Sounder Stations Access Study

Report

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Prepared for:

SOUNDTRANSIT

Prepared by the URS Team

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Chapter 1: Introduction

Why did we conduct this planning study?

In November 1996, voters approved the Sound Transit *Sound Move* (Sound Transit 1996) funding package, a comprehensive regional transit plan that comprises nearly 100 interrelated capital and service projects. This plan includes a mix of transportation improvements such as high-occupancy vehicle (HOV) lane access improvements, Sound Transit Express (ST Express) bus routes, Sounder Commuter Rail, and Link light rail. Sounder Commuter Rail service runs 82 miles from Everett to Tacoma/Lakewood. Sounder service between Seattle and Tacoma started in 2000, and service between Everett and Seattle began in 2003. Over 10,500 commuters use this service daily during the peak commute times and it is anticipated that this number will continue to grow.

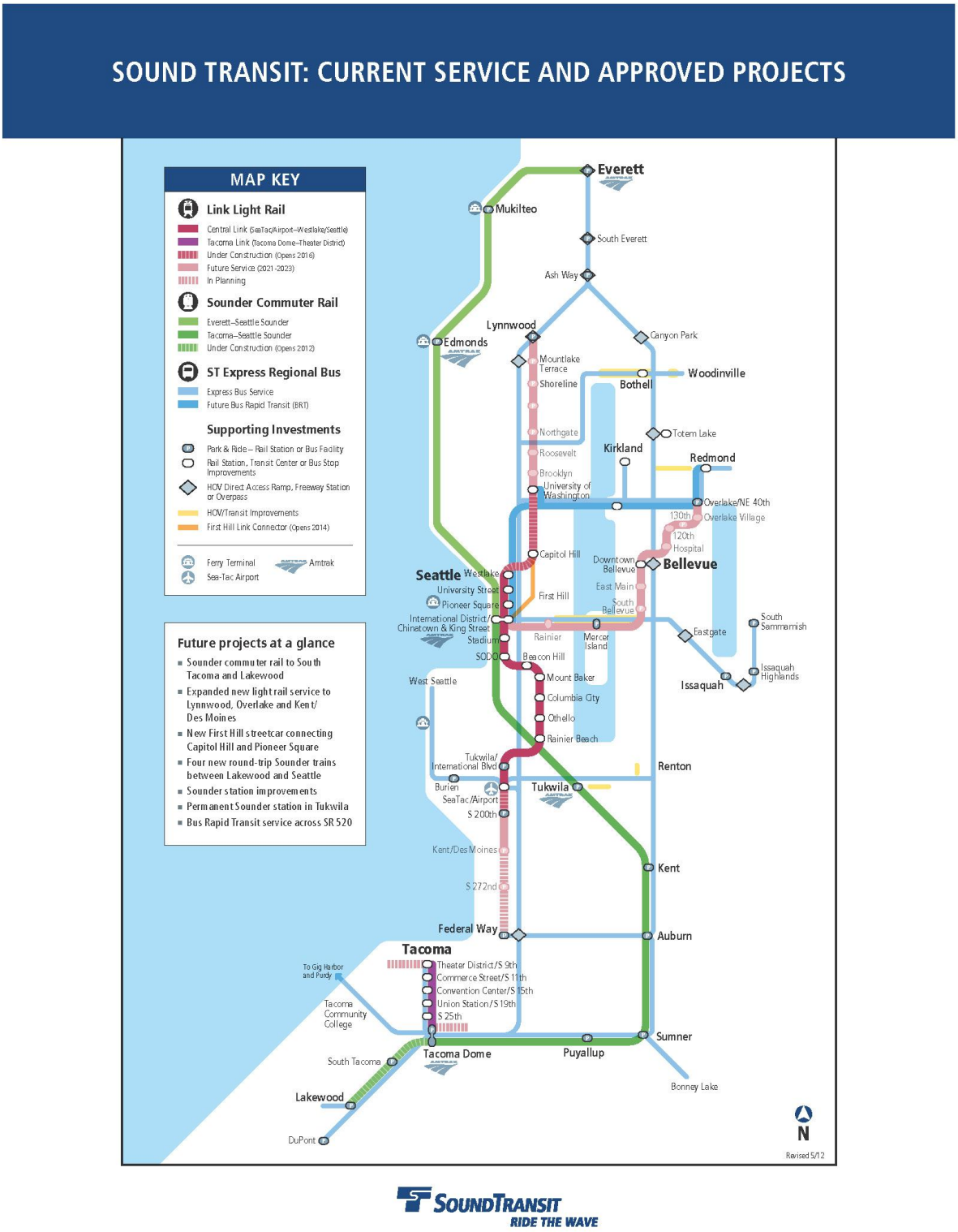
In November 2008, voters approved ST2, which provides immediate and long-term funding for significant express bus growth, as well as launching major light rail, commuter rail, and station access expansions. Figure 1-1 shows Sound Transit's current service and future projects. Part of the funding package is targeted to improve access to the regional transit system at eight Sounder Commuter Rail stations: Mukilteo, Kent, Auburn, Sumner, Puyallup, Tacoma Dome, South Tacoma, and Lakewood. Riders, local jurisdictions, and the community have all expressed the desire for investment in improved station access. Concerns include:

- Parking lots that operate at or above capacity
- Impacts on local streets, neighborhoods, and downtowns
- Reducing greenhouse gas emissions by encouraging walking, biking, transit connection, and carpooling to Sounder stations

As a response to these concerns and inquiries, Sound Transit has advanced the concept of station access solutions. This Sounder Stations Access Study implements this approach by addressing how much demand can be accommodated by modes other than by autos parking at the stations. This report will determine how much shift away from single-occupancy vehicles could occur by 2030 if capital investments are made to improve access via alternative modes, such as walking or bicycling, while acknowledging stations needing additional parking. The Sounder Stations Access Study was started in 2010 and concluded in 2012; during this time service changes to connecting bus routes were implemented and are described in Chapter 2 of this report in *italics.*

Sounder trains provide weekday peak service between Tacoma and Seattle (which will be extended to Lakewood in 2012) and between Everett and Seattle. Sounder also serves select major weekend events such as Mariners, Seahawks, and Sounders FC games. Event service typically includes one train in each direction between Tacoma and Seattle and between Everett and Seattle. Currently, free parking is provided at Sounder stations except for King Street Station, which does not provide a Sound Transit parking lot. At the time of this study, adult fares were between $2.75 and $4.75, depending on the length of the trip.

Figure 1-1: Sound Transit Current Service and Future Projects



What will you find in this report?

The Sounder Stations Access Study consisted of seven phases:

- Phase 1 – Project Management Plan (on file with Sound Transit)
- Phase 2 – Inventory of Existing Conditions/Data Collection (Chapter 2)
- Phase 3 – Station Access Deficiency Assessment (Chapter 2)
- Phase 4 – Evaluation Criteria (Chapter 3)
- Phase 5 – Alternatives Analysis (Chapter 4)
- Phase 6 – Station Access Improvements Plan (Chapter 5)
- Phase 7 – Support Staff Recommendation

For the most part, stations are considered separately in terms of their access-related data, challenges, and improvement plans—there are no comparisons drawn between stations. This is due in part to the differences between stations (for example, the station-area population and employment/housing mix), and also to keep a constant, un-biased review for each station.

All maps and aerial photographs presented in this report are oriented such that north is at the top of the figure.

Chapter 2: Inventory of Existing Conditions/Data Collection and Access Deficiency Assessment (Phases 2 and 3)

This chapter contains the products of efforts conducted for Phases 2 and 3 of the Sounder Stations Access Study. For Phase 2, the following existing plans and policy documents were reviewed, including:

- ST2 Plan
- ST2: A Mass Transit Guide
- ST Parking Pricing Study (2009)
- Origin-destination information
- ST 2009 Fare Payment Survey
- Local jurisdictions' comprehensive plans, zoning ordinances, downtown plans, transportation and non-motorized plans, and corridor plans or studies

Other components of Phase 2 include data collection for each station, rider surveys, and public outreach through a series of open houses and stakeholder interviews. Through these efforts, the existing conditions or the "state" of each Sounder Station, as well as the issues or opportunities at each Sounder Station, are described in this chapter. A pedestrian and bicycle assessment and a public open house summary also are included.

An access deficiency assessment prepared for Phase 3 for each of the eight Sounder stations analyzed for the project is also included in this chapter. To develop the deficiency assessment, ridership demand and access modes were analyzed by station based on station-specific design, such as parking capacity, feeder transit capacity, bicycle capacity and station-area characteristics such as pedestrian and bicycle connectivity, major barriers (e.g., freeways, railroad tracks) and broader access opportunities and constraints (primarily for the automobile).

Evaluating each station's access performance involved a three-step process:

1. Assessing current and forecast demand by mode and comparing to industry averages
2. Identifying capacity constraints from data collected in Phase 2
3. Identifying deficiencies in capacity to accommodate forecast demand

How have we reached the community?

Beginning in 2010, Sound Transit reached out to the city governments in the cities where the eight stations in this study are located. Sound Transit staff met with local staff and elected officials to brief them on the study. Sound Transit reviewed the scope of the study, the

schedule and the opportunities for public input with staff and elected officials from each of the host cities.

In addition, Sound Transit staff attended various regional group meetings, such as the Valley Mayors group and the South County Area Transportation Board, to brief elected officials on the study. Sound Transit has continued to provide briefings and respond to requests for information on the Access Study (see Chapter 4).

Sound Transit hosted a series of public open house events in 2011, to secure feedback to help inform possible future Sound Transit investments at the eight stations. The objectives of the open houses were to generate awareness, encourage public participation, and solicit feedback. A total of six open houses were held in the following cities:

- Kent – Wednesday, January 26
- Auburn – Thursday, January 27
- Sumner – Wednesday, January 19
- Puyallup – Thursday, January 20
- Tacoma – Tuesday, January 18
- Lakewood – Tuesday, January 25

The format of the open house events featured six information stations;

- Station One: Basic information about Sound Transit; funding, routes, ridership, budget and future area investments
- Station Two: Overview about the Access Study and its goals, desired outcomes and timelines
- Station Three: An aerial map with information about the existing conditions at each station and opportunity to discuss potential improvements
- Station Four: Collecting feedback about how people travel to the stations
- Station Five: Opportunity for Sound Transit staff and public to engage and interact
- Station Six: Bike Station and other third-party/partner organizations (Pierce County Metro, etc.)

Rider surveys were also collected at the study stations in early November 2010 (Appendix C – Winter 2011 Public Outreach and Open House Summary). Additional outreach was conducted in fall 2011 and winter 2012 (Chapters 4, 5, and Appendix G).

What is the state of each Sounder station?

This chapter presents information for each of the eight Sounder stations collected in fall 2010, from north (Mukilteo) to south (Lakewood). The state of each station is reported in terms of a brief inventory of the facility, transit connections, the local jurisdiction's relevant goals and policies for the station area, mode splits, rider surveys, field observations, proposed future developments in the vicinity of the station, and detailed traffic counts. Transit connections are classified using the following wait times: good (5-10 minutes), acceptable (10-20 minutes), or poor (less than 5 minutes, greater than 20 minutes, or does not connect with all trains).

The modeling was based on the transit service in place at the time of the rider surveys (November 2010), which is described in this chapter. However, later changes in transit service are noted in *italics* in each station's summary section.

The modes from which riders accessed morning trains are described in detail, and based on field observations and rider surveys (Appendix B). In the afternoon, Sounder provides seven southbound trains from Seattle to Tacoma and two reverse direction trains, departing from 3:15 to 6:15 p.m. There are four northbound trains from Seattle to Everett in the afternoons departing from 4:05 to 5:35 p.m. In addition to Sounder service, Amtrak Rail Plus provides one northbound train and one southbound train between Everett and Seattle in both the morning and afternoon. See Tables 2-1 and 2-2 for schedules that were in place at the time of the study.

Table 2-1: Sounder Everett-Seattle Schedules (weekdays only)

Southbound					
Train		**Everett Station**	**Mukilteo Station**	**Edmonds Station**	**Seattle**
Sounder	1701	5:45 a.m.	5:56 a.m.	6:11 a.m.	6:44 a.m.
Sounder	1703	6:15 a.m.	6:26 a.m.	6:41 a.m.	7:14 a.m.
Sounder	1705	6:45 a.m.	6:56 a.m.	7:11 a.m.	7:44 a.m.
Sounder	1707	7:15 a.m.	7:26 a.m.	7:41 a.m.	8:14 a.m.
Northbound					
Train		**Seattle**	**Edmonds Station**	**Mukilteo Station**	**Everett Station**
Sounder	1700	4:05 p.m.	4:32 p.m.	4:47 p.m.	5:04 p.m.
Sounder	1702	4:33 p.m.	5:00 p.m.	5:15 p.m.	5:32 p.m.
Sounder	1704	5:05 p.m.	5:32 p.m.	5:47 p.m.	6:04 p.m.
Sounder	1706	5:35 p.m.	6:02 p.m.	6:17 p.m.	6:34 p.m.

Table 2-2: Sounder Tacoma-Seattle Schedules (weekdays only)

Northbound							
Train	**Tacoma**	**Puyallup Station**	**Sumner Station**	**Auburn Station**	**Kent Station**	**Tukwila Station**	**Seattle**
1500	4:55 a.m.	5:07 a.m.	5:12 a.m.	5:20 a.m.	5:27 a.m.	5:34 a.m.	5:54 a.m.
1502	5:35 a.m.	5:47 a.m.	5:52 a.m.	6:01 a.m.	6:08 a.m.	6:15 a.m.	6:34 a.m.
1504	6:00 a.m.	6:12 a.m.	6:17 a.m.	6:26 a.m.	6:33 a.m.	6:40 a.m.	6:59 a.m.
1506	6:25 a.m.	6:37 a.m.	6:42 a.m.	6:51 a.m.	6:58 a.m.	7:05 a.m.	7:24 a.m.
1508	6:50 a.m.	7:02 a.m.	7:07 a.m.	7:16 a.m.	7:23 a.m.	7:30 a.m.	7:49 a.m.
1510	7:20 a.m.	7:32 a.m.	7:37 a.m.	7:45 a.m.	7:52 a.m.	7:59 a.m.	8:19 a.m.
1512	8:00 a.m.	8:12 a.m.	8:17 a.m.	8:25 a.m.	8:32 a.m.	8:39 a.m.	8:59 a.m.
1514	4:25 p.m.	4:37 p.m.	4:42 p.m.	4:50 p.m.	4:57 p.m.	5:04 p.m.	5:23 p.m.
1516	5:00 p.m.	5:12 p.m.	5:17 p.m.	5:25 p.m.	5:32 p.m.	5:39 p.m.	5:58 p.m.
Southbound							
Train	**Seattle**	**Tukwila Station**	**Kent Station**	**Auburn Station**	**Sumner Station**	**Puyallup Station**	**Tacoma**
1501	6:10 a.m.	6:22 a.m.	6:29 a.m.	6:36 a.m.	6:45 a.m.	6:49 a.m.	7:08 a.m.
1503	6:50 a.m.	7:02 a.m.	7:09 a.m.	7:16 a.m.	7:25 a.m.	7:29 a.m.	7:48 a.m.
1505	3:15 p.m.	3:27 p.m.	3:34 p.m.	3:41 p.m.	3:50 p.m.	3:54 p.m.	4:14 p.m.
1507	3:50 p.m.	4:02 p.m.	4:09 p.m.	4:16 p.m.	4:25 p.m.	4:29 p.m.	4:49 p.m.
1509	4:20 p.m.	4:32 p.m.	4:39 p.m.	4:46 p.m.	4:56 p.m.	5:00 p.m.	5:19 p.m.
1511	4:45 p.m.	4:57 p.m.	5:04 p.m.	5:11 p.m.	5:21 p.m.	5:25 p.m.	5:44 p.m.
1513	5:12 p.m.	5:24 p.m.	5:31 p.m.	5:38 p.m.	5:48 p.m.	5:52 p.m.	6:11 p.m.
1515	5:40 p.m.	5:52 p.m.	5:59 p.m.	6:06 p.m.	6:16 p.m.	6:20 p.m.	6:39 p.m.
1517	6:15 p.m.	6:27 p.m.	6:34 p.m.	6:41 p.m.	6:41 p.m.	6:54 p.m.	7:14 p.m.

Sounder has two bicycle tie-downs per car. Two additional bikes are allowed on each car that must be held in place securely by the cyclist. Sound Transit policy allows up to four bicycles on each of the cars per train, for a total of 28 bicycles on Tacoma-Seattle trains (seven cars), and a total of 16 bicycles on Everett-Seattle trains (four cars).

Mukilteo

The Mukilteo Sounder Station is located near the waterfront and Washington State Ferry (WSF) terminal, and is designed to serve riders coming from the local area in and around Mukilteo and the Mukilteo-Clinton ferry.

Sounder trains depart each weekday morning from Mukilteo southbound to Seattle at 5:56, 6:26, 6:56, and 7:26 a.m. Figure 2-1 shows the location of Mukilteo Station.

Figure 2-1: Mukilteo Station (920 1st Street)

There are 63 surface parking stalls, six bicycle rack spaces and no bicycle lockers. There is space available for up to eight vehicles at any one time for passenger drop-off or pick-up.

Transit Connections

The Mukilteo Station is served by Community Transit (CT) local and regional routes, and a local Everett Transit route. The WSF system and Island Transit on Whidbey Island provide opportunities for inter-modal travel through this station. All of these connections are located at the WSF terminal, approximately 1,000 feet northwest of the station. Changes in transit service made since 2010 are noted in *italics*.

CT Route 113 provides all-day service between Mukilteo and Lynnwood, approximately every 20 minutes in both directions. This route provides reasonable access to Sounder, particularly on the northern end of the route; for example, from the Harbor Point area and north to the WSF terminal. There are transfer connections for all four afternoon Sounder trips and two of the morning trips. In the morning, the bus arrives 13 minutes before the second train, 18 minutes before the third train, and 10 minutes before the fourth train. In the afternoon, the bus is scheduled to depart eight minutes after the arrival of the train. *The southern part of CT Route 113 has been truncated by eliminating the part of the route between the Ash Way Park-and-Ride and Lynnwood.*

CT Route 417 provides peak period, peak direction service between the Mukilteo ferry terminal and downtown Seattle, competing with Sounder. Route 417's scheduled travel times are almost 20 minutes longer than Sounder (approximately 68 minutes vs. Sounder's 48 minutes) to the south end of downtown Seattle. *Service has been reduced on CT Route 417, with morning trips reduced from five to four and afternoon trips reduced from seven to five.*

Island Transit Route 1 provides all-day, bi-directional service on Whidbey Island between Oak Harbor and the Clinton ferry dock. There are six morning and six afternoon trips during peak commute times and service every 60 minutes at midday with "at the boat" loading on the dock. Whidbey Island has fairly robust transit, carpool, and vanpool usage, making this a potentially significant market although it is outside of the Puget Sound Regional Transit Authority district.

Everett Transit Route 70 and CT Routes 190 and 880/885 provide peak-period-only service away from Mukilteo in the morning and toward Mukilteo in the afternoon. Therefore, these routes have limited potential for transfers to and from Sounder. *CT Route 190 has been eliminated.*

Origin and Destination

Thirty of the passengers surveyed who boarded at Mukilteo Station one morning during the first week of November 2010 returned surveys. Table 2-3 shows the city of origin for the passengers surveyed. Of these 30 passengers, 80% disembarked at King Street Station.

Table 2-3: Mukilteo Passenger City of Origin

City	Boardings	% of Boardings
Clinton	4	13
Everett	7	23
Langley	4	13
Mukilteo	12	40
Other	3	10
TOTAL	30	100

Rider Survey Information

Table 2-4 summarizes the station arrival access mode data from the passenger surveys. Approximately two-thirds of the passengers who returned surveys drove themselves to the station on that day.

Table 2-4: Mukilteo Sounder Access

Mode	% of Arrivals
Drive	66
Drop-off	7
Carpool	0
Feeder Transit	24
Bike	0
Walk	0
Other/Sounder Reverse	3
TOTAL	100

Station Area Arrival Access Mode

Arrival mode information was gathered by direct observation at the station on the morning of November 2, 2010 from approximately 4:30 to 7:30 a.m., when the last train left the station. A total of 109 arriving passengers were observed. Table 2-5 summarizes the station arrival mode split data.

