. Holly St.	Rainier Improve crossing conditions at intersection with high use by elderly and children	●		●	●			●	●	●	●				

Table 9: Project Matrix

Refer to Page 176 for Benefit descriptions.

8. PROJECT MATRIX

Project #	Location	Project description	MODE				BENEFIT							
														
36	Rainier Ave. S. Et S. Rose St. / Wabash Ave. S.	Rainier Improve safety at intersection	●	●	●	●	●	●	●	●	●			
37	Rainier Ave. S. Et S. Thistle St. / Rainier Pl. S.	Rainier Improve safety at intersection	●	●	●	●	●	●	●	●	●	●		
38	Rainier Ave. S. Et Fisher Pl. S.	Rainier Extend and improve pedestrian connection in urban village	●	●		●	●	●	●	●	●	●		
39	Rainier Ave. S. Et 52nd Ave. S. / Mapes Walkway	Rainier Extend and improve pedestrian connection in urban village	●	●		●	●	●	●	●	●	●		
40	Rainier Ave. S. Et 51st Ave. S. / Sturtevant Ave. S.	Rainier Improve safety at High Collision Location	●	●	●	●	●	●	●	●	●	●	●	
41	Rainier Ave. S: 52nd Ave. S. to Ithaca Pl. S.	Rainier Improve safety and accessibility in urban village corridor	●	●	●	●	●	●	●	●	●	●	●	
42	Rainier Ave. S. Et Seward Park Ave. S.	Rainier Improve safety at intersection	●	●	●	●	●	●	●	●	●	●	●	
43	Rainier Ave. S. Et 57th Ave. S.	Rainier Improve safety at intersection	●	●	●	●	●	●	●	●	●	●	●	
44	Rainier Ave. S. Et Cornell Ave. S.	Rainier Improve safety at intersection	●	●	●	●	●	●	●	●	●	●	●	





















Project #	Location	Project description	MODE				BENEFIT								
															
45	Pedestrian lighting along Rainier Ave. S.	Rainier Improve safety with pedestrian lighting along corridor	●			●	●	●							
46	S. Spokane St: Columbian Way S. to 23rd Ave. S.	Beacon Hill Address delays in congested corridor			●										
47	S. Oregon St. Et Columbian Way S. / 15th Ave. S.	Beacon Hill Improve safety at High Collision Location	●	●	●	●	●	●							
48	Beacon Ave. S. Et S. Columbian Way	Beacon Hill Improve safety at High Collision Location	●		●			●					●	●	
49	Beacon Ave. S. Et S. Orcas St.	Beacon Hill Improve safety at High Collision Location	●		●			●					●	●	
50	Swift Ave. S: 15th Ave. S. to S. Warsaw St.	Beacon Hill Reconfigure intersections and provide bicycle access across I-5		●	●			●	●						●
51	Bicycle access across I-5	Beacon Hill Connect Chief Sealth Trail across I-5, connect to I-90 Trail	●	●				●							●

Table 9: Project Matrix

Refer to Page 176 for Benefit descriptions.

8. PROJECT MATRIX

Project #	Location	Project description	MODE				BENEFIT								
															
52	31st Ave. S: Yesler Way to S. McClellan St.	North Rainier Valley Slow traffic and improve safety on arterial	●	●	●	●	●	●	●	●	●	●			
53	23rd Ave S: S. Waite St. to S. College St.	North Rainier Valley Provide safe pedestrian route	●	●	●		●								
54	S. McClellan St. & Mt. Baker Blvd.	North Rainier Valley Improve safety at intersection and add bicycle lanes	●	●			●								
55	Wilson Ave. S. & S. Dawson St.	North Rainier Valley Construct roundabout	●	●	●		●			●			●		
56	Seward Park Ave. S. & S. Juneau St.	North Rainier Valley Calm traffic and improve safety near park entrance	●	●	●		●								
57	S. Graham St. & 39th Ave. S, 42nd Ave. S, 44th Ave. S.	North Rainier Valley Improve safety along arterial street with High Collision Location	●				●								
58	Seward Park Ave. S: S. Dawson St. to Rainier Ave. S.	South Rainier Valley Improve bicycle route		●						●					
59	Renton Ave. S. & 44th Ave. S. / S. Thistle St.	South Rainier Valley Improve safety by closing sharply angled street end at intersection	●	●	●										





















Project #	Location	Project description	MODE				BENEFIT									
																
60	Renton Ave. S. Et S. Ryan St.	South Rainier Valley Improve pedestrian safety	●				●									
61	Waters Ave. S: 57th Ave. S. to S. Ryan St.	South Rainier Valley Improve pedestrian safety	●	●	●											
T62	Rainier Ave. S: Bus signal priority and Complete Streets	Improve transit speed and reliability				●					●	●	●	●	●	●
T63	Study area: Bus stop location and consolidation	Improve transit speed and reliability				●										●
T64	Rainier Ave. S. Et Martin Luther King Jr. Way S: Bus queue jump	Improve transit speed and reliability				●										●
T65	Study area: Fare payment methods and boardings	Improve transit speed and reliability				●										●
T66	Study area: Help buses merge into traffic	Improve transit speed and reliability				●										●
T67	Study area: Better bus stops	Improve transit speed and reliability				●										●
T68	Rainier Beach: Bus connections to Henderson Station	Provide convenient access to Link light rail	●	●												
T69	S. Graham St: East - west bus corridor	Preserve transit corridors for future growth				●										

Table 9: Project Matrix

Refer to Page 176 for Benefit descriptions.

8. PROJECT MATRIX

Project #	Location	Project description	MODE				BENEFIT							
														
T70	Rainier Ave. S. Et 23rd Ave. S: Preserve street car corridors	Preserve transit corridors for future growth				•		•						
ST71	Study area: Street types, overlays and designations	Develop consistent street designation program	•	•	•	•	•	•	•	•	•	•	•	•
ST72	Study area: SEA Streets	Develop and implement SEA Streets Plan	•	•	•								•	