Approximately half of the arriving passengers drove themselves to the station on that day. The substantial number of passengers arriving on foot at the Sounder station were observed coming directly from the Mukilteo-Clinton ferry terminal.

Table 2-5: Mukilteo Arrival Mode

Mode	Arrivals	% of Arrivals
Auto	57	52.3
Feeder Transit	0	0.0
Bicycle	1	0.9
Drop-off	10	9.2
Walk	41	37.6
Train	0	0.0
TOTAL	109	100.0

Observations in the Field

In general, passenger arrivals were evenly spaced across the four southbound trains. The ferry and Sounder schedules were generally well-coordinated. The station parking area was about 90% full following the departure of the fourth and last southbound train.

Traffic Counts

One intersection near the station (1st Street at the station parking entrance; see Figure 2-1) was counted between 6:30 and 8:30 a.m. on November 8, 2010. At this intersection, the peak hour for total arriving traffic occurred between 7:25 and 8:25 a.m., when 61 vehicles entered the intersection at about one per minute, with the majority (42) turning from southbound 1st Street into the Sounder station parking/drop-off area. Volumes are very low at this intersection because three of the four legs function effectively as driveways.

Jurisdiction Goals and Policies

The Mukilteo Station is designated as Commercial with a Mixed Use Overlay by the City's Comprehensive Plan and is zoned Waterfront Mixed Use.

Mukilteo Comprehensive Plan. Mukilteo revised its Comprehensive Plan in 2009. The original plan was adopted in 1986 and amended in 1995 to address Growth Management Act (GMA) requirements (City of Mukilteo 2010). The Mukilteo Commuter Rail Station is located on the Burlington Northern Santa Fe Railway (BNSF) mainline along the Puget Sound shoreline. The City adopted its plan for the shoreline area as a waterfront mixed use zoning district and is expecting re-development of the waterfront area within the next ten years, anchored by a multi-modal transportation terminal for ferry, bus, and commuter rail riders. Per the GMA, Mukilteo is scheduled to update its Comprehensive Plan by June 30, 2015.

The commuter rail station is an integral piece of the multi-modal transportation terminal. The first phase of construction on the commuter rail station has been completed by Sound Transit.

WSF issued a Draft Environmental Impact Statement (EIS) in January 2012 on three options to improve or relocate the ferry terminal.

Specific Comprehensive Plan policies that support inter-modal connectivity to Mukilteo's waterfront and multi-modal terminal include:

- *GD2: Encourage City entryways, commercial development, and redevelopment near the urban waterfront to reflect the waterfront atmosphere of the City.*
- *GD5: Provide public infrastructure and services which are cost-effective, efficient, and sensitive to the environment; and which balance the use of private vehicles, cars/vanpools, public transit and non-motorized modes of transportation, including a comprehensive system of bicycle and pedestrian routes, for the movement of people and goods.*
- *TR2: Concepts within the March 1995 Mukilteo Multimodal/Inter-Modal Terminal and Access Study and the Programmatic Environmental Impact Statement (EIS) prepared by the City of Mukilteo and the Central Waterfront Alternative or any amended master plan adopted by the Mukilteo City Council should be used as the basis for all planning activities related to the proposed Multimodal/Inter-Modal Terminal in downtown Mukilteo. The City should aggressively pursue an alternative route to replace Mukilteo Speedway as the primary vehicular access to the Mukilteo waterfront and the Washington State Ferries terminal in a cooperative effort with WSDOT* [Washington State Department of Transportation] *and the City of Everett.*
- *TR3: Development of the Multimodal/Intermodal terminal and redevelopment of the Tank Farm site, should employ the following urban design techniques: a network of public paths, a waterfront promenade, a chain of waterfront parks, recreational opportunities such as a new marina or visitor dock and boat launch, new mixed use/commercial opportunities, public amenities downtown (e.g. benches, street lights, water fountains, etc.), and pedestrian oriented streetscapes.*
- *TR4: Design of the Multimodal/Intermodal terminal shall remove ferry parking and queuing lanes from SR 525 and shall encourage the use of public transit, high occupancy vehicles (HOV), and pedestrian and bicycle access over private automobile access. The waterfront shall be preserved to the maximum extent possible for development and uses that take advantage of and benefit from being located on the waterfront and which improve on the positive characteristics of the waterfront. Surface parking lots are not such a use and shall be minimized.*
- *TR23: Convenient and secure bicycle parking should be provided in activity and transportation centers to accommodate Multimodal/Inter-Modal connections.*

Mukilteo Downtown Business District Subarea Plan. The Downtown Business District Subarea Plan was adopted in 2009 (City of Mukilteo 2009). Specific non-motorized projects identified in the Mukilteo Plan include:

- *REC-11: Construct a footbridge between Mukilteo Lane and the waterfront at Park Avenue or Loveland Avenue. A bridge from Old Town to the waterfront was a high priority among work session participants. While this is an expensive project, such a bridge might be coordinated with redevelopment and transit improvements on the waterfront.*

Mukilteo Bicycle, Pedestrian and Trails Plan. The Mukilteo Bicycle, Pedestrian and Trails Plan was adopted in 2009 (City of Mukilteo 2008). Specific non-motorized projects identified in the Mukilteo Plan include:

- Waterfront Promenade Multipurpose Trail, Lighthouse Park to Tank Farm
- Waterfront Pedestrian Bridge from 2nd Street to waterfront (same as REC-11 above)

Mukilteo Waterfront Redevelopment. In 1995, the City of Mukilteo City Council adopted the Multimodal/Intermodal Terminal and Access Study, developed by an interagency committee charged with addressing the growing needs of the Washington State Ferry System, the proposed Sound Transit commuter rail station and selling the U.S. Air Force Tank Farm property as surplus (City of Mukilteo 1995). The study provided a plan for:

- Expanding and relocating the WSF terminal, increasing capacity for ferry loading and moving it off of State Route (SR) 525
- Placing a commuter rail platform and a 120-vehicle park-and-ride lot (which was reduced to 80 spaces when the waterfront mixed-use zoning was adopted in 2000, unless parking is provided in a garage or a lot that can be used for shared parking)
- Transferring passengers from other modes, such as bus, taxi, van pool or drop-off
- A multimodal/intermodal station that allows passengers to transfer modes easily by separating vehicles and pedestrians through the use of a second story walkway system
- A marina/visitor moorage, boat launch, and associated parking and services
- Reclaiming public access to the waterfront through a series of parks connected by a pedestrian promenade that will form a mile-long loop trail when the Tank Farm site is connected with the Mukilteo Lighthouse Park, and which also sets aside 20% of the redeveloped area as open space
- Redeveloping Front Street into a pedestrian-oriented waterfront commercial area that emphasizes water-enjoyment activities and allows for mixed use on the south side of Front Street (outside the 200-foot shoreline jurisdiction) where views will not be obstructed

Future Pedestrian and Bicycle Access to Multimodal/Intermodal Terminal. Sound Transit has constructed Phase I of a new commuter rail platform near the central waterfront intermodal site. This project was evaluated and defined in the 1999 Draft and Final EIS for the Everett-Seattle Commuter Rail Project by Sound Transit and the U.S. Department of Transportation, Federal Transit Administration. The completed facility will consist of two platforms serving travel both toward Everett and Seattle, a pedestrian bridge over the tracks connecting the platforms, and associated parking. Phase II to complete the facility is scheduled to begin construction in 2013.

Currently, access is proposed to the terminal site from the existing SR 525 on the north side of the BNSF railroad tracks. The multimodal/intermodal terminal project will be designed to allow for future access from an alternate waterfront route when this new roadway is constructed. The Comprehensive Plan further acknowledges that the SR 525 street bridge just south of the Mukilteo ferry terminal is the responsibility of WSDOT, and that the bridge is functionally obsolete, does not have adequate facilities for bicyclists and pedestrians, and needs to be replaced (although funding at the state level has not yet been made available).

Commute Trip Reduction. Under the Washington State Commute Trip Reduction (CTR) Efficiency Act of 2006, the City is required to administer a CTR program for all employers in Mukilteo with at least 100 employees arriving at a single location during the peak morning commute hours. The goal of CTR is to reduce the number of single-occupancy vehicles (SOVs) traveling during the peak commute hours. CTR incentives include providing transit subsidies, preferential parking for carpools, bicycle lockers and showering facilities, and flexible work schedules.

The specific Mukilteo Comprehensive Plan policy that supports CTR measures is:

- *TR29: The City of Mukilteo should support Community Transit with the adoption of a Commute Trip Reduction Plan for major employers in the city and shall coordinate and work cooperatively with Community Transit, Everett Transit, Snohomish County and other cities in the Southwest Urban Growth Area to implement the Commute Trip Reduction Plans.*

Access Deficiency Assessment

Station Description and Major Barriers:

- Mukilteo Station is located near the Mukilteo Ferry terminal, north of the BNSF rail line from greater Mukilteo. The SR 525 bridge links Mukilteo and the ferry terminal area, providing the only pedestrian and bicycle connection between Mukilteo and the station.
- The existing rail line is a direct barrier to pedestrian and bicycle access to the station from the south.

Station Area Pedestrian and Bicycle Connectivity Assessment:

- Sounder Passenger Access Survey[1] indicates no pedestrian or bicycle trips originating within the 15-minute travel shed.
- 160 employed residents are located within a 15-minute walk and almost 3,700 employed residents are located within a 15-minute bicycle ride of the station. The walk and bicycle catchment areas are shown in Appendix F, Exhibit A.

Feeder Transit Service Limitations (changes in feeder transit service made since 2010 are in italics):

- CT Route 417 competes with Sounder service by providing peak period/direction service between the WSF terminal and downtown Seattle.
- CT Route 113 and Island Transit Route 1 provide transfer connections with Sounder. *The southern portion of CT Route 113 between the Ash Way Park-and-Ride and Lynnwood has been eliminated.*
- Everett Transit Route 70 and CT Routes 190 and 880/885 have limited potential for transfers to and from Sounder due to their travel direction. *CT Route 190 has been eliminated.*
- There is no off-peak service to compliment Sounder service.

Vehicle Access and Network Constraints:

- There are no level-of-service issues in the morning peak at intersections that serve the station.
- The afternoon Sounder trains are scheduled to arrive with enough time for riders to catch the next departing ferry as walk-on passengers. However, this results in a conflict for Sounder park-and-ride users as the only access road to the park-and-ride is through the same intersection as all ferry loading/unloading vehicles. WSF is currently evaluating alternatives to replace or relocate the Mukilteo Ferry Terminal. The build alternatives under consideration are designed to reduce conflicts, congestion, and safety concerns for pedestrians, bicyclists and vehicles; as well as to offer better and safer connections to transit and commuter rail through the connecting second-story bridge structures.

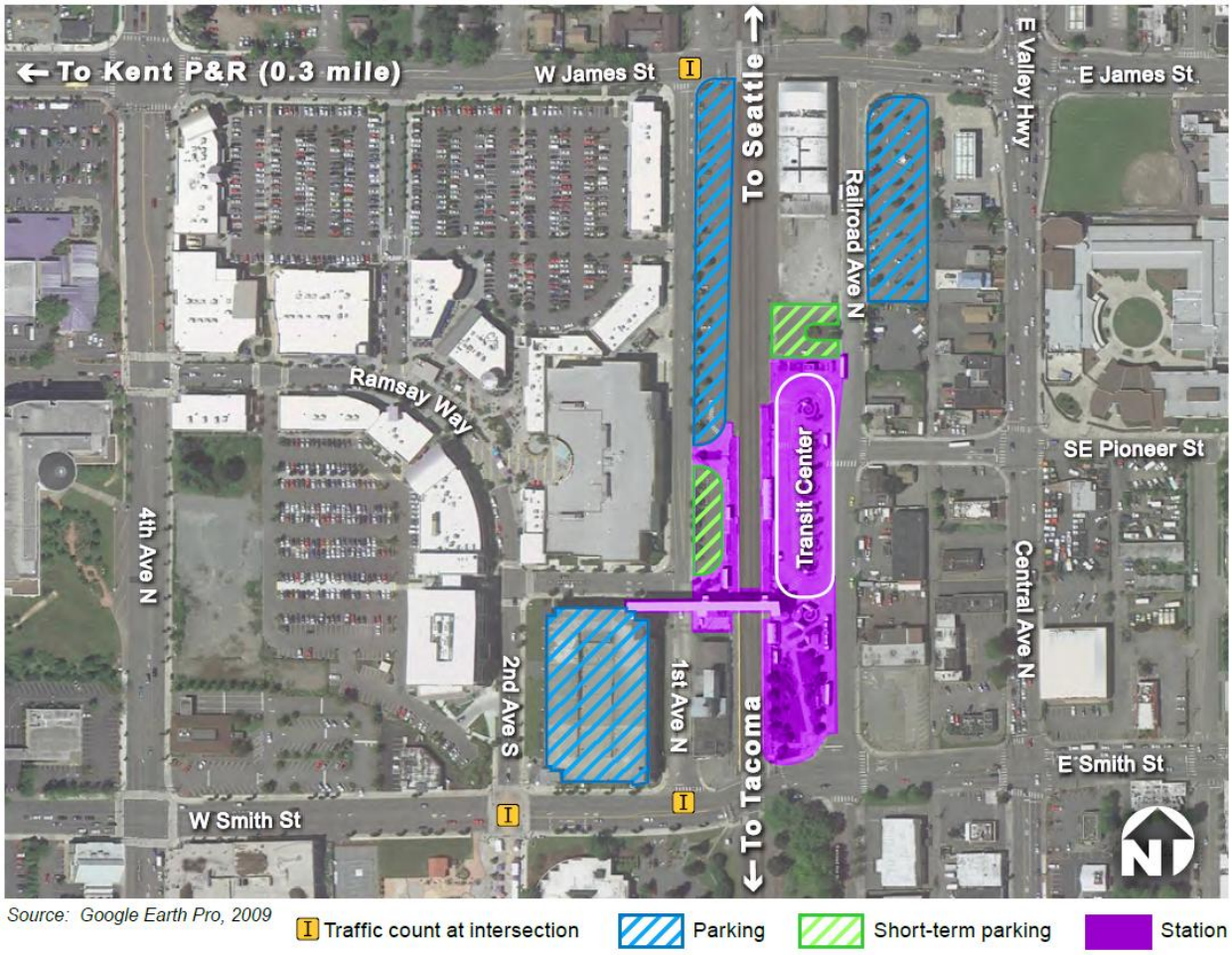
[1] Of the ~1,200 surveys returned, 466 were geo-coded to an accuracy level high enough to use for this part of the analysis. Of those 466, 217 were within the 15-minute travel shed for a station. Specific results of the Sounder Passenger Access Survey can be found beginning on page 2-6 and Appendix D.

Kent

The Kent Sounder Station is located in the northern part of downtown Kent, between the busy east-west arterials of W James Street and W Smith Street. It is one block west of Central Avenue, which is the primary north-south arterial in downtown Kent. It primarily serves riders who live east of the downtown area, as well as those who work near the station. The station also is a major transfer point for King County Metro bus service.

Sounder trains depart each weekday morning from Kent, northbound to Seattle at 5:27, 6:08, 6:33, 6:58, 7:23, 7:52, and 8:32 a.m., and southbound to Tacoma at 6:29 and 7:09 a.m. Figure 2-2 shows the location of Kent Station.

Figure 2-2: Kent Station (301 Railroad Avenue N)



There are 1,101 parking stalls (976 garage and 125 surface), eight bicycle rack spaces and 22 bicycle lockers with a 44-bicycle capacity available. The parking garage is open from 5:00 a.m. to 2:30 a.m. Monday through Friday, and from 6:00 a.m. to 2:30 a.m. on weekends and holidays. There is space available for up to 39 vehicles at any one time for passenger drop-off and pick-up.

Transit Connections

At Kent, a transit center is incorporated into the station on the east side of the commuter rail platforms. The Kent Station is served by ST Express bus routes and seventeen King County Metro bus routes. Some of the King County Metro routes will be discussed as groups because they operate or are scheduled together, which has transfer implications. Changes in transit service made since 2010 are noted in *italics*.

ST Express Route 566 travels from Auburn Station to the Overlake Transit Center, also serving Kent Station, the Renton Transit Center and Bellevue Transit Center. Midday, southbound in the morning peak period and northbound in the afternoon peak period has service every 30 minutes. In the morning peak period there are additional northbound trips that start at Kent Station and additional southbound trips in the afternoon peak period that end at Kent Station. For these periods and directions this results in service every 15 minutes or better, with some trips just six to seven minutes apart. Transfers to and from Sounder are convenient.

King County Metro Route 150 provides all day bi-directional service every 15 minutes between Kent Station and downtown Seattle, with stops at the Park-and-Ride at James Street and Lincoln, Southcenter, the Tukwila Interurban Investment lot and Tukwila Park-and-Ride (at 13445 Interurban Avenue S). There are acceptable transfer times for most Sounder trips in both directions for both peak periods, with the exception of the first two northbound Sounder trips in the morning (the first southbound bus misses the second northbound Sounder trip by two minutes but this may be a limited market).

King County Metro Route 153 connects Kent Station to the Renton Transit Center, stopping at the Renton Park-and-Ride and travelling mostly via E Valley Road, primarily through an industrial/ commercial area. Service is offered from about 6:00 a.m. to 6:00 p.m. with service every 30 minutes in the peak period and every 60 minutes midday. In the morning the northbound bus trips provide an acceptable transfer connection from about half of the northbound Sounder trips. There are acceptable return transfers for nearly all of the southbound Sounder trips in the afternoon.

Tukwila Station is the location for timed transfer connections between Sounder and King County Metro Route 154, which provides northbound peak period service in the morning and southbound in the afternoon between Kent Station and Federal Center South, via the Boeing (Duwamish) Industrial area. There are four a.m. and four p.m. trips.

King County Metro Routes 158/159/162 are an intra-scheduled set of routes providing service between Timberlane, Kent East Hill, downtown Kent/Kent Station and downtown Seattle via I-5. This is peak period, peak direction service only, with some trips timed to meet Sounder trips. Route 162 trips operate only between Kent Station and downtown Seattle. The Sounder schedule is shown on the 158/159/162 timetable. *This service remains largely the same as in Fall 2010, with the exception of a Route 162 trip leaving Kent Station for downtown Seattle at 6:10 a.m. which has been dropped from the schedule, however there is an alternative for passengers as a Sounder trip leaves from this location for Seattle at 6:09 a.m.*

Another intra-scheduled group of routes are the King County Metro Routes 164/166/168, connecting Kent Station to Green River Community College (Route 164), Highline Community College/Des Moines (Route 166) and Timberlane (Route 168) east of Kent. All have service every 30 minutes in both directions from about 5:00 a.m. to 10:00 p.m. (midnight on the 168). The scheduling for these routes takes into account work and school class times, as well as the potential for acceptable transfer connections with Sounder, which makes for a scheduling challenge. In fact, there are acceptable transfer connections between Route 168 and Sounder. *The routing and frequency of service remains the same for these routes. The span of service and schedules have been modified, most notably on Route 164, but overall the connections with Sounder remain about the same.*

King County Metro Route 169 operates between Kent Station and the Renton Transit Center via 104th/108th Avenues SE all day, approximately every 30 minutes. There are acceptable transfer connections from northbound morning Sounder trips to the 169 and acceptable return connections in the afternoon. *This route has been rescheduled. The connections remain good in the morning with the exception of the last Sounder trip, but in the afternoon there are good connections for only about half of the Sounder trips.*

Service is provided every 30 minutes all day on King County Metro Route 180 between Burien and White River Junction, south of Auburn. This route serves SeaTac/Airport Link Station, Kent Station and Auburn Station. The Burien-Kent portion of the route has good transfers to northbound Sounder trips in the morning and southbound Sounder trips in the afternoon. The portion of the route south of Auburn Station is oriented, schedule-wise, to the Auburn Station. *There have been some schedule adjustments to this route but the basic service level remains the same. However, in the afternoon peak period, three additional southbound trips between Kent Station and Auburn have been added to the schedule, resulting in approximately 15 minute directional frequency for part of the peak period. These trips provide good transfers from the southbound Sounder trips.*

King County Metro Route 183 connects Federal Way to Kent Station via Star Lake and provides southbound service every 60 minutes from about 6:30 a.m. to the afternoon peak period, when service is every 30 minutes. Northbound service is provided every 30 minutes in the morning, then every 60 minutes until 6:00 p.m., when service ends. About half of the northbound morning trips make good connections to Sounder trips and in the afternoon most of the southbound trips make good connections with southbound Sounder trips.

King County Metro Route 913 provides service every 30 minutes all day in both directions between Riverview (northwest Kent) and Kent Station. There are good connections in the morning from the bus to the northbound Sounder trips and returning in the afternoon from southbound Sounder trips to the bus; except there is no bus trip for the first morning northbound Sounder trip or the last afternoon southbound Sounder trip. For trips from northbound Sounder to the bus in the morning and from the bus to southbound Sounder in the afternoon, the wait times are in the 15-25 minute range. *This route has been extensively modified. The route still serves most of the old Route 913 to Riverview but it has been expanded to also serve the 76th Avenue S portion of Route 918, which has been discontinued. It operates*

as a counter-clockwise loop in the morning and clockwise in the afternoon. The service is now peak period only, with a schedule that effectively replicates the previous Route 918 service along 76th Ave S. There are six morning and eight afternoon trips with good timed transfers from northbound Sounder trips in the morning and to southbound Sounder trips in the afternoon.

King County Metro Routes 914 and 916 are midday local routes within Kent that do not currently provide service during the peak commute hours.

King County Metro Route 918 is a peak period only loop from Kent Station through the industrial area to the north of downtown Kent and back to Kent Station. There are six morning and six afternoon trips with timed transfers from and to Sounder (the last morning northbound and afternoon southbound Sounder trips do not have a corresponding bus trip). *This route has been eliminated. King County Route 913 now covers part of this route.*

King County Metro Route 952 is a peak period service between Auburn and Everett Boeing via SR 167 and Interstate 405 (I-405) with a stop at Kent Station. There are four northbound bus trips in the morning and four southbound trips in the afternoon. The bus and Sounder schedules are not compatible for transfers.

Origin and Destination

One hundred forty-three of the passengers who boarded at Kent Station were surveyed during the first week of November 2010. Table 2-6 shows the city of origin for the passengers surveyed. Of these 143 passengers, 88% disembarked at King Street Station, followed by Tacoma Station (5%).

Table 2-6: Kent Passenger City of Origin

City	Boardings	% of Boardings
Auburn	14	9.8
Covington	16	11.2
Kent	102	71.3
Maple Valley	5	3.5
Other	6	4.2
TOTAL	143	100.0

Rider Survey Information

Table 2-7 summarizes the station arrival access mode data from the passenger surveys. Three-quarters of the passengers who returned surveys drove themselves to the station on that day. Six percent of passengers used transit and 6% walked to the station.

Table 2-7: Kent Sounder Access

Mode	% of Arrivals
Drive	75
Drop-off	12
Carpool	1
Feeder Transit	6
Bike	0
Walk	6
Other/Sounder Reverse	0
TOTAL	100

Station Area Arrival Access Mode

Arrival mode information was gathered by direct observation at the station on the morning of November 3, 2010 from 5:00 to shortly after 8:30 a.m., when the last train was scheduled to depart. On that day, the last two trains were delayed by a blockage between Puyallup and Sumner, but station arrival mode

Table 2-8: Kent Arrival Mode

Mode	Arrivals	% of Arrivals
Auto	1,108	54.1
Feeder Transit	562	27.5
Bicycle	9	0.4
Drop-off	145	7.1
Walk	62	3.0
Train	161	7.9
TOTAL	2,047	100.0

data were tabulated based on scheduled train arrival times, not actual ones. A total of 2,047 arriving passengers were observed. Table 2-8 summarizes the station arrival mode data.

Slightly more than half of the arriving passengers drove themselves to the Kent station on that day. A little more than a quarter of passengers arrived by feeder transit. About 8% of arrivals were by Sounder train.

Observations in the Field

As a multimodal transit center, the Kent Station has a large amount of arriving traffic that is not bound for Sounder trains. In particular, a substantial number of those arriving by feeder transit leave the station on another bus. In addition, several of those arriving at the Kent Station on each train left the station on their bicycles. Some patrons observed arriving on foot could have parked or been dropped off out of the view of the observation team. The 976-space parking garage did not fill during the observation period. Four accessible spaces, 33 regular spaces, and 18 vanpool-only spaces were empty at the end of the observation period.

Traffic Counts

Three intersections (see Figure 2-2) were counted between 6:30 and 8:30 a.m. on November 3, 2010 (the same day station arrival mode split observations were recorded). The intersections counted are west of the station because that is where nearly all of the station parking is located. No traffic operation issues at any of the three intersections were observed in the morning peak hour (7:25 to 8:25 a.m.).

The 1st Avenue N/W James Street intersection is unsignalized and W James Street traffic is not required to stop. Left turns are prohibited by signage and a median curb on W James Street.

The 1st Avenue N/W Smith Street intersection is unsignalized and W Smith Street traffic is not required to stop. The Ramsay Way/W Smith Street intersection is signalized, with left turn lanes on all four approaches. It is the primary station access point for station users who park in the parking garage.

Jurisdiction Goals and Policies

Kent Station is designated as Urban Center by the City's Comprehensive Plan and is zoned as Downtown Commercial Enterprise. The station is within the City's Regional Growth Center designated by the Puget Sound Regional Council (PSRC).

Kent Comprehensive Plan. Kent revised its Comprehensive Plan in 2004. The City's first Comprehensive Plan was adopted in 1977 and was updated in 1995 to address GMA requirements (City of Kent 2004). Per the GMA, Kent is scheduled to update its Comprehensive Plan by June 30, 2015.

The Kent Downtown Plan (City of Kent 1989) was completed just prior to the passage of the GMA, and set the stage for designating the area as an Urban Center in 1995 under the GMA.

Kent updated its Downtown Strategic Action Plan in 2005, which serves as a basis for developing the Urban Center and implementing the Kent Comprehensive Plan (City of Kent 2005).

The following specific public improvements and redevelopment opportunities from the Downtown Strategic Action Plan are applicable to the Sounder Access Study:

- *Construct traffic and pedestrian improvements to Downtown streets as necessary to provide access.*
- *Support residential development in the North Core District.*
- *Encourage mixed-use development projects in proximity to the Kent Transit Center* [park and ride].

In 2001, the City purchased the Borden Chemical property west of the commuter rail station, which made future development of high intensity mixed uses in proximity to the station possible. The City initiated a Planned Action process for the property for three development scenarios within the North Core District Subarea. The City Council selected Alternative 2 (Kent Station Proposal) as the Preferred Alternative in July 2002, and groundbreaking occurred in June 2004.

Kent Station is an 18-acre private development on the former Borden property that includes office, retail, entertainment restaurants, and a branch campus of the Green River Community College.

The following Comprehensive Plan goals and policies address the key issues and priorities related to station oriented development:

- *Kent shall maintain the designation of its Urban Center within which Center-appropriate land uses, employment, housing infrastructure, and transit improvements shall be concentrated.*
- *The City shall develop a safe transportation network which promotes a variety of mobility options, including private automobiles, public transit, bicycling, and walking.*
- *The City shall continue to support public transit, including expanded Sounder commuter rail service. Transit service shall be focused in designated medium- and high-density centers within the City.*
- *Encourage residential development in designated medium- and high-density commercial and mixed-use areas.*
- *Ensure opportunities for affordable housing in proximity to employment, public transportation, and human services.*
- *Additional office and retail development shall be encouraged, particularly in designated centers which can be served by transit.*

- *Public infrastructure, transportation, and transit service enhancements shall be utilized to focus economic development in designated medium and high-density areas.*

Implementation policies from the Comprehensive Plan include:

- *LU-3.1: Allow and encourage mixed-use development which combines retail, office, and residential uses, or as a portion of the total mixture of uses, to provide a diverse, vibrant and well designed Urban Center.*
- *LU-4.2: Focus future public transportation investments in the Urban Center.*
- *LU-9.4: Locate housing opportunities with a variety of densities within close proximity to employment, shopping, transit, and where possible, near human and community services.*
- *LU-10.1: Allow and encourage high to medium density residential development in the Downtown and designated Activity Centers.*
- *TR-1.6: Coordinate new commercial and residential development in Kent with transportation projects to assure that transportation facility and service capacity is sufficient to accommodate the new development.*
- *TR-1.9: Promote multimodal facilities and services, street design, and development that includes residential, commercial and employment opportunities within walking/bicycling distance so that distances traveled are shorter and there is less need for people to travel by automobile.*
- *TR-6.3: Coordinate with BNSF Railroad, UP* [Union Pacific] *Railroad, Washington Utilities and Trade Commission (WUTC), and Sound Transit to ensure maximum transportation efficiency on both roads and rails, while minimizing adverse impacts on the community.*
- *TR-7.2: Provide non-motorized facilities with signage within all areas of the City to connect land use types, facilitate trips made by walking or bicycling, and reduce the need for automobile trips.*
- *TR-7.3: Create a comprehensive system of pedestrian facilities using incentives or regulations. All future development should include pedestrian and bicycle connections to schools, parks, community centers, public transit services, neighborhoods and other services. Provide special attention to the requirements set forth in the Americans with Disabilities Act (ADA) regarding the location and design of sidewalks and crosswalks.*
- *TR-7.7: Encourage the installation of safe and secure bicycle parking facilities at park and ride facilities, train/transit stations, shopping malls, office buildings, and all land use types that attract the general public.*
- *TR-8.1: Work with regional transit providers to resolve the transit needs identified in the TMP and provide high quality travel options for local residents, employees, students, visitors, business, and other users of local and regional facilities.*

Kent Transit Master Plan. Kent's Transit Master Plan was updated in 2007 (City of Kent 2007). The Kent Transit Master Plan recommends service improvements that provide local circulation in the City of Kent and that connect Kent residents to other regional communities, based on an extensive needs assessment. Capital improvements and pedestrian projects that support transit service goals are also detailed, as are transit-supportive land use policies. Specific policies promoting alternative mode use are included.

Kent Transportation Master Plan. Kent's Transportation Master Plan was adopted in 2008 (City of Kent 2008). This plan outlines specific geographic areas and projects to improve pedestrian, bicycle and transit corridors and connections that directly serve the Sounder station. These projects are prioritized by mobility, safety, multimodal, environment and implementation (cost effectiveness, funding commitment and project readiness). The Non-Motorized System chapter includes an inventory of existing facilities and a needs assessment for pedestrian and bicycle access.

Kent Bicycle Advisory Board. In 1991, the Kent City Council adopted Resolution 1298, creating the Board. Members of the Board work with Council and staff to identify and promote bicycle facility improvements.

Commute Trip Reduction. Kent City Code No. 6.12 (Ordinance No. 3474) implements State requirements for CTR. As part of Kent's Transportation Master Plan, the City of Kent updated the CTR Ordinance and the CTR Local Plan in 2008 to incorporate the state's 2006 CTR Efficiency Act. At the time of this report there were 35 worksites in Kent participating in the program, which provides public outreach and marketing of commute alternatives to about 15,000 employees at CTR-affected worksites.

Access Deficiency Assessment

Station Description and Major Barriers:

- Kent Station is located in the northern part of downtown Kent. The station includes a pedestrian bridge that links the station's parking garage and the west and east platforms, providing direct pedestrian and bicycle access to the station from both sides of the rail line. Kent's downtown street network south and immediately east of the station is fairly flat, mostly a grid, and well connected. Larger land parcels northwest and north of the station provide more limited pedestrian and bicycle connectivity than the downtown grid.
- The station area is bounded by SR 167 to the west, with limited street and non-motorized connections between west Kent and the station. There are steep slopes east of downtown Kent.

Station Area Pedestrian and Bicycle Connectivity Assessment:

- The Sounder Passenger Access Survey indicates a significant share of pedestrian trips but only one reported bicycle trip originating within the 15-minute travel shed, perhaps due to the steep slopes that hinder connectivity between east Kent residential areas and the station or from limited connections between west Kent and the station.

- Riders parking at the King County Metro park-and-ride at N Lincoln Ave and E Smith St already walk, bike, or catch a bus to Kent Station and this is expected to continue.
- Slightly more than 1,100 employed residents are located within a 15-minute walk of the station, and over 19,900 employed residents are located within a 15-minute bicycle ride of the station. The walk and bicycle catchment areas are shown in Appendix F, Exhibit B.

Feeder Transit Service Limitations (changes in feeder transit service made since 2010 are in italics):

- Many transfers to and from Sounder are convenient due to route service timing.
- King County Metro Route 150 does not provide a connection for the first two northbound Sounder trips.
- There is the potential for greater transfer connections for work and school class schedule times (Green River Community College and Highline Community College) with King County Metro Routes 164/166/168. *The span of service and schedules have been modified on these routes, most notably on Route 164, but overall the connections with Sounder remain about the same.*
- King County Metro Route 913 does not provide a connection for the first morning northbound and last afternoon southbound Sounder trips. For trips from northbound Sounder to the bus in the morning and from bus to southbound Sounder in the afternoon, the wait times are in the 15-25 minute range. *The service is now peak period only. There are six morning and eight afternoon trips that provide good connections from northbound Sounder trips in the morning and to southbound Sounder trips in the afternoon.*
- King County Metro Route 918 does not meet the last morning northbound or last afternoon southbound Sounder trips. *This route has been eliminated; however King County Metro Route 913 now covers part of this route.*
- King County Metro Route 952, which connects Auburn and Everett Boeing via the Kent Transit Center, is not compatible for Sounder transfers.

Vehicle Access and Network Capacity:

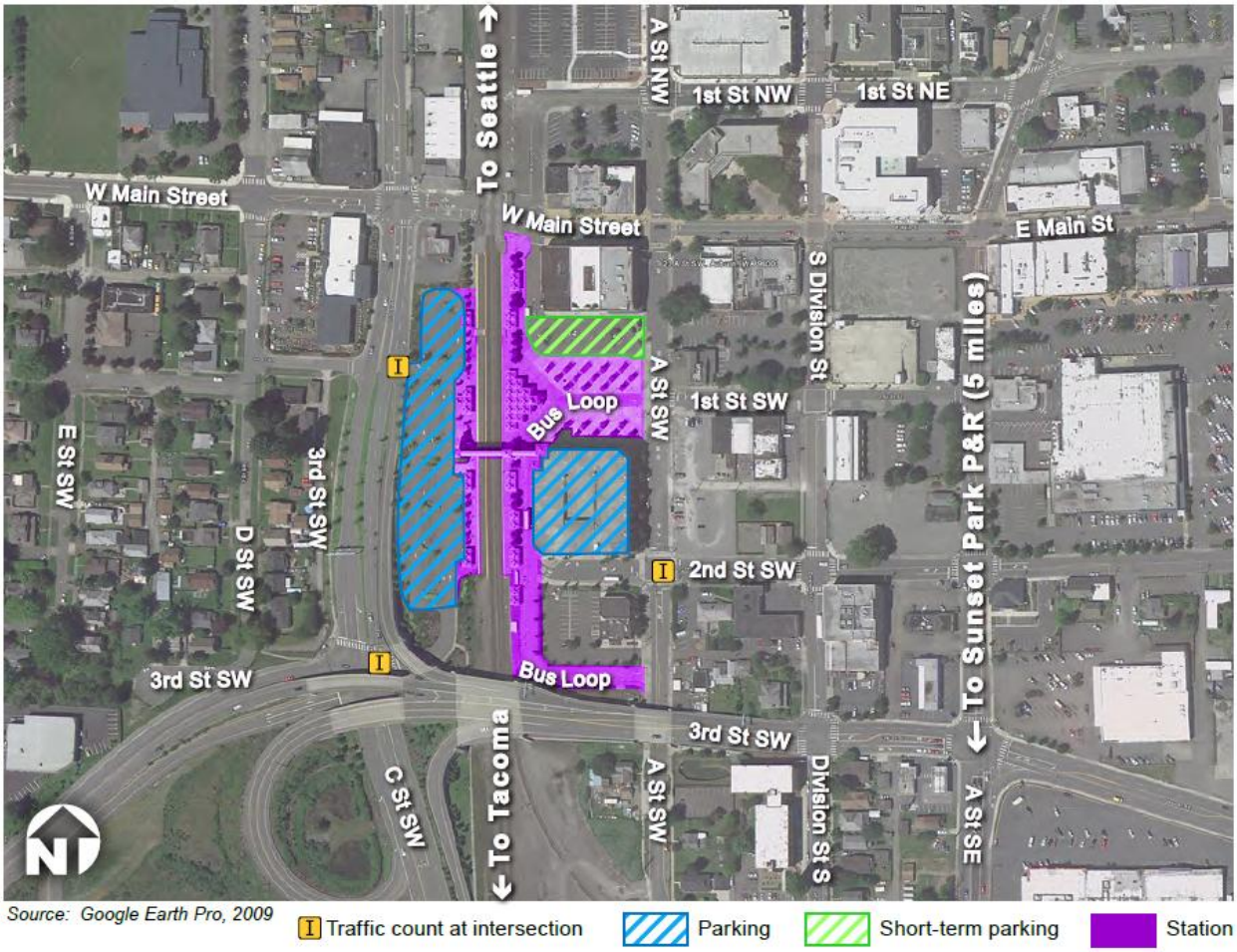
- Egress from the garage is slow in the afternoon peak, potentially discouraging some passengers from parking. *Sound Transit's parking utilization report indicates that 94% of capacity was used in March 2012*.
- There are no level of service issues in the morning peak at intersections that serve the station.

Auburn

The Auburn Sounder Station is located in the southwestern part of downtown Auburn, just south of West Main Street, the downtown's primary east-west arterial.

Sounder trains depart each weekday morning from Auburn northbound to Seattle at 5:20, 6:01, 6:26, 6:51, 7:16, 7:45, and 8:25 a.m., and southbound to Tacoma at 6:36 and 7:16 a.m. Figure 2-3 shows the location of Auburn Station.

Figure 2-3: Auburn Station (23 A Street SW)



There are 521 stalls available to transit riders and 42 stalls controlled by the City of Auburn in the garage, plus 113 surface parking stalls. There are also 32 bicycle rack spaces and 26 bicycle lockers with a 40-bicycle capacity available. The garage is open from 5:00 a.m. to 2:00 a.m. Monday through Friday, and from 6:00 a.m. to 2:00 a.m. on weekends and holidays. There is space available for up to 37 vehicles at any one time for passenger drop-off and pick-up.

Transit Connections

Bus stops are located east of the commuter rail platforms, on the bus loop. Auburn Station is served by two ST Express bus routes, six King County Metro routes, and one Pierce Transit (PT) bus route. Changes in transit service made since 2010 are noted in *italics*. *Two new King County Metro routes have been added serving Auburn Station*.

ST Express Route 566 travels from Auburn Station to the Overlake Transit Center, also serving Kent Station, the Renton Transit Center, and Bellevue Transit Center. At the Auburn Station this route has service all day, approximately every 30 minutes in both directions. There are acceptable transfer connections at this station for a few trips; however, additional Route 566 trips start and end at Kent Station, making it a more convenient location for most transferring passengers.

ST Express Route 578 serves the Puyallup, Sumner and Auburn Stations as the midday and evening/night extension of ST Express Route 577 from Federal Way to Seattle. It also provides peak period, off-peak direction (southbound in the morning, northbound in the afternoon) service to or from Tacoma (Tacoma Dome Station and downtown Tacoma).

King County Metro Route 152 provides peak period, peak direction service from Auburn Station to downtown Seattle via I-5, with service every 30 minutes. It also stops at the Auburn and Star Lake Park-and-Rides. It competes with Sounder but the train is faster to south downtown Seattle. *The schedule for Route 152 now has one less trip in the morning. The 7:17 a.m. trip to Seattle, at approximately the same time as a Sounder trip, has been eliminated.*

Burien, Kent, Auburn, southeast Auburn, and White River Junction are connected by King County Metro Route 180, which stops at both the Auburn and Kent Stations. Route 180 runs every 30 minutes, all day, in both directions. The White River Junction/southeast Auburn portion of the route has good transfer connections to Sounder at the Auburn Station (the Burien-Kent portion has the best and logical transfers at Kent Station). *This route has been rescheduled but has not significantly affected connections with Sounder.*

King County Metro Route 181 travels between Twin Lakes/Federal Way and East Auburn (Green River Community College) via Auburn Station and provides service every 30 minutes all day in both directions. The East Auburn to Auburn Station portion of the route has good transfer connections to northbound Sounder in the morning and back in the afternoon. Transfer connections from Federal Way to Sounder are acceptable in the morning (missing one Sounder trip) but only about one-half of the afternoon trips have an acceptable transfer.

New King County Metro Routes 186 (peak periods) and 915 (midday) provide direct service between Enumclaw and Auburn Station. The peak period service is bi-directional and connections with Sounder are shown on the route's timetable. There are five good connections in the morning to Seattle bound Sounder trips and one good connection in the morning from a southbound Sounder trip. In the afternoon there are five good connections from southbound Sounder trips and one for a northbound Sounder trip.

King County Metro Route 910 connects North Auburn, downtown Auburn/Auburn Station and the SuperMall. Service is every 60 minutes in both directions from about 8:00 a.m. to about 4:30 p.m. These service hours only match up with the last morning peak and first afternoon peak Sounder trips.

Auburn/Auburn Station, Algona, and White River Junction are connected by service every 60 minutes on King County Metro Route 917, which operates all day. During the peak periods there are good transfer connections to three northbound morning and three afternoon southbound Sounder trips.

King County Metro Route 919 connects North Auburn, Auburn Station, and southeast Auburn with bi-directional service every 60 minutes from about 8:00 a.m. to 4:00 p.m., not within the Sounder peak direction commute trip times.

PT also serves the Auburn Station. PT Route 497 provides shuttle service between the Sunset Park-and-Ride and Sounder for all peak period, peak direction Sounder trips. Transfer times are scheduled to allow five minutes to make the transfer between the train and bus. The train departure and arrival times are shown on the bus timetable. Per the schedule, afternoon bus trips will wait for Sounder connections (i.e. delayed trains) before departing.

Origin and Destination

Three hundred thirty-nine of the passengers who boarded at Auburn Station were surveyed during the first week of November 2010. Table 2-9 shows the city of origin for the passengers surveyed. Of these 339 passengers, the majority disembarked at King Street Station (92%) and Tukwila Station (6%).

Table 2-9: Auburn Passenger City of Origin

City	Boardings	% of Boardings
Algona	12	4
Auburn	226	67
Bonney Lake	5	1
Covington	11	3
Enumclaw	19	6
Federal Way	6	2
Kent	5	1
Lake Tapps	16	5
Maple Valley	8	2
Pacific	10	3
Other	21	6
TOTAL	339	100

Rider Survey Information

Table 2-10 summarizes the station arrival access mode data from the passenger surveys.

Sixty-two percent of the passengers who returned surveys drove themselves to the station on that day. Sixteen percent of passengers arrived by feeder transit.

Table 2-10: Auburn Sounder Access

Mode	% of Arrivals
Drive	62
Drop-off	13
Carpool	4
Feeder Transit	16
Bike	1
Walk	3
Other/Sounder Reverse	1
TOTAL	100

Station Area Arrival Access Mode

Arrival mode information was gathered by direct observation at the station on the morning of November 30, 2010 from 5:00 to shortly before 8:30 a.m., when the last train departed. A total of 852 arriving passengers were observed. Table 2-11 summarizes the station arrival mode data.

Just over half of arriving passengers drove themselves to the Auburn Station on that day. Over 30% of station users arrived by feeder transit.

Table 2-11: Auburn Arrival Mode

Mode	Arrivals	% of Arrivals
Auto	439	51.5
Feeder Transit	263	30.9
Bicycle	11	1.3
Drop-off	72	8.5
Walk	37	4.3
Train	30	3.5
TOTAL	852	100.0

Observations in the Field

Auburn is a transit hub, with buses from multiple systems (PT, King County Metro, and Sound Transit) serving the station. The complexity of inter-modal access and interchange made counting specific commuter rail access by mode difficult. Table 2-11 shows arrival mode split data for all arrivals at the station during the time commuter rail trains were running, but does not show whether all of these arrivals left by train, or some by another mode.

The west-side park-and-ride lot was full after the third northbound train departure at 6:26 a.m., and the garage was full after the fourth northbound train departure at 6:51 a.m. Surface street parking spaces are numerous and began to fill following the fourth northbound train departure. It was difficult to distinguish walk-up passengers originating from the surrounding area from auto-mode users parking in peripheral lots and on-street spaces. For this information, we rely on the rider survey results.

Traffic Counts

Three intersections near the station were counted between 6:30 and 8:30 a.m. on November 2, 2010 (see Figure 2-3). Both of the west-side parking lot driveways on C Street SW were counted, as well as the main parking garage entry on 2nd Street SW.

The 2nd Street SW/parking garage entry intersection is signalized and 2nd Street SW traffic is required to stop when leaving the garage at this signal. As with the Kent and Tacoma Dome Station parking garage entrances, this intersection has an earlier peak hour (6:30 to 7:30 a.m.) than an intersection of two public streets would. Travelers using Sounder parking arrive at the stations earlier than the normal morning peak hour, both because Sounder trains run earlier in the morning and because these parking garages tend to fill and garage parking is generally considered preferable. There are no traffic operation issues at this intersection in the morning peak hour.

The C Street SW/south parking entry intersection is signalized. The west leg of this intersection is the westbound on-/off-ramps to and from Highway 18. There are no traffic operations issues at this intersection in the morning peak hour (6:55 to 7:55 a.m.).

The C Street SW/north parking entry intersection is unsignalized, and C Street SW traffic is not required to stop. East-west left turns and through movements are prohibited, as are left turns from C Street SW. There are no traffic operations issues at this intersection in the morning peak hour (7:00 to 8:00 a.m.).

Jurisdiction Goals and Policies

Auburn Station is designated as Urban Center by the City's Comprehensive Plan and is zoned Downtown Urban Center. The station is within the City's Regional Growth Center designated by the PSRC.

Auburn Comprehensive Plan. Auburn revised its Comprehensive Plan in 2009. The original plan was adopted in 1986 and amended in 1995 to address GMA requirements. Per the GMA, Auburn is scheduled to update its Comprehensive Plan by June 30, 2015.

Auburn's Urban Center designation includes the following characteristics:

- Concentrated employment and housing, and a mix of other land uses, with direct service by high capacity transit
- An extensive transportation system to help reduce reliance on auto travel

Auburn adopted its Downtown Plan in 2001 and has since begun implementing many of the plan's strategic objectives:

- Establishing the 220-acre downtown Auburn planning area (bounded by the Interurban Trail to the west, 2nd Street NW and 3rd/4th Streets NE to the north, E Street NE/SE to the east, and SR 18 to the south), including Auburn Station, that is the focus for future downtown redevelopment
- Providing incentives for downtown development and redevelopment through various measures, including reducing off-street parking requirements compared to other areas of the city and in some cases waiving transportation impact fees if a lower level of service is desired
- Encouraging non-motorized, pedestrian and bicycle connections and linkages to and within the urban center area
- Encouraging protection of historic assets and resources from redevelopment activities
- Identifying potential catalyst projects and sites to spur development activity in the downtown and to better focus redevelopment and marketing efforts
- Encouraging more residential development downtown as well as 24-hour type uses and nighttime activity
- Seeking to remove undesirable land uses and other blighting influences in the downtown area

- Promoting street improvements and enhancements to improve access and the visual qualities of the streetscape

In early 2007, the City established a new zoning district for the majority of downtown, the Downtown Urban Center district. This district allows all types of land uses unless specifically prohibited, and regulates the intensity of development by allowed floor area ratio, providing incentives for higher intensity of use.

To meet the City's goal to encourage the Comprehensive Plan's direction, the City has adopted an overall objective and several policies relating to downtown Auburn transportation. While supportive, the policies pre-date the commuter rail station development and operations but remain valid.

Implementation policies from the Comprehensive Plan include:

- *LU-86: Emphasis should be given to enhancing pedestrian linkages between the Hospital area, the Main Street retail core, the Performing Arts Center, the southwestern portion of Downtown, and the parking area adjacent to Safeway. An important element of this emphasis will be to reduce the pedestrian barrier effect of Auburn Avenue and Auburn Way.*
- *LU-87: The City should build upon past efforts to improve pedestrian amenities, through public improvements, sign regulations and development standards. The maintenance of public and private improvements should be given priority commensurate with downtown's role as the focal point of the community.*
- *LU-88: The City shall work with transit providers to increase the availability and effectiveness of transit in downtown and between downtown, other commercial and employment areas, residential areas, and the region at large.*
- *LU-89: As regional transportation programs such as commuter rail are implemented, the City will strive to ensure that the downtown is a beneficiary.*

Auburn Comprehensive Transportation Plan. Auburn's Comprehensive Transportation Plan was amended on December 7, 2009. The plan contains a needs assessment and set of future recommendations for all modes, as well as policies and funding strategies to guide implementation of the plan. The plan includes transportation policies supporting pedestrian and bicycle use and access within the downtown Auburn area and the commuter rail station. Several downtown streets within 0.5 mile of the commuter rail station (including A Street NW, A Street Loop, and F Street SE) are designated for enhancements to include either on-street bicycle lanes or shared travel lanes. No specific, high-priority pedestrian improvements are identified in the plan for the downtown area.

Commute Trip Reduction. The City of Auburn contracts with King County Metro Transit to provide CTR support services for the CTR-affected employers in Auburn. Currently, there are 11 CTR-affected employers in Auburn, with a combined total of 5,500 employees. The agency

assists employers in complying with state law by providing rideshare support and a host of other incentives aimed at reducing single occupancy vehicles.

Access Deficiency Assessment

Station Description and Major Barriers:

- Auburn Station includes a pedestrian bridge linking the station's parking garage and the west and east platforms, providing direct pedestrian and bicycle access to the station from both sides of the rail line. Auburn's gridded and flat street system is well connected and facilitates bicycle access to the station. Pedestrian access is generally good; however, SR 18 does present a barrier to residents south of the station.

Station Area Pedestrian and Bicycle Connectivity Assessment:

- The Sounder Passenger Access Survey indicates a significant share of pedestrian trips and a number of bicycle trips originating within the 15-minute travel shed.
- Slightly more than 1,000 employed residents are located within a 15-minute walk of the station, and over 12,700 employed residents are located within a 15-minute bicycle ride of the station. The walk and bicycle catchment areas are shown in Appendix F, Exhibit C.

Feeder Transit Service Limitations:

- King County Metro Route 181 misses one morning and approximately half of the afternoon Sounder trips.
- King County Metro Route 910 misses all but the last morning and the first afternoon Sounder trip.

Vehicle Access and Network Capacity:

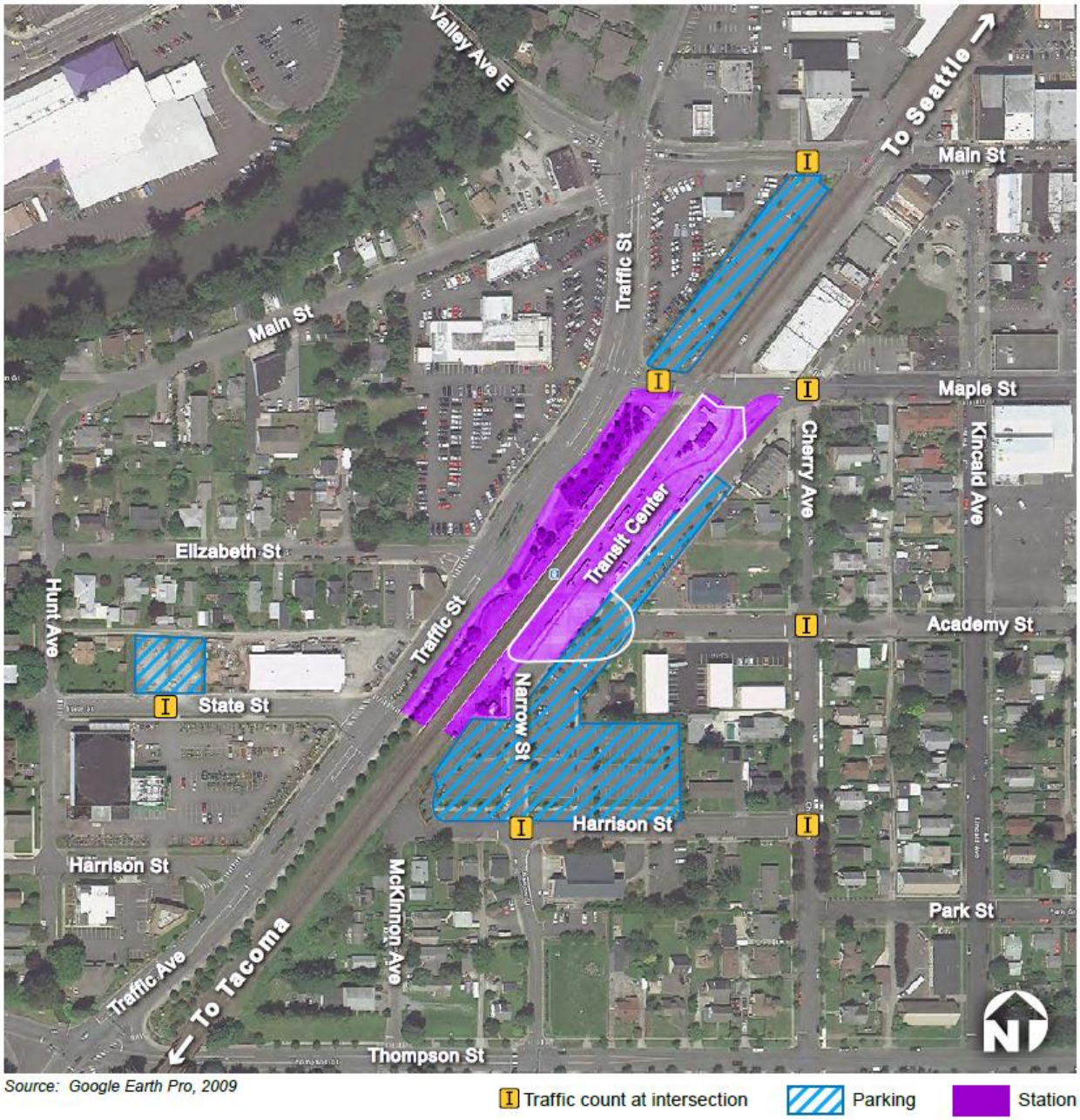
- This station is accessible on a regional level due to the close proximity of SR 18, SR 164, and SR 167.
- Station parking, including the garage, is typically full after the fourth morning Sounder trip.
- There are no level of service issues in the morning peak at intersections that serve the station.

Sumner

The Sumner Sounder Station is located in the southwestern part of downtown Sumner, south and west of the Maple Street/Narrow Street/Cherry Street intersection.

Sounder trains depart each weekday morning from Sumner northbound to Seattle at 5:12, 5:52, 6:17, 6:42, 7:07, 7:37, and 8:17 a.m. and southbound to Tacoma at 6:45 and 7:25 a.m. Figure 2-4 shows the location of the Sumner Station.

Figure 2-4: Sumner Station (810 Maple Street)



There are 339 surface parking stalls, including a leased lot at Hunt Avenue and State Street, two bicycle racks (a total of 10 spaces) and seven bicycle lockers with a 14-bicycle capacity. There is space available east of the commuter rail platforms for up to 20 vehicles at any one time for passenger drop-off and pick-up.

Transit Connections

At Sumner Station, a transit center is incorporated into the station, along Narrow Street between Maple and Academy Streets. Changes in transit service made since 2010 are noted in *italics*. *Due to the defeat of Proposition 1 ("PT Tomorrow") in February 2011, service reductions were implemented in June and October 2011 affecting service to Puyallup Station. All special event services were eliminated.*

ST Express Route 578 is a midday and evening extension of ST Express Route 577 from Federal Way to downtown Seattle. This extension serves the Auburn, Sumner and Puyallup Stations. This service supplements Sounder service by providing a fast service to and from downtown Seattle when Sounder service is limited or not scheduled. ST Express Route 578 also provides peak period, off-peak direction (southbound in the morning and northbound in the afternoon) service between Sumner and Tacoma (Tacoma Dome Station and downtown Tacoma).

PT Route 408 connects the Bonney Lake Park-and-Ride with downtown Sumner and Sumner Station. Service is approximately every 30 minutes in the peak period and every 60 minutes midday. It functions as both a local route and a "shuttle" to Sounder with good transfers to four of the seven morning northbound Sounder trips and five of the seven afternoon southbound commute trips. *This route has been eliminated, but PT Route 496 continues to provide service between the Bonney Lake Park-and-Ride and Sumner Station.*

PT Route 496 is a shuttle between the Bonney Lake Park-and-Ride and the Sumner Station with timed transfers for all peak period northbound morning and southbound afternoon trips.

PT Route 409 connects the 72nd Street Transit Center (Tacoma), Puyallup, Sumner/Sumner Station, and the Sumner Industrial area (about three miles north of the station). This route has service every 30 minutes in the peak period and every 60 minutes midday. The Sounder schedule is shown in the bus timetable and there are acceptable transfer connections from and to Puyallup, with two morning and two afternoon connections to and from the industrial area. *There have been changes to this route that reduced access to Sumner Station. Service is now every 60 minutes, a reduction from peak period service of 30 minutes, which eliminated some transfer connections. In addition, the segment of the route between Sumner Station and the Sumner Industrial area has been eliminated.*

Origin and Destination

Two hundred sixty-nine passengers who boarded at Sumner Station were surveyed during the first week of November 2010. Table 2-12 shows the city of origin for the passengers surveyed. Of these 269 passengers, the majority disembarked at King Street Station (77%) and Tukwila Station (18%).

Table 2-12: Sumner Passenger City of Origin

City	Boardings	% of Boardings
Bonney Lake	100	37.2
Buckley	18	6.7
Edgewood	11	4.1
Lake Tapps	14	5.2
Orting	28	10.4
Puyallup	36	13.4
Sumner	47	17.4
Other	15	5.6
TOTAL	269	100.0

Rider Survey Information

Table 2-13 summarizes the station arrival access mode data from the passenger surveys.

Seventy-one percent of the passengers who returned surveys drove themselves to the station on that day. An additional 14% of passengers were dropped off that day.

Table 2-13: Sumner Sounder Access

Mode	% of Arrivals
Drive	71
Drop-off	14
Carpool	0
Feeder Transit	7
Bike	3
Walk	4
Other/Sounder Reverse	1
TOTAL	100

Station Area Arrival Access Mode

Arrival mode information was gathered by direct observation at the station on the morning of November 4, 2010 from 4:45 to approximately 8:20 a.m., which was just after the last train departed. A total of 756 arriving passengers were observed. Table 2-14 summarizes the station arrival mode data.

Approximately 70% of the arriving passengers drove themselves to the Sumner Station. Feeder transit and drop-off arrivals also featured heavily in the Sumner Station passengers.

Table 2-14: Sumner Arrival Mode

Mode	Arrivals	% of Arrivals
Auto	534	70.6
Feeder Transit	109	14.4
Bicycle	18	2.4
Drop-off	84	11.1
Walk	11	1.5
Train	0	0.0
TOTAL	756	100.0

Observations in the Field

The designated park-and-ride lot adjacent to the station was near capacity following the second northbound train departure at 5:52 a.m. Following the third northbound train departure at 6:17 a.m., all park-and-ride lots and immediate surface street parking spaces were filled (100% utilization). After that, observations focused on other modes of arrival.

It was difficult to distinguish whether passengers arriving on foot were residents in local neighborhoods or parking on-street in local neighborhoods, especially as the on-site parking areas reached capacity. The off-site parking lot at Hunt Avenue and State Street appeared to

be the parking area of choice for patrons arriving later, reflected in the large number of pedestrians accessing the station from the west along adjacent streets.

Traffic Counts

Six intersections near the station (see Figure 2-4) were counted between 6:30 and 8:30 a.m. on November 3, 2010. A seventh intersection (Main Street/north parking lot driveway) was counted between 6:30 and 8:30 a.m. on November 11, 2010.

The Harrison Street/Narrow Street intersection is unsignalized, with stop signs on all four legs. The intersection is south and west of the station area, and the north leg of the intersection is the main entry to the south parking lot. There are no traffic issues at this intersection in the morning peak hour (6:40 to 7:40 a.m.).

The Harrison Street/Cherry Avenue intersection is unsignalized and Cherry Avenue traffic is not required to stop. The intersection is south of the station area, and there is no east leg at this intersection. Traffic volumes are very low and there are no traffic issues at this intersection in the morning peak hour (6:55 to 7:55 a.m.).

The Academy Street/Cherry Avenue intersection is unsignalized and Cherry Avenue traffic is not required to stop. The intersection is east of the station. Traffic volumes are very low, with each leg averaging an arriving vehicle every two minutes, and there are no traffic issues at this intersection in the morning peak hour (6:55 to 7:55 a.m.).

The Cherry Avenue/Maple Street/Narrow Avenue intersection is unsignalized and Maple Street traffic is not required to stop. Cherry Avenue ends at Maple Street, and Narrow Avenue is one-way from northwest to southeast. The intersection is northeast of the station. Traffic volumes are very low at this intersection during the morning peak hour, with three of the four legs averaging an arriving vehicle every two minutes, and the busiest (eastbound Maple Street) averaging a vehicle arrival about every 45 seconds. There are no traffic issues at this intersection in the morning peak hour (7:30 to 8:30 a.m.).

The Maple Street/north Sounder Lot Driveway intersection is unsignalized, with Maple Street traffic not required to stop. There is no south leg at this intersection. There are no traffic issues at this intersection in the morning peak hour (7:25 to 8:25 a.m.).

The Main Street/north parking lot driveway intersection is unsignalized and Main Street traffic is not required to stop. There is no north leg at this intersection. Westbound left turns from Main Street into the parking lot are prohibited by median bollards. There are no traffic issues at this intersection in the morning peak hour (7:30 to 8:30 a.m.).

The State Street/Sounder off-site parking lot driveway intersection is unsignalized and State Street traffic is not required to stop. The south leg of this intersection is a gated driveway for a tractor equipment store. This intersection has very low traffic volumes, and there are no issues at this intersection in the morning peak hour (6:30 to 7:30 a.m.).

Jurisdiction Goals and Policies

Sumner Station is designated as Public-Private Utilities & Facilities by the City's Comprehensive Plan and is zoned Central Business District.

Sumner Comprehensive Plan. Sumner revised its Comprehensive Plan in 2009. It was originally adopted in 1994 and amended in 2004 to address GMA requirements (City of Sumner 2009). The Sumner Comprehensive Plan includes specific policy, goals and objectives regarding the commuter rail station land uses and connectivity. Per the GMA, Sumner is scheduled to update its Comprehensive Plan by June 30, 2015.

The provision of regional transit service has and will continue to affect land use and transportation in Sumner. The following goals and policies address the key issues and priorities related to station-oriented development in the downtown area.

Implementation policies from the Comprehensive Plan include:

Goal 1 Support regional transit connections in the Sumner Planning Area.

1.1 Collaborate when possible with Sound Transit, Pierce County and surrounding cities to do joint planning on future services concerning the commuter rail and transit system.

1.2 Work with local property owners to encourage the development of commercial uses compatible with the commuter rail station.

1.3 Ensure that the commuter rail station does not have an unreasonable adverse impact on the residential character of the neighborhood.

1.4 Consider and pursue opportunities for an increased pedestrian connection to the West Sumner Neighborhood and the Downtown business core such as a pedestrian overpass.

1.5 Continue to explore the parking options and access options for the commuter rail station that are compatible with the surrounding land uses, safe, convenient, and attractive. Address options for location of future parking for expanded service over time.

1.6 Plan for a train station at Stewart Road next to the golf course and adjacent to the northeastern boundary of the Sumner-Pacific Manufacturing/Industrial Center (MIC). The station would help connect high density housing centers with the proposed MIC, and may serve regional populations or function as secondary "skip-stop" stations.

1.6.1 Work with Sound Transit and Pierce Transit throughout the planning, construction, and operation of a station to ensure it is an integral part of the City's transportation system and the regional transit system.

1.6.2 Consideration will be given to design controls, compatibility with surrounding land uses, access, transit connections to other parts of town, bicycle storage,

relationships to pedestrian and bicycle trails, and parking. Complementary land uses such as civic rooms, day care, small retail, or other uses to be integrated with the station may also be included in the station plan.

1.7 Promote the use of the Sounder commuter train by the entire Sumner community. Provide housing near the train station for households desiring the close transit availability, and provide services and businesses that cater to residents and train commuters.

1.8 Work closely with Sound Transit to establish stations north at Stewart Road/Lake Tapps Parkway and at Shaw Road/East Main to relieve ridership and parking demands at the Sumner commuter rail station.

1.9 Promote and pursue the use of underutilized parking lots throughout the City as potential remote sites for commuter rail station parking.

1.10 Seek alternatives to the construction of a stand alone parking garage in the Town Center.

1.11 Request that Sound Transit provide additional bicycle lockers at the station to encourage bicycle commuting to the station. Require that any expansions to parking for the station include increased bicycle lockers.

1.12 Work with transit agencies to improve the frequency and location of transit service between high density residential areas and the MIC, provide connections between the rail stations and the MIC, and encourage transit ridership through efforts such as prioritizing pedestrian improvements near transit stops and outreach efforts to industrial employers.

West of the commuter rail station, land is zoned Mixed-Use and Medium Density Residential. Land south of the station is zoned Medium Density Residential. Land east of the station areas is zoned Central Business District and Low Density Residential. Land north of the station is zoned General Commercial.

Sumner Town Center Plan. The Sumner Town Center Plan was adopted in 2005 and presents the vision and strategies for Sumner's 210-acre Town Center. The goal was to reinforce and strengthen the downtown area as a fully functional "everyday" downtown, while maintaining its classic small-town character. The following goals and policies address the key issues and priorities related to station-oriented development in the Town Center:

Policy TC 1.3 Promote active, pedestrian-oriented retail, service, and mixed uses.

Policy TC 1.6 Encourage more housing in and near Downtown to strengthen Downtown businesses, take advantage of the commuter train, offer a range of housing in the community, and provide an active, social character.

Policy TC 6.1 Promote the construction of housing stock in the Town Center by at least 350-500 dwelling units by 2015.

Policy TC 6.3 Promote the redevelopment of key downtown locations such as the car dealerships and the Red Apple market through partnering with developments, Sound Transit, and other key parties.

Sumner Transportation Plan. In 2004, the City of Sumner updated their long-term Transportation Plan of 2002. The adopted plan identified specific transportation improvement projects that were needed to support the 2020 land use projections. The identified transportation projects allowed the roadways and intersections within the City to operate at or above the City's adopted level of service standards. There are no improvements listed near the Sumner Station.

Sumner Trail Master Plan. The Sumner/Pacific Trail Plan was originally adopted in September 1996 and was updated as the Sumner Trail Master Plan in 2008. On a broad scale, the trail and bicycle routes proposed in the Sumner Trail Master Plan will form linkages to major trails in the surrounding Puget Sound Communities. Near the Sumner Station, bike routes are proposed on Traffic Street, Narrow Street, and Main Street. A trail also is proposed along the White River.

Commute Trip Reduction. The City coordinates with Pierce Transit, Sound Transit, and other jurisdictions on CTR programs for three major employers in the Sumner planning area. Sumner's human resources department implements state requirements for CTR per Sumner Municipal Code Chapter 16.06. The CTR program is fairly new, and no baseline information has been collected from employers at this time.

Access Deficiency Assessment

Station Description and Major Barriers:

- Pedestrian access from the west side of Sumner Station is limited to the at-grade crossing on Maple Street and from the sidewalk along Traffic Avenue/Street. West of the station, the barriers provided by SR 167 and SR 410 limit the amount of potential residential or employment growth within walking distance to the station. East of the rail line, Sumner's street network provides relatively good connectivity.

Station Area Pedestrian and Bicycle Connectivity Assessment:

- The Sounder Passenger Access Survey indicates a significant share of pedestrian trips and a number of bicycle trips originating within the 15-minute travel shed.
- Slightly over 1,000 employed residents are located within a 15-minute walk of the station, and over 6,200 employed residents are located within a 15-minute bicycle ride of the station. The walk and bicycle catchment areas are shown in Appendix F, Exhibit D.

Feeder Transit Service Limitations (changes in feeder transit service made since 2010 are in italics):

- PT Route 408 is not timed to provide acceptable transfers for three of the seven morning northbound and two of the seven afternoon southbound Sounder trips, by arriving too early or too late. *This route has been eliminated.*

- *Modifications and reductions to PT routes serving Sounder stations were implemented in October 2011 due to the defeat of Proposition 1 ("PT Tomorrow").*

Vehicle Access and Network Capacity:

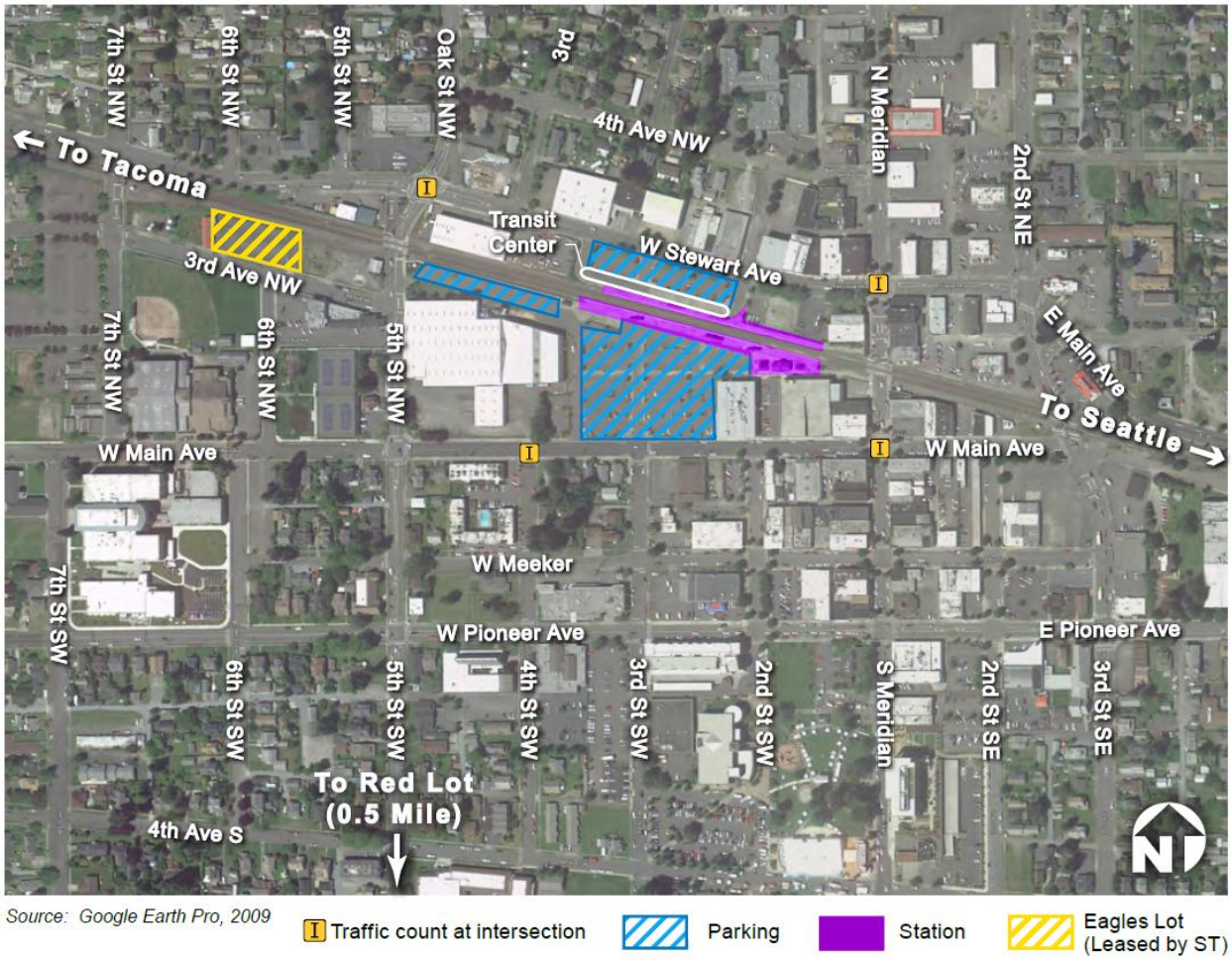
- Station parking is typically full before the last two or three morning Sounder trips. On-street parking in the immediate area also fills prior to the last Sounder trip.
- There are no level of service issues in the morning peak at intersections that serve the station.

Puyallup

The Puyallup Sounder Station is located in downtown Puyallup, bounded by W Main Avenue, 5th Street NW, W Stewart Avenue, and Meridian Street N.

Sounder trains depart each weekday morning from Puyallup northbound to Seattle at 5:07, 5:47, 6:12, 6:37, 7:02, 7:32, and 8:12 a.m. and southbound to Tacoma at 6:49 and 7:29 a.m. Figure 2-5 shows the location of Puyallup Station.

Figure 2-5: Puyallup Station (131 W Main Street)



There are 640 total parking stalls, including 66 stalls in the "Eagles Lot" (on 3rd Avenue NW, west of 5th Street NW), 219 leased parking stalls (in the Puyallup Fair's "Red Lot" approximately ½ mile south of the station, located on 5th Street SW between 7th Avenue SW and 9th Avenue SW), five bicycle rack spaces and 20 bicycle lockers (with a 40-bicycle capacity) available. There is space available north and south of the commuter rail platforms for up to 38 vehicles at any one time for passenger drop-off and pick-up.

Transit Connections

Puyallup Station is served by an ST Express bus route and a number of PT bus routes. There are also a number of additional PT bus routes in the vicinity of the station. There is an off-street transit center on the north side of the station. Changes in transit service made since 2010 are noted in *italics*. *Due to the defeat of Proposition 1 ("PT Tomorrow") in February 2011, service reductions were implemented in June and October 2011 affecting service to Puyallup Station. All special event services were eliminated.*

ST Express Route 578 serves the Puyallup, Sumner and Auburn Stations as a midday and evening/night extension of ST Express Route 577 from Federal Way to Seattle. The service supplements Sounder by providing a fast service between these stations and downtown Seattle in the off-peak times when Sounder does not operate. It also provides peak period, off peak direction (southbound in the morning, northbound in the afternoon) service between Puyallup and Tacoma (Tacoma Dome Station and downtown Tacoma).

PT Route 400 provides service between South Hill, Puyallup (including the Red Lot and Puyallup Station), Tacoma Dome Station, and downtown Tacoma. Peak period service is approximately every 30 minutes with midday service every 60 minutes. In the morning, the northbound schedule replicates the service between South Hill Mall Transit Center and the Puyallup Station formerly provided by PT Route 495. Trips are timed for connections to the northbound Sounder trips.

PT Route 402 connects Hidden Village in Spanaway, SW Puyallup, Puyallup Station and the Federal Way Transit Center approximately every 30 minutes from about 5:00 a.m. to 9:00 p.m. The Sounder schedule is shown on the bus timetable and there are good transfer connections to most of the Sounder trips in the morning. For return trips in the afternoon, there is generally a 15-20 minute wait for the bus. *Service on PT Route 402 has been significantly reduced from service approximately every 30 minutes to 60 minutes and later evening trips have been eliminated. The revised service provides only one good morning northbound connection and two or three good afternoon southbound connections to Sounder.*

PT Route 409 connects the 72nd Street Transit Center, Puyallup, Sumner and the Sumner Industrial area. This route has service every 30 minutes in the peak period with service every 60 minutes midday. The transfers are coordinated best at the Sumner Station (the Puyallup Station Sounder schedule is not in the timetable) but there are some good transfer connections to and from the west with 5-10 minute waiting times in the morning (however, two bus trips have the same arrival time as the Sounder departure) and 15-20 minute transfer times in the afternoon. *Similar to many PT routes, this route now has significantly less service. Service in the peak period is now every 60 minutes and the span of service has been reduced, notably with the elimination of the first two eastbound trips in the morning (both of which made good connections to Sounder). There are now few good connections between Route 409 and Sounder and the Sounder/Route 409 schedule coordination insert has been dropped from the public timetable.*

PT Routes 413, 446 and 490 are in the general vicinity of Puyallup Station but do not serve the station. *These three routes have been eliminated.*

PT Route 495 connects the South Hill Mall Transit Center to Puyallup Station (including the Red Lot) with seven morning northbound trips and seven afternoon southbound trips, all scheduled for good transfers. *The morning service on this route has been eliminated. See note for PT Route 400.*

Origin and Destination

Two hundred sixty-four of the passengers who boarded at Puyallup Station were surveyed one morning during the first week of November 2010. Table 2-15 shows the city of origin for the passengers surveyed. Of these 264 passengers, 81% disembarked at King Street Station and 14% at Tukwila Station.

Table 2-15: Puyallup Passenger City of Origin

City	Boardings	% of Boardings
Eatonville	5	2
Graham	16	6
Puyallup	204	78
Spanaway	11	4
Tacoma	14	5
Other	14	5
TOTAL	264	100

Rider Survey Information

Table 2-16 summarizes the station arrival access mode data from the passenger surveys.

Seventy-three percent of the passengers who returned surveys drove themselves to the station on that day. An additional 12% of passengers were dropped off that day.

Table 2-16: Puyallup Sounder Access

Mode	% of Arrivals
Drive	73
Drop-off	12
Carpool	3
Feeder Transit	6
Bike	1
Walk	4
Other/Sounder Reverse	1
TOTAL	100

Station Area Arrival Access Mode

Arrival mode information was gathered by direct observation at the station on the morning of November 2, 2010 between 4:45 and 8:15 a.m., which was just after the departure of the last train. A total of 1,062 arriving passengers were observed. Table 2-17 summarizes the station arrival mode data.

Table 2-17: Puyallup Arrival Mode

Mode	Arrivals	% of Arrivals
Auto	586	55.2
Feeder Transit	146	13.7
Bicycle	19	1.8
Drop-off	104	9.8
Walk	201	18.9
Train	6	0.6
TOTAL	1,062	100.0

Observations in the Field

Although the observation data indicates that just over 55% of arriving passengers drove themselves to the station, the high number of walk-up passengers observed could be due to passengers driving to the station but parking off-site after the main parking lot was full. This also may explain the difference between the modes reported on the rider survey and the

observed modes. The north lot was full shortly after the fifth northbound train departed at 7:02 a.m.

The Puyallup Fair's Red Lot, which opened in October 2009 for station patrons, had only six cars in it at the end of the observation period in fall 2010. *As of October 1, 2011, the Cornforth Campbell parking lot is no longer available to ST commuters due to time limits on parking, and commuter rail parking was moved to the Red Lot. By early 2012, use of the Red Lot increased to approximately 150 vehicles per day.*

Traffic Counts

Four intersections near the station (see Figure 2-5) were counted between 6:30 and 8:30 a.m. on November 2, 2010, the same day station arrival mode split observations were recorded.

The 5th Street NW/W Stewart Avenue intersection is signalized with left turn lanes on all four legs and right turn bypass lanes in the eastbound and westbound directions on W Stewart Avenue. There are no traffic issues at this intersection in the morning peak hour (7:10 to 8:10 a.m.).

The N Meridian Street/W Stewart Avenue intersection is signalized. N Meridian Street is one-way southbound. There are no traffic issues at this intersection in the morning peak hour (7:30 to 8:30 a.m.).

The 4th Street SW/W Main Avenue intersection is unsignalized and W Main Avenue traffic is not required to stop. There is no north leg at the intersection. There are no traffic issues at this intersection in the morning peak hour (6:55 to 7:55 a.m.).

The Meridian Street N/W Main Avenue intersection is signalized. Meridian Street N is one-way southbound. There are no traffic issues at this intersection in the morning peak hour (7:20 to 8:20 a.m.).

Jurisdiction Goals and Policies

The Puyallup Station is designated Central Business District and Central Business District Core by the City's Comprehensive Plan and zoning code. The PSRC has designated the Puyallup downtown area, including the station, as a Regional Growth Center.

Puyallup Comprehensive Plan. The Comprehensive Plan was first adopted in 1991. Since that time, the plan has been updated annually. One of the main goals of the plan is to create a multimodal approach to transportation, focusing on walkway, bikeway, and transit systems in addition to roadways (City of Puyallup 1994). Per the GMA, Puyallup is scheduled to update its Comprehensive Plan by June 30, 2015.

Specific goals, policies and objectives include:

Land Use Element

- *II.1.b: Focus multi-family housing, large scale developments, and taller buildings within the City's two Regional Growth Centers on South Hill and Downtown.*
- *II.7: In order to stimulate employment and residential development, coordinate land use and transportation planning efforts to functionally unite the City's two Regional Growth Centers and the Meridian corridor.*
- *V.2: Focus new population and housing growth within Regional Growth Centers and other areas with prioritized infrastructure financing.*
- *VI.1.g: Promote mixed-use projects integrating moderate and high density residential uses with commercial uses in areas designated for pedestrian oriented commercial, limited commercial, and automobile oriented commercial, especially within the City's two regional growth centers. Mixed-use developments including a residential component within pedestrian oriented commercial (POC) areas should be subject to height, bulk, and building design standards with no density limitations imposed.*
- *X.2.a: Encourage commercial development and redevelopment to be focused into compact centers with interrelated functions and discourage further strip commercial development.*
- *XVI: Promote mass transit and accommodate individuals who rely upon bus and/or commuter rail by assuring a mix of uses near to the commuter rail station that serve commuter needs and complement each other.*
- *XVI.4: Exclude new automobile related uses. The sale, service or maintenance of automobiles is unrelated to the daily shopping needs of individuals relying primarily on mass transit, does not reflect the day to day needs of households living in the Commuter Rail Station Center and downtown area, and interferes with the retail clustering opportunities.*
- *XVI.4.a: Prohibit primary use surface level parking lots (i.e., lots that are not associated with a specific use and site) in the Commuter Rail Station Center and downtown area.*
- *XVII: Through public infrastructure investments and streamlining the development review process, encourage development of residential and employment densities downtown that are sufficient to support transit service.*

Transportation Element

- *I.6.a: The City should encourage Pierce Transit to increase the availability of transit, including the frequency of service and the number of bus routes, especially serving transit hubs in downtown Puyallup (i.e., the Sounder Station), and on South Hill (i.e., the existing transit center and future Bus Rapid Transit hub).*

- *I.6.b: The City should cooperate with transit providers, including Pierce Transit and the Regional Transit Authority, to encourage provision of facilities and services that make multi-modal travel more convenient.*
- *I.6.h: The City should implement facilities which favor transit and other high occupancy vehicles at congested intersections where appropriate, such as the bus rapid transit system identified in the LIFT* [Local Infrastructure Financing Tool] *program.*
- *Goal V: A wide range of local and regional transit services to meet the needs of present and future residents should be developed.*
- *V.3.a: The City acknowledges that Sound Transit has primary responsibility for providing commuter rail service. The City shall cooperate with Sound Transit in siting commuter rail stations within the UGA* [Urban Growth Area]*, as appropriate, and expanding station facilities and services, as needed.*

Downtown Revitalization Neighborhood Plan

- *I.4.d: The City shall encourage development of structured parking and transit-oriented development which will focus growth within the Growth Center.*
- *IV.4.a: The City shall continue coordinating with Sound Transit to promote the use of rail commuting while addressing ongoing issues including parking, reverse commute opportunities, pedestrian connections and bolstering local businesses.*
- *IV.4.c: The City shall encourage shuttle service connecting the Sound Transit Station and other transit hubs with future bus rapid transit service, downtown destinations such as the Western Washington Fairgrounds, and South Hill destinations such as Pierce College, the South Hill Business & Technology Center, and other employment and retail sites.*
- *IV.4.d: In order to encourage economic development, the City shall work with Sound Transit to incorporate the parking facility construction facilitated by passage of Sound Transit 2 ballot measure into transit-oriented mixed use parking developments dispersed in the downtown area, rather than into one large structure.*
- *IV.5.b: The City shall require installation of bicycle racks on the periphery of public parking areas, at major downtown destinations (e.g., the library, transit center, etc.), and where feasible on sidewalks. Where possible, bike racks shall be located in covered areas, or bike covers shall be provided. Building and business owners shall be encouraged to provide bike lockers, showers, and other facilities that support employee bicycle commuting.*

Puyallup Transportation Plan. In 2000, the City began the process to update its Transportation Plan, the foundation of the Transportation Element (City of Puyallup 2000). In 2002, additional amendments were incorporated into the annual amendment of the City's Transportation Element based on work that came from the City's updated Comprehensive Transportation Plan. The Plan includes CTR goals.

Downtown Parking Management Plan. The City is addressing strategies for appropriately managing parking facilities in the Central Business District of downtown Puyallup. Planning staff are working closely with stakeholders to develop a comprehensive vision and overall plan for managing parking demand and supply in this sub-area. Preliminary goals were presented to the Planning Commission on May 12, 2010. In the fall of 2011, the City implemented time limits and use policies for on- and off-street parking facilities in the city's downtown core. These efforts are being undertaken to maximize and better utilize existing facilities, channel long-term parking demands into off-street parking lots, and to better provide for alternative transportation modes.

Access Deficiency Assessment

Station Description and Major Barriers:

- The current at-grade crossings to the Puyallup Station limit immediate pedestrian access to and from the north. Otherwise, the surrounding Puyallup street network and topography provides relatively good connectivity.

Station Area Pedestrian and Bicycle Connectivity Assessment:

- The Sounder Passenger Access Survey indicates a significant share of pedestrian trips but no reported bicycle trips originating within the 15-minute travel shed.
- Over 1,800 employed residents are located within a 15-minute walk of the station, and over 15,000 employed residents are located within a 15-minute bicycle ride of the station. The walk and bicycle catchment areas are shown in Appendix F, Exhibit E.

Feeder Transit Service Limitations (changes in feeder transit service made since 2010 are in italics):

- PT Routes 402 and 409 riders have wait times in the 15-20 minute range after the afternoon Sounder trip arrives at the station. *Service on PT Route 402 has been reduced to every 60 minutes and later afternoon trips have been eliminated.*
- PT Routes 413, 446 and 490 are in the general vicinity of Puyallup Station but do not serve the station. *These three routes have been eliminated. PT Route 495 was modified in October 2011 and now provides connections to afternoon trains only.*

Vehicle Access and Network Capacity:

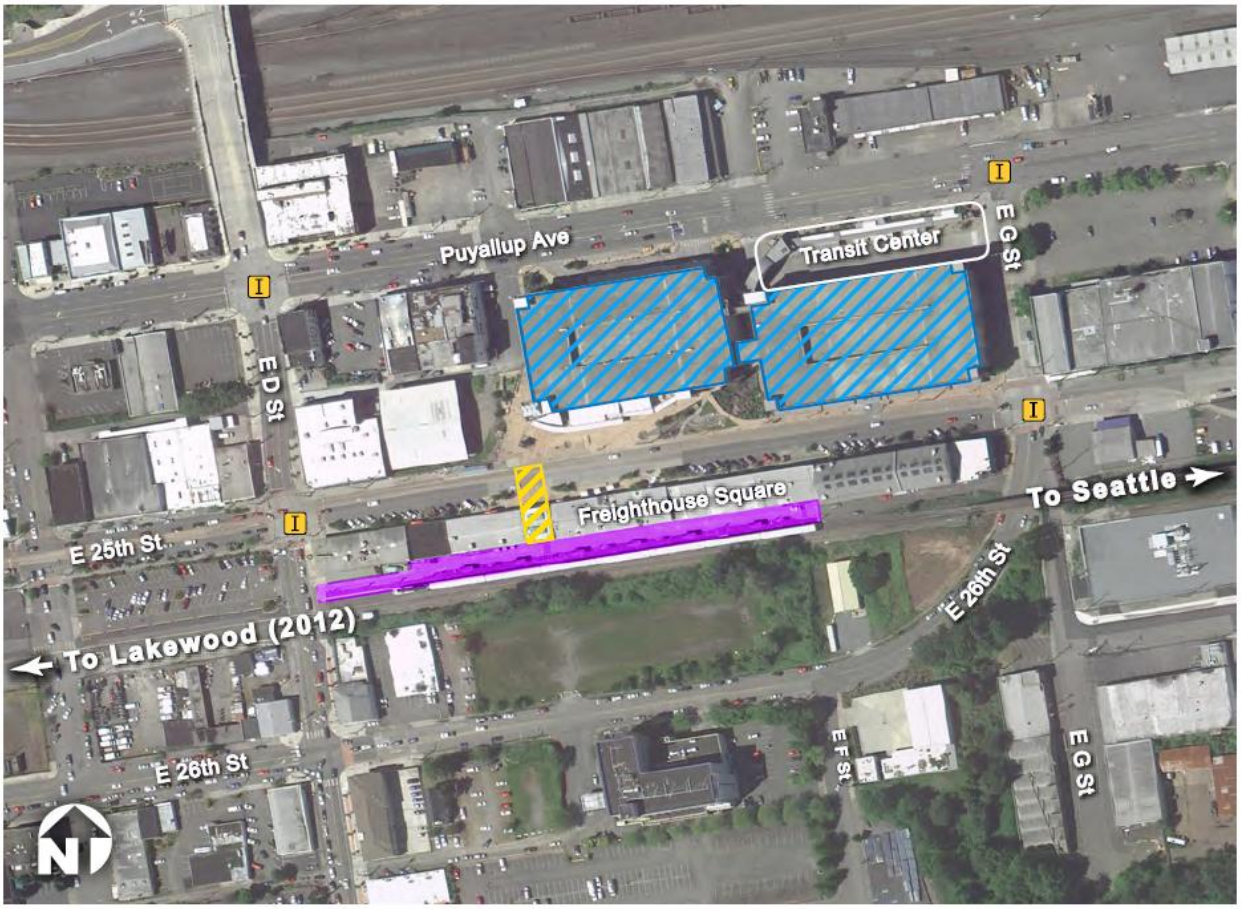
- Parking lots near the station are full before the morning Sounder service is complete.
- Although the November 2010 surveys indicated that just over 55% of arriving passengers drove themselves to the station, the high number of walk-up passengers observed could indicate that many additional passengers drove to the station but parked off-site after the main parking lot was full. *By early 2012, use of the Red Lot increased to approximately 150 vehicles per day. PT Routes 400 and 495 provide service between the Red Lot and Puyallup Station.*
- There are no level of service issues in the morning peak at intersections that serve the station.

Tacoma Dome

The Tacoma Dome Sounder Station is located southeast of downtown Tacoma, just north of the Tacoma Dome and adjacent to Freighthouse Square. Tacoma Dome Station is currently the interim terminus for Sounder service in Pierce County. Service to South Tacoma and Lakewood will begin in Fall 2012.

Sounder trains depart each weekday morning from the Tacoma Dome Station northbound to Seattle at 4:55, 5:35, 6:00, 6:25, 6:50, 7:20, and 8:00 a.m., and in the afternoon at 4:25 and 5:00 p.m. Southbound trains from Seattle arrive in the morning at 7:08 and 7:48 a.m., and in the afternoon at 4:14, 4:49, 5:19, 5:44, 6:11, 6:39, and 7:14 p.m. Figure 2-6 shows the location of the Tacoma Dome Station.

Figure 2-6: Tacoma Dome Station (424 E 25th Street)



There are 2,283 parking stalls, 10 covered bicycle rack spaces in the garage, and 27 bicycle lockers (with a 38-bicycle capacity) available. There is space available for up to 56 vehicles at any one time for passenger drop-off and pick-up.

Transit Connections

A very busy multi-modal hub, this station is served by Sounder, Tacoma Link light rail, seven ST Express routes, six PT routes, the Olympia Express (a joint PT and Intercity Transit service) and Greyhound. Also, nearby Amtrak is planning to relocate to Tacoma Dome Station. The transit center serving ST Express buses, PT, the Olympia Express, and Greyhound is north of the commuter rail platform, and riders must walk through Freighthouse Square and between the parking garages (approximately 480 feet from of the station). Tacoma Link stops across the street from Freighthouse Square, approximately 120 feet north of the station. Changes in transit service made since 2010 are noted in *italics*. *Due to the defeat of Proposition 1 ("PT Tomorrow") in February 2011, service reductions were implemented in June and October 2011 affecting service to Tacoma Dome Station. All special event services were eliminated.*

Tacoma Link connects Tacoma Dome Station through downtown Tacoma to the theater district, providing service every 10 minutes from 7:00 a.m. to 10:00 p.m. *(now service is every 12 minutes to 8:00 p.m.)* and 20 minute service before and after this time period *(now service is every 24 minutes from 5:00 to 7:00 a.m. and from 8:00 to 10:00 p.m.)*. For riders accessing northbound Sounder trips in the morning from downtown, there is no Tacoma Link to the first trip, service every 20 minutes for the next three trips, and service every 10 minutes for the last three morning trips. All of the afternoon southbound Sounder trips are met by Tacoma Link every 10 minutes.

ST Express Routes 574, 578, 586, 590, 593, 594 and 599 serve the Tacoma Dome Station. Route 599 is notable as the bus operates as an extension of Sounder to Lakewood Station. Other routes provide service to some of the Sounder markets at times and directions that Sounder does not operate, while others serve entirely separate markets. *ST Express Route 599 has been discontinued.*

Greyhound provides service to Seattle, inter-state destinations and international destinations from this station. There are four daily roundtrips to Vancouver, B.C., via Seattle and three daily round trips to Portland and beyond.

A regional service, the Olympia Express is operated jointly by PT (designated Routes 601 and 603A) and Intercity Transit (Route 603 trips). There are trips every 5-15 minutes in peak periods and approximately every 90 minutes midday. About half of the trips stop at the Tacoma Dome Station. *This service is now provided exclusively by Intercity Transit as Routes 603, 605 and 612. Total trips have been reduced from 24 in both directions to 18 northbound and 19 southbound. Twelve northbound trips serve the Tacoma Dome Station (two in the morning and all trips in the afternoon). Southbound, 11 trips serve this station (all the morning trips, a midday trip, and two additional afternoon trips).*

PT Routes 13, 14, 102, 400, 500 and 501 serve the station directly and Route 1 is very close-by.

The following describes PT routes serving this station or close-by:

- Route 1: Roy Y Park-and-Ride – Tacoma Dome Station – Downtown Tacoma – Tacoma Community College Transit Center. This route has all day service every 15 minutes except for in the early morning and after 8:00 p.m., when service is every 30 minutes. The Tacoma Dome Station is only served directly during peak periods, via a short deviation from Pacific Avenue. *This service operates from about 5:00 to 2:00 a.m. with service every 20 minutes. It does not directly serve the Tacoma Dome Station but makes a one block deviation from Pacific Avenue, which is a very short distance west of the station.*
- *Route 13: Tacoma Dome Station – Downtown – N 30th St – Proctor Shopping District. Route 13 has all day service every 60 minutes in both directions from 5:40 a.m. to 6:20 p.m. There are only a few good connections to Sounder.*
- *Route 14: Tacoma Dome Station – Downtown (Dock St) – UPS – Proctor Shopping District. This route has service every 60 minutes from about 6:00 a.m. to 7:00 p.m. This route has two good connections from Sounder in the morning and one to Sounder in the afternoon.*
- Route 41: Downtown Tacoma – Tacoma Dome Station – 72nd St Transit Center and Park-and-Ride. This is all day, bi-directional service that varies from every 20-35 minutes. Transfer times to Sounder vary from 5-20 minutes. *Service is now provided every 60 minutes in the early morning, midday and evening with peak period service approximately every 30 minutes. There are good connections to about half of the northbound morning and southbound afternoon Sounder trips. In addition, some Route 41 trips are through-routed with PT Route 11 Point Defiance trips, providing additional direct service to and from Point Defiance.*
- Route 102: Gig Harbor – Tacoma Express. This is a peak period, peak direction service with six morning and six afternoon trips. Five of the Route 102 morning trips make an acceptable connection with Sounder but only three do in the afternoon. *This route now has four morning and five afternoon trips, with all but the last morning and first afternoon trips making good connections to Sounder.*
- Route 490: South Hill – Downtown Tacoma. This route has four morning and four afternoon peak period, peak direction trips. Overall the transfer connections to and from Sounder are poor. *This route has been eliminated.*
- Route 500: Downtown Tacoma – Federal Way and Route 501 Milton – Federal Way. All trips serve the Tacoma Dome Station. These routes are not particularly relevant to Sounder service.

Amtrak, currently located at 1001 Puyallup Ave, plans to move its service to a shared station facility with Sounder at Tacoma Dome Station. No date has been set for this relocation.

Origin and Destination

One hundred forty-seven of the passengers who boarded at Tacoma Dome Station were surveyed one morning during the first week of November 2010. Table 2-18 shows the city of origin for the passengers surveyed. Of these 147 passengers, 66% disembarked at King Street Station, 25% at Tukwila Station, and 9% at Kent Station.

Table 2-18: Tacoma Dome Passenger City of Origin

City	Boardings	% of Boardings
Gig Harbor	11	7
Olympia	7	5
Lakewood	5	3
Spanaway	7	5
Tacoma	92	63
University Place	13	9
Other	12	8
TOTAL	147	100

Rider Survey Information

Table 2-19 summarizes the station arrival access mode data from the passenger surveys.

Table 2-19: Tacoma Dome Sounder Access

Mode	% of Arrivals
Drive	81
Drop-off	8
Carpool	3
Feeder Transit	3
Bike	1
Walk	2
Other/Sounder Reverse	2
TOTAL	100

Station Area Arrival Access Mode

Arrival mode information was gathered by direct observation at the station on the morning of November 4, 2010 from 4:30 to 8:00 a.m., when the last train departed. A total of 2,147 arriving passengers were observed. Table 2-20 summarizes the station arrival mode data.

Table 2-20: Tacoma Dome Arrival Mode

Mode	Arrivals	% of Arrivals
Auto	1,651	76.9
Feeder Transit	255	11.9
Bicycle	18	0.8
Drop-off	113	5.3
Walk	12	0.6
Train	84	3.9
Light Rail	14	0.6
TOTAL	2,147	100.0

The large number of parking spaces available and the fact that this is currently the southern terminus of the Sounder line contribute to the very large passenger demand at this station. More than 76% of passengers arriving at the Tacoma Dome Station drove themselves. There also were a significant number of feeder transit arrivals at the station.

Over 80% of the passengers who returned surveys drove themselves to the station on that day. Eight percent were dropped off. Arrivals by carpool, feeder transit, bike, walk, and other were relatively similar (between 1 and 3% each).

Observations in the Field

The east end of the station platform is accessible to East G Street south of Freighthouse Square, but it was not observed directly. After the observation period, 20 cars were counted parked along East G Street south of the railroad tracks. Because it is not clear whether these vehicles were driven by station users, they are not included in the station arrival estimates.

At the end of the observation period, the two station parking garages had the following available parking spaces (combined):

- 223 Unrestricted
- 12 Accessible
- 3 Employee Only
- 58 Short Term
- 1 Vehicle over 7'2" only

A Pierce Transit operations staff member present at the station bus platform on Puyallup Avenue for most of the observation period commented that passenger drop-off activity sometimes occurs in the bus area and can cause bus queuing problems. Spaces along E 25th Street are commonly used for drop-off and pick-up.

Traffic Counts

Intersections with traffic counts are shown on Figure 2-6. The East D Street/Puyallup Avenue intersection is signalized, with left turn lanes on three of the four legs (all but southbound). There are no traffic issues at this intersection in the morning peak hour (7:10 to 8:10 a.m.).

The East G Street/Puyallup Avenue intersection is signalized, with no street to the north. The north side of Puyallup Avenue is occupied by a business's parking/loading area, but there is no signal head controlling traffic entering the intersection from the business. Buses accessing the Tacoma Dome Station use this intersection extensively. There are no traffic issues at this intersection in the morning peak hour (7:20 to 8:20 a.m.).

The East D Street/E 25th Street intersection is signalized, with no left-turn lanes marked on any approach. Traffic volumes are very low and there are no traffic issues at this intersection in the morning peak hour (6:35 to 7:35 a.m.).

The East G Street/E 25th Street intersection is signalized. The light rail/streetcar tracks along E 25th Street transition from median-running east of East G Street to north-side running west of East G Street. There are no traffic issues at this intersection in the morning peak hour (6:55 to 7:55 a.m.).

Jurisdiction Goals and Policies

The Tacoma Dome Station is within the Urban Center Mixed-Use in the Tacoma Dome zone, an area characterized by dense mixed-use development. The station is also within the Tier I – Primary Growth Area of the Urban Growth Tier, which serves as the focus of growth for the next six years (City of Tacoma 2010). The PSRC has designated the downtown area, including the station, as a Regional Growth Center.

Tacoma Comprehensive Plan. The Comprehensive Plan was first adopted in 1975. At that time, it was entitled the Land Use Management Plan: Goals and Policies for Physical Development. The 2010 Annual Amendment to the Comprehensive Plan was adopted by the City Council on June 15, 2010, per Amended Ordinance No. 27892. Per the GMA, Tacoma is scheduled to update its Comprehensive Plan by June 30, 2015.

The applicable goals of the Tacoma Comprehensive Plan are to:

- *1: Achieve a balanced pattern and variety of growth and development that occurs in an orderly, timely, and desirable fashion.*
- *2: Support a multimodal transportation system that efficiently moves people and goods with optimum safety and speed, maximizes the conservation of energy and minimally disrupts the desirable features of the environment.*

Specific policies include:

- *LU-GGD-3 Concentrated Development – Growth and development throughout the urban area should be regulated, stimulated, and otherwise guided toward the development of compact concentrated areas to discourage sprawl, facilitate economical and efficient provision of utilities, public facilities and services, and expand transportation options to the public.*
- *LU-MUCD-5 Public Transit Support – Give maximum consideration for transit user convenience in centers including pullout lanes, fully developed transit stops, and, where appropriate, park and ride and multimodal facilities.*
- *LU-MUCD-6 Compactness – Centers must remain compact enough to increase densities, facilitate economical and efficient provision of utilities, public facilities and services, and support more walking, bicycling, and transit use.*
- *LU-MUCC-1 Public Transit Support – Integrate major collection points for local public transit within designated community centers.*
- *LU-RDHI-1 Locate Near or Within Regional Activity Centers – High-density residential developments should be located near and within regional mixed-use centers where utilities, transit facilities, employment opportunities and commercial conveniences and services are available to accommodate developments of this nature.*
- *LU-RDHI-7 Special Amenities – Encourage innovations in the development of high intensity residential areas to include such conveniences as grade-separated pedestrian crossings, public transit connections and mixed-use development within high-rise structures in order to meet the needs of residents in these areas.*
- *T-LUT-1 Land Use Considerations – Development, expansion, or improvement of transportation facilities should be coordinated with existing and future land use patterns and types of development.*

- *T-LUT-2 Land Use Patterns – Encourage land use patterns and developments, especially in mixed-use centers, that support non-single occupancy vehicle travel, increase community access, improve intermodal connectivity, and encourage short trips easily made by walking or bicycling for recreation and commuting.*
- *T-LUT-9 Transit Oriented Development – Encourage and promote transit-oriented development (TOD) and provide incentives for development that includes specific TOD features.*
- *T-MS-4 Transit Planning – Support future transit planning among local and regional governmental agencies to improve the reliability, availability, and convenience of transit options.*

Tacoma Mobility Master Plan. The City of Tacoma Mobility Master Plan was created in 2010. The Tacoma Mobility Master Plan provides a vision, objectives, and an implementation plan for how the City of Tacoma can improve conditions for bicycling and walking in Tacoma over the next 20 years. The plan envisions an interconnected bicycle and pedestrian network that provides safe routes to neighborhoods, schools, recreational public facilities, business districts, transit centers and environmental features. Multi-modal connections and CTR policies are included (City of Tacoma 2010). Near the station, bicycle lanes are proposed along East D Street and Puyallup Avenue, with a bicycle boulevard proposed along SR 509 with a connection to Pacific Avenue. A trail is also proposed along East D Street.

South Downtown Subarea Plan and EIS. The City of Tacoma, along with the University of Washington, Tacoma, is preparing a subarea plan for areas around the Tacoma Dome, Brewery District, Thea Foss Waterway, and the University of Washington Tacoma campus. The Subarea Plan and EIS will identify and prioritize necessary infrastructure improvements; plan for parks, trails, and open space; prioritize transportation investments including light rail, parking, pedestrian and bike improvements; develop potential funding strategies; and pre-approve up to 30 million square feet of new development space. Scoping for the EIS was completed in December 2011. The City anticipates releasing the Draft Plan and EIS in fall 2012.

Commute Trip Reduction. The Tacoma City Council adopted the CTR Plan in July 2007 (Resolution No. 37220) and adopted the CTR Ordinance into the Tacoma Municipal Code, Chapter 13.15, in December 2008 (Ordinance No. 27771). The CTR Plan provides guidelines for the City and major employers affected by the State law to implement effective strategies to achieve the goals of 10% reduction in drive-alone trips and 13% reduction in vehicle miles traveled by 2011.

In addition to the mandated program activity, the City of Tacoma is participating in a voluntary pilot program encouraged and funded by the State, whereby downtown Tacoma is designated as a Growth and Transportation Efficiency Center (GTEC). More aggressive CTR strategies will be implemented within the GTEC, involving selected target audiences besides the CTR-affected employers. Expected outcomes of the pilot program are the reduction of auto-dependent trips and the alleviation of the burdens on State highway facilities within and between GTECs. The GTEC program is effective from July 2008 through June 2012 (City of Tacoma 2010).

Access Deficiency Assessment

Station Description and Major Barriers:

- The current at-grade crossings and adjacent topography to the Tacoma Dome Station limit immediate pedestrian access from the south. Otherwise, the surrounding Tacoma street network provides relatively good connectivity.
- The Tacoma Dome Station is located within an area of almost exclusively non-residential uses.
- I-5, I-705, and the existing BNSF Railway line are direct barriers to pedestrian and bicycle access to the station.

Station Area Pedestrian and Bicycle Connectivity Assessment:

- The Sounder Passenger Access Survey indicates no pedestrian trips and very few bicycle trips originating within the 15-minute travel shed.
- Only 130 employed residents are located within a 15-minute walk, while over 18,000 employed residents are located within a 15-minute bicycle ride of the station. The walk and bicycle catchment areas are shown in Appendix F, Exhibit F.

Feeder Transit Service Limitations (changes in feeder transit service made since 2010 are in italics):

- ST Express Routes 590/593/594 compete with Sounder by providing peak hour/direction service from the Tacoma Dome Station to downtown Seattle.
- There is no Tacoma Link service for the first morning Sounder trip.
- PT Route 102 does not provide connections for two of the morning northbound and five of the afternoon southbound Sounder trips. *This route now provides good connections with all but the last morning and first afternoon Sounder trips.*
- *Modifications and reductions to PT routes serving Sounder stations were implemented in October 2011 due to the defeat of Proposition 1 ("PT Tomorrow"). This included eliminating PT Route 490.*

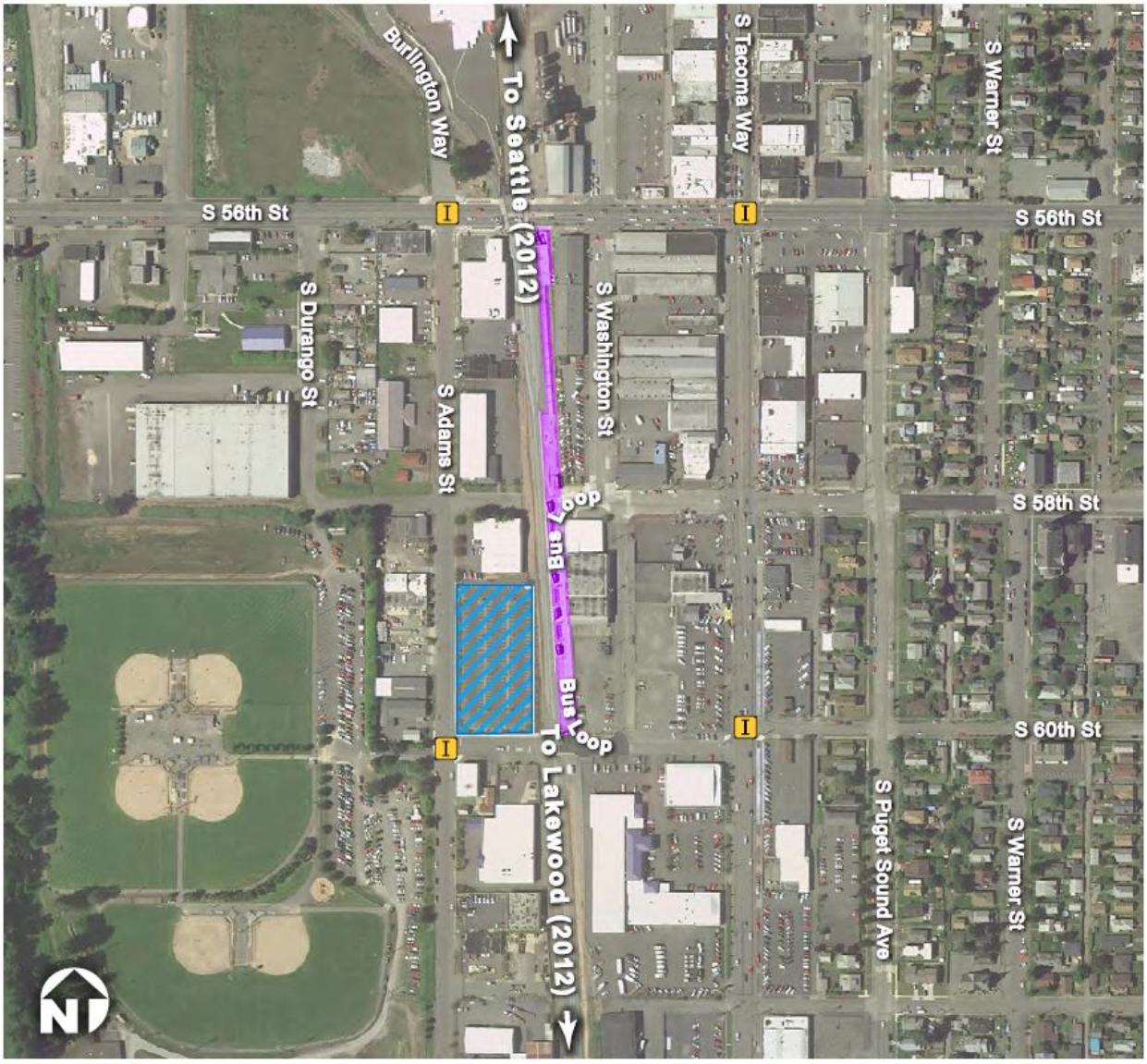
Vehicle Access and Network Capacity:

- There are no level of service issues in the morning peak at intersections that serve the station.

South Tacoma

The South Tacoma Sounder Station, which has been constructed, will be served by Sounder when service to Lakewood begins in 2012. The station is located in southwest Tacoma, south and west of the major intersection of S 56th Street and South Tacoma Way. Figure 2-7 shows the location of the South Tacoma Station.

Figure 2-7: South Tacoma Station (5650 S Washington Street)



There are 220 parking stalls in the surface parking lot, 16 bicycle rack spaces, and four bicycle lockers (with an eight-bike capacity) available. There is space available for up to 22 vehicles at any one time for passenger drop-off and pick-up.

Transit Connections

The station is served by ST Express Route 593 through the Tacoma Dome Station to downtown Seattle. It is also served by PT Routes 53 and 59 via S 56th Street (with stops approximately 4,750 feet/0.9 mile and 1,580 feet/0.3 mile from the station, respectively) and PT Route 300 via South Tacoma Way (approximately 530 feet from the station). Changes in transit service made since 2010 are noted in *italics*. *Due to the defeat of Proposition 1 ("PT Tomorrow") in February 2011, service reductions were implemented in June and October 2011 affecting service to Tacoma Dome Station. All special event services were eliminated. PT Route 53 has modified routing but still serves the South Tacoma Station vicinity. PT Route 59 has been eliminated but only provided two morning and two early afternoon round trips, the latter of which were not within operating hours of Sounder. PT Route 300 remains and has the same routing but has a reduced span of service that eliminated the first two morning trips (which had potential connections to Sounder) and two late afternoon trips.*

Origin and Destination

Because riders of ST Express Route 593 disembark at Tacoma Dome Station, rider surveys from the South Tacoma Station were captured on the train from those boarding at Tacoma Dome Station.

Station Area Arrival Access Mode

Field data and observations were not collected for the South Tacoma Station because it was not open for Sounder service at the time of the surveys (November 2010).

Traffic Counts

Intersections with traffic counts are shown on Figure 2-7. There are no traffic issues at these intersections during the morning peak hour (7:30 to 8:30 a.m.).

The S Tacoma Way/S 56th Street intersection is signalized, with left turn lanes on all four legs. Traffic volumes are moderate, as S 56th Street is a primary east-west commute route for the area.

The South Tacoma Way/S 60th Street intersection is unsignalized and South Tacoma Way traffic is not required to stop. The east and west legs are offset by about 40 feet. Traffic volumes are very low.

The S Adams Street/S 56th Street intersection is unsignalized and S 56th Street traffic is not required to stop. S 56th Street has a center turn lane. The heavy volumes on S 56th Street could result in some delay for northbound vehicles desiring to turn left and go west. However, the volume of traffic making this movement in the morning peak is very low, and the center turn lane will allow such vehicles to use separate gaps in eastbound and westbound traffic to complete the turn.

The S Adams Street/S 60th Street intersection is unsignalized and S Adams Street traffic is not required to stop. The west leg of the intersection is an entrance to the South End Recreation Area. Traffic volumes are very low.

Jurisdiction Goals and Policies

The South Tacoma Station is designated Heavy Industrial and lies within the South Tacoma Manufacturing/Industrial Center overlay.

The applicable goals and policies for the Comprehensive Plan are described in the Tacoma Dome Station section.

Tacoma Mobility Master Plan. Approximately 1,580 feet/0.3 mile west of the station, an extension to existing bicycle lanes is proposed along S Tyler Street (north of S 62nd Street) and along S 56th Street. A bicycle boulevard is proposed along S 54th Street (approximately 1,050 feet/0.2 mile northeast of the station). The existing Water Ditch Trail is located approximately 2,110 feet/0.4 mile east of the station and roughly follows S Clement Street.

Access Deficiency Assessment

Station Description and Major Barriers:

- South Tacoma Station is located in an area of mixed commercial and residential use.
- The proposed South Tacoma Community Center Campus development may improve pedestrian and bicycle connectivity to S Tyler Street, west of the station. The surrounding area street network and topography provides a relatively good connection for pedestrian and bicycle access to the station.

Station Area Pedestrian and Bicycle Connectivity Assessment:

- Commuter rail service was not extended to South Tacoma at the time of this study; hence, there are no passenger survey data to compare to the connectivity scoring for pedestrian and bicycle access.
- 1,165 employed residents are located within a 15-minute walk and 14,444 employed residents are located within a 15-minute bicycle ride of the station. The walk and bicycle catchment areas are shown in Appendix F, Exhibit G.

Feeder Transit Service Limitations (changes in feeder transit service made since 2010 are in italics):

- ST Express Route 593 and PT Routes 53, 59 and 300 currently serve the station park-and-ride. No comments can be made about feeder transit connections because Sounder was not operating at the station at the time of this study. *Modifications and reductions to PT routes serving Sounder stations were implemented in 2011 due to the defeat of Proposition 1 ("PT Tomorrow"). PT Route 53 has modified routing but still serves the South Tacoma Station vicinity. PT Route 59 has been eliminated. PT Route 300 remains and has the same routing but has a reduced span of service.*

Vehicle Access and Network Capacity:

- Currently there is parking capacity, but Sounder service had not begun at the time of this study.
- There are no level of service issues in the morning peak at intersections that serve the station.

Lakewood

The Lakewood Sounder Station, which has been constructed and will be fully operational in 2012 when Sounder service is extended to Lakewood, is located in southern Lakewood on the north side of Pacific Highway South, east of Bridgeport Way SW. The station currently is served by ST Express buses. Figure 2-8 shows the location of the Lakewood Station.

Figure 2-8: Lakewood Station (11424 Pacific Highway SW)

There are 600 parking stalls and 18 covered hooks/hangers for bicycles available in the garage. There is space available for up to 14 cars at any one time for passenger drop-off or pick-up.

Transit Connections

Bus stops are located next to and east of the station platform. Changes in transit service made since 2010 are noted in *italics*.

ST Express Routes 592/594 operate from the Lakewood Station (a few peak period trips extend to/from DuPont) to downtown Seattle. The peak period (Route 592) service varies from every 7-15 minutes with midday (Route 594) service every 30 minutes. The 592 trips bypass Tacoma but the 594 trips stop at the Tacoma Dome Station.

ST Express Route 599 is a bus-operated Sounder route extension from the Tacoma Dome Station to Lakewood Station. There are timed transfers for all Sounder trips and no fares are collected on the buses but riders must have a valid transfer, pass, ORCA card, or Sounder ticket. Service on Route 599 will be cut back once Sounder service to Lakewood Station begins in 2012. *This route has been eliminated.*

PT Route 300 travels between Lakewood Station and the Lewis-McChord Joint Base. There is service every 30 minutes during the day and every 60 minutes in the evening. *As noted in the South Tacoma Station section, the first and last two trips of this route have been eliminated.*

The Olympia Express from Olympia to Tacoma is provided jointly by PT (trips designated 601 and 603A) and Intercity Transit (Route 603 trips). There are trips every 5-15 minutes in peak periods and roughly every 60 minutes midday. All trips stop at the Lakewood Station. *The Olympia Express is now operated exclusively by Intercity Transit as Routes 603, 605 and 612; all trips still stop at Lakewood Station. Total trips have been reduced from 24 in both directions to 19 southbound and 18 northbound. The service frequency varies throughout the day.*

Other PT routes operate in the vicinity and may be included in future modifications to serve the Lakewood Station. *For example, PT Route 206 from Lakewood Transit Center to Madigan Hospital operates through the intersection of Bridgeport Way and Pacific Highway. PT Route 51, connecting UPS, Cheney Stadium, and the Lakewood Transit Center, has already been extended to serve the Lakewood Station directly, providing service every 60 minutes from about 6:00 a.m. to 7:30 p.m.*

Origin and Destination

Twenty eight of the passengers who boarded at Lakewood Station were surveyed one morning during the first week of November 2010. Table 2-21 shows the city of origin for the passengers surveyed. All of these passengers disembarked at Tacoma Dome Station.

Table 2-21: Lakewood Passenger City of Origin

City	Boardings	% of Boardings
Tacoma	7	25
Spanaway	2	7
Olympia/Lacey	6	21
DuPont	7	25
Lakewood	3	11
Other	3	11
TOTAL	28	100

Station Area Arrival Access Mode/Rider Survey Information

No field data or observations were collected for the Lakewood Station because it was not open for Sounder service during the time of the station surveys (November 2010). The rider survey indicated that of the 28 passengers surveyed, 68% arrived by auto and parked at the station and 21% arrived by feeder transit. Of these feeder transit riders, half parked at the DuPont Park-and-Ride.

Traffic Counts

The Pacific Highway SW/parking lot driveway intersection (see Figure 2-8) is signalized, and there is no southeast leg at the intersection. There are no traffic issues at this intersection in the morning peak hour (7:30 to 8:30 a.m.)

Jurisdiction Goals and Policies

The Lakewood Station is within the Transit Oriented Commercial zone within the Lakewood Station District and is designated as Corridor Commercial by the City's Comprehensive Plan.

The station lies within the area designated by the PSRC as a Regional Growth Center.

Lakewood Comprehensive Plan. Lakewood adopted its initial comprehensive plan in 2000 as a new city and updated the plan in 2004. In addition, the plan is amended yearly as provided for in the state GMA. As part of the plan's land-use element, the City created the Lakewood Station District and an urban design framework for the district (City of Lakewood 2010). The Lakewood Station District is also part of Lakewood's designated urban center under the *Vision 2040* plan (PSRC 2009). Per the GMA, Lakewood is scheduled to update its Comprehensive Plan by June 30, 2015.

Lakewood Station District: Once Sounder service reaches Lakewood in 2012, the station will act as the multi-modal commuter hub of Lakewood and the southern terminus of Sound Transit's commuter rail service. This district will provide a mixture of intensive land uses (office, retail and high density residential), a pedestrian-oriented urban environment, and activities supportive of regional transportation. The plan provides incentives to encourage urban growth over a period of time.

The applicable goals and policies of the Lakewood Comprehensive Plan are:

GOAL LU-25: Promote the Lakewood Station area as the multi-modal commuter hub of Lakewood.

- *LU-25.1 – Coordinate with affected agencies to facilitate the development and operation of the Lakewood Station area as a multi-modal commuter hub.*
- *LU-25.2 – Foster the Lakewood Station area's role as a transit-oriented development district.*

- *LU-25.3 – Seek ways to acquire additional public and semi-public open space including the creation of mechanisms for bonus densities in return for provision of open space and other public amenities.*
- *LU-25.4 – Provide incentives for redevelopment of the Lakewood Station area to capitalize on growth and visibility associated with the commuter rail station.*

GOAL LU-26: Promote an interactive mixture of activities around the Lakewood Station that focus on the station's regional access.

- *LU-26.1 – Coordinate and promote the development of the area around the Lakewood Station to create a distinctive urban node that provides for a rich mixture of uses including regional offices, major institutions, high-density urban residences, neighborhood businesses, and open space.*

GOAL LU-27: Develop an urban design framework to guide physical development of the Lakewood Station district.

- *LU-27.1 – As part of the Lakewood Station sub-area plan, develop design guides and a detailed urban design framework plan for the Lakewood Station District, coordinating public and private development opportunities (see GOAL UD-9).*
- *LU-27.2 – Prioritize completion of existing street grid to ensure connectivity throughout the Lakewood Station district.*
- *LU-27.3 – Create additional public and semi-public open space opportunities to serve residents, employees, commuters and visitors in the Lakewood Station district.*
- *LU-27.4 – Improve pedestrian and vehicular connections across the railroad tracks, Pacific Highway Southwest, and I-5.*

GOAL UD-9: Create a livable, transit-oriented community within the Lakewood Station district through application of urban design principles.

- *UD-9.1 – Provide for pedestrian and bicycle connectivity within the Lakewood Station district to the commuter rail station.*
- *UD-9.2 – Identify the opportunities for additional public/semi-public green space in the Lakewood Station district. (see Policy LU25.3 regarding bonus densities).*
- *UD-9.3 – Improve identified civic boulevards, gateways, and green streets within the Lakewood Station district to provide a unifying and distinctive character.*
- *UD-9.4 – Establish the intersection of Pacific Highway Southwest and Bridgeport Way as a major gateway into the city and develop a landscaping treatment to enhance the city's image at this gateway.*
- *UD-9.5 – Develop a sub-area plan to serve as the framework plan for developing the Lakewood Station district. Incorporate site and architectural design measures to coordinate consistency of private and public development.*

Other changes envisioned within the Lakewood Station district include:

- Strengthening and completion of the street grid north of St. Clare Hospital and east of Bridgeport Way
- Developing an open space corridor adjacent to the railroad tracks as part of a greater citywide system

Some of the specific urban design actions that may occur as the Lakewood Station district develops over the next 20 years are:

Landmarks/Activity Nodes: The Bridgeport Way intersection with I-5, the most visible access point into the city, would be redeveloped and landscaped into a graceful entrance on both sides of Pacific Highway SW. The commuter rail station and related architecture, including the garage structure, could present a memorable regional image, while simultaneously functioning to mediate the transition in scale between the station and the neighborhood to the north.

Civic Boulevards: Bridgeport Way, Pacific Highway SW, and 112th Street would receive various safety and image-oriented streetscape improvements, including landscaped medians, improved crosswalks, and undergrounding of utilities.

Green Streets: Several important pedestrian connections would be made along existing streets to increase pedestrian interest and safety, including curb ramps, street trees, crosswalks, and lighting.

Transit-Oriented Commercial Zoning. Following adoption of its comprehensive plan, Lakewood instituted new citywide zoning in 2001. The Lakewood Station District contains several different zoning districts. The Transit-Oriented Commercial (TOC) zoning district is specific to the station district and reflects the commercial corridor within that area. The intent of the zone is to create "*an interactive mixture of uses which focus on regional transportation networks while providing for urban design, people orientation, and connectivity between uses and transportation routes*" (LMC 18A.30.510). In addition to commercial uses, multifamily housing is also allowed within the zone at a density of 54 dwelling units per acre, as either a large, stand-alone development or combined with ground-floor commercial uses.

The area north of the tracks and south of St. Clare Hospital is zoned Multifamily 3, which also provides for density of up to 54 dwelling units per acre. It differs from the TOC provisions in that it allows smaller stand-alone developments and does not integrate ground-floor commercial uses. The area currently contains older, largely outdated multifamily housing which may be suited for redevelopment. PT is planning its local connection between the Lakewood Towne Center transit station and the Sounder station through this area. However, transit service implementation and redevelopment interest is impeded by the fact that the area is currently physically separated from the station by the tracks themselves.

Non-Motorized Plan. Lakewood adopted their Non-Motorized Transportation Plan in 2009 (City of Lakewood 2009a), which identifies specific Sounder station access improvements, including a new grade-separated crossing of the railroad at Lakewood Station called the

"Lakewood Connection." The crossing will provide more direct pedestrian and bicycle connection from Lakewood's downtown and central neighborhoods to the commuter rail station. The bridge will be under construction in 2012. Sound Transit provided a contribution of $1 million for the Lakewood Pedestrian Connection project.

Access Deficiency Assessment

Station Description and Major Barriers:

- Based on the current street network, both pedestrian and bicycle connectivity from neighboring land parcels north and west of the rail line to the Lakewood Station is severely limited. A grade-separated pedestrian and bicycle crossing, funded in part by Sound Transit, is planned to be constructed in 2012 and will provide significant access improvements to the station in the future.

Station Area Pedestrian and Bicycle Connectivity Assessment:

- Commuter rail service was not yet extended to Lakewood at the time of this study; hence, there are no passenger survey data to compare to the connectivity scoring for pedestrian and bicycle access.
- 316 employed residents are located within a 15-minute walk and 5,241 employed residents are located within a 15-minute bicycle ride of the station. The walk and bicycle catchment areas are shown in Appendix F, Exhibit H.

Feeder Transit Service Limitations (changes in feeder transit service made since 2010 are in italics):

- There are several ST Express (Routes 592/594 and 599) and PT (Routes 300, 601A and 603A) routes in the vicinity or serve the station park-and-ride. No comments can be made about feeder transit connections because Sounder was not operating at the station at the time of this study. *ST Express Route 599 has been eliminated. PT Routes 601A and 603A are now operated exclusively by Intercity Transit as Routes 603, 605 and 612.*
- *Modifications and reductions to PT routes serving Sounder stations were implemented in October 2011 due to the defeat of Proposition 1 ("PT Tomorrow").*

Vehicle Access and Network Capacity:

- Currently there is parking capacity, but Sounder service had not yet begun at the time of this study.
- There are no level of service issues in the morning peak at intersections that serve the station.

Chapter 3: Evaluation Criteria (Phase 4)

This chapter describes the evaluation criteria or performance measures used to evaluate potential projects for each of the eight stations in the study.

The project goals, objectives, and planning parameters set by the Sound Transit Board and local agencies provided the platform for the criteria. Throughout the study, stakeholders provided input and feedback on station issues and data collected by Sound Transit. As a result of combining this knowledge, understanding, and input, the following evaluation criteria has been used throughout the study; especially to evaluate the alternatives described in Chapter 4. As discussed in Chapter 5, Station Access Improvement Projects Evaluation, the top six criteria listed below were used to evaluate the potential improvement projects (described in Chapter 4).

Sounder Access Study Evaluation Criteria

Top 6 Criteria

- Increases ridership
- Cost effective/operation & maintenance cost
- Leverages previous investments
- Decreases travel time and increases reliability
- Partnership potential
  - Joint parking
  - Pedestrian amenities/quality of the walk
  - Bicycle programs and/or amenities
  - Transit feeder service
- Environmental benefits

Secondary Criteria

- Capital cost/increases value of investment
- Connectivity and mobility
- Land use development potential
- Customer service
- Public support
- Risk avoidance
- Capacity accommodates future demand
- System integration

- Project funding toward capital improvements (minimize operations and maintenance increases/programs)
- Reduce SOV access share
- Greenhouse gas reduction
- Consistency with local agency and Sound Transit plans/policies
- Leverage previous investments (Sound Transit, other, matches)
- Flexibility for future actions
- Technology
- Highest and best use
- Design criteria

Chapter 4: Alternatives Analysis (Phase 5)

This chapter summarizes the analysis of access alternatives for the Sound Transit Access and Demand Study. The analysis uses future ridership and access mode estimates, based on the ST Access Tool (Appendix E), to assess the potential of multimodal access improvements to increase Sounder ridership. Ridership estimates are based on future population and employment growth around the station, as well as potential future infrastructure improvements (described in Chapter 5).

By station, current passenger counts by access mode are compared to three future scenarios, in 2030:

1. **2030 ST Access Tool Model Forecast** – This ridership estimate is based on the ST Access Tool Model, which uses a nation-wide station access database to forecast ridership based on station type, land use, access facilities and feeder service (e.g. park-and-ride, feeder transit, and street network). Land use projections for each station are based on Puget Sound Regional Council (PSRC) data (2006) and it is assumed there would be no change in station typology, feeder service, or street network. PSRC land use projections are based on the jurisdictions' adopted land use plans.

2. **ST 2030 Fare Model Forecast without Mode/Land Use Shift** – This ridership estimate is based on the ST Fare Model and assumes that the access mode share does not change (the majority of riders will continue to arrive by car and associated parking demand is met). This model also assumes that feeder transit service levels are constant with 2010 levels.

3. **2030 ST Fare Model Forecast with Mode/Land Use Shift** – This ridership estimate is based on the ST Fare Model and assumes that access modes will shift towards a more multi-modal mode share found at stations surrounded by more transit-friendly development. This model also assumes a greater number of non-park-and-ride access modes, with enough station-area residential density to generate forecasted walk and bike trips. Feeder transit service levels are constant. This represents the highest density scenario of future land use in the station areas.

These scenarios include the following assumed future characteristics for Sounder service:

- Peak period service only
- Mono-directional service (e.g. inbound to downtown Seattle in AM period)
- No charge for park-and-ride parking
- Integrated bus service for Feeder Transit

Transit-Oriented Development (TOD) has emerged around many commuter rail stations across the country. TOD includes a mixture of housing, office, retail and/or other amenities integrated into a walkable neighborhood and located within a half-mile of quality public transportation.

Such development is intended to reduce dependency on automobiles, as well as to improve mobility and access between residences, jobs, and services. Transit-oriented design around stations is often used to maximize the ridership potential of surrounding development. For all eight of the Sounder stations studied, the 2030 ST Fare Model Forecast with Mode/Land Use Shift scenario assumed a slightly higher density land use than identified in the jurisdiction's comprehensive plan with a range of 2- to 8-story structures. This scenario also assumed no substantial increase in the total amount of park-and-ride spaces at the stations, transit connections, and a good pedestrian and bicycle network within the station area.

The results of the analysis show that potential access improvements could produce increased future ridership on Sounder service beyond that already forecast for the system. Table 4-1 summarizes the results of the analysis, and shows that the improvements result in ridership increases ranging from as little as 1% (approximately 20 additional riders at Puyallup) to as high as 75% (approximately 80 additional riders at Mukilteo). Potential access improvements to facilities near the Lakewood Station are estimated to generate approximately 260 additional riders, which represents the highest projected ridership increase of all stations.

Table 4-1: Summary of Phase 5 Analysis Findings

Station	Modeled 2010 Ridership	2030 Baseline Ridership Estimates		Benefit of Improvements	
		ST Access Tool Model Forecast[1]	ST 2030 Fare Model Forecast with Mode/Land Use Shift	Additional Riders	% Increase over Forecast
Mukilteo	110	110	200	80	42-75%
Kent	840	1,060	2,000	90	5-9%
Auburn	750	1,110	1,500	190	13-17%
Sumner	770	950	1,100	180	17-19%
Puyallup	830	1,260	2,000	20	1-2%
Tacoma Dome	720	1,000	1,930	160	8-16%
South Tacoma	--	670	700	190	27-28%
Lakewood	--	1,020	700	260	25-37%
TOTAL	**4,020**	**7,180**	**10,130**	**1,170**	**11-16%**

1. Ridership estimates based on population and employment growth from PSRC, using Access Tool model.

Overall, the potential access improvements described in this chapter result in a total daily ridership increase of approximately 1,170 in 2030 (an 11–16% increase) compared to the no-improvement baseline. This increase occurs with no substantial increase in the total amount of park-and-ride spaces at the study stations and would largely result from improved pedestrian or bicycle connections to each of the stations, the addition of residential or employment-centered development within non-motorized commuting distance of the station, an increase in drop-off/pick-up spaces, or a combination of the above.

The Sound Transit Parking Pricing Study (2009) found that parking pricing offers an opportunity to better manage parking supply, encourages riders to use alternative access modes, and cost-effectively manages the system by generating revenue that could offset parking-related costs or

contribute to improved transit access. However, implementing parking pricing also carries with it the cost of infrastructure, management and operating a system, potential decreases in ridership by parking customers who are unwilling to pay for parking, potential shift in transit modes or to alternate parking facilities, and potential challenges with jurisdictional issues such as parking spillover into surrounding neighborhoods.

Methods

This chapter presents the results of the analysis, including the estimated morning peak boardings for existing conditions (2010) and baseline future conditions (2030) for each of the study stations. The growth between 2010 ridership and the 2030 baseline represents the growth projected by the Sound Transit Access Tool and Sound Transit revenue models based on regional growth in both population and congestion, and does not account for additional access improvements. The analysis also provides an assessment of the incremental ridership increase associated with the improvements discussed in this chapter for each station.

Population and employment growth in the Sounder station areas is based on the PSRC regional model, which projects growth for its Forecast Analysis Zones (FAZs). Since more refined forecasts were not available, the analysis was performed by assuming a uniform distribution of population and employment growth across each of the zones within a ½-mile radius of the station. Where multiple FAZs are within a station area, the growth rates are averaged.

The primary analysis tool used is the Sound Transit Access Tool, which was developed by the URS Team and is described in detail in Appendix E. This tool is based on the spreadsheet tool *Transit Cooperative Research Program (TCRP) Report 153: Guidelines for Providing Access to Public Transportation Stations* (TCRP Report 153) developed for the Transportation Research Board of the National Academies. It uses inputs on adjacent land use (e.g., population density, employment) and station access facilities and services (e.g., parking capacity, feeder transit service availability) to estimate station boardings by access mode. In addition, the spreadsheet incorporated the connectivity analysis provided by the Sound Transit Connectivity Tool (Appendix F) to quantify the potential ridership benefits associated with connectivity improvements in the vicinity of the study stations.

The Sound Transit Access Tool does not account for potential changes in travel behavior associated with external pressures (e.g., oil price spikes) or demographic changes. Therefore, increases in the 2030 baseline ridership come entirely from: (1) an expansion of the station catchment area; and/or (2) increases in population and jobs within the ½-mile catchment area. The Sound Transit Access Tool estimates additional changes in ridership beyond the 2030 Baseline, based on the access improvements at each station described in this chapter.

The TCRP Report 153 and the Sound Transit Access Tool classify stations based on certain characteristics of the station area, including land use intensity, feeder transit connections, parking availability, and the quality of the pedestrian network. Under current conditions, the stations in this study can be classified as “Suburban Village Center,” which is based on a

subregional hub for transit, limited pedestrian/bicycle access, and surrounding medium-high housing density (about 20-25 dwelling units per acre). Unless the station area type or land use pattern changes due to anticipated growth (e.g., "Suburban Village Center" to "Suburban TOD"), the proportionate share of various access modes within the model remains similar as overall ridership grows.

Four stations (Kent, Auburn, Sumner, and Puyallup) change from "Suburban Village Center" to "Suburban TOD" between 2010 and 2030 to reflect anticipated growth. "Suburban TOD" stations have a medium-high housing density (about 20-30 dwelling units per acre), some local bus connections, and a good pedestrian/bike access network within the station area. Under the ST Fare Model Forecast with Mode/Land Use Shift model, the Tacoma Dome station would change from "Suburban Village Center" to "Urban Neighborhood with Parking." "Urban Neighborhood with Parking" stations have medium housing density (about 10-20 dwelling units per acre), are within 5–10 miles of the central business district, operate as a subregional transit hub, and have a high quality pedestrian/bike access network. Mukilteo, South Tacoma and Lakewood remain "Suburban Village Centers."

Bicycle Access

The Sound Transit Access Tool does not provide a method to quantitatively estimate the benefit of local bicycle network improvements on bicycle access. An additional refinement to the Sound Transit Access Tool was made to allow the tool to better assess the bicycle access potential improvement projects. To address bicycle improvements, first a reasonable maximum for bicycle access to transit at a given station was set as 10% of all riders. This value was determined based on a review of access characteristics at over 500 stations throughout the country as part of TCRP Report 153, which indicated there are only two stations where access by bicyclists represents more than 10% of total ridership.

Next, a qualitative review of the suggested bicycle improvements was conducted to estimate the extent to which these changes constitute a complete bicycle network with high-quality bicycle access to the station from all directions. Stations with high-quality bicycle access in all directions and high numbers of residents within a 2-mile distance received higher bicycle mode shares in the future. Note that the topography of each station may vary and could be more or less conductive to bicycle access. Estimated bicycle mode share at study stations after improvements ranged from 2% (Puyallup) to 6% (South Tacoma).

Examples of high-quality bicycle access include sharrows and bicycle boulevards. While a typical bike lane is a portion of the roadway that has been designated by striping, signage, and pavement markings for the use of bicycles; sharrows and bicycle boulevards differ and offer other advantages to a cyclist. Sharrows, or shared lane markings, are road markings used to indicate a shared lane environment for bicycles and automobiles. Sharrows reinforce the legitimacy of bicycle traffic on the street. Bicycle boulevards are streets with low motorized traffic volumes and speeds, designated and designed to give bicycle travel priority. Bicycle boulevards use signs, pavement markings, and speed and volume management measures to

discourage use by motor vehicles and create safe, convenient bicycle crossings of busy arterial streets.

Finally, the projected bicycle parking demand at each station and the current parking supply was reviewed to identify potential future bicycle parking deficiencies. Typically Sounder trains have space for up to four bicycles per car, for a total of 28 bicycles per northbound morning trip on a seven-car train and a total of 16 bicycles per southbound morning trip on a four-car train. In the future, Sound Transit plans to add one car to each Tacoma-Seattle northbound train, providing capacity for up to 32 bicycles.

Of the four bicycle storage spaces on each Sounder train, two have facilities to secure a bicycle, and two are for standing passengers with their bicycle (this space is also designated for passengers in wheelchairs, who have priority over bicyclists). Since standing on a train car with a bicycle is not desirable and those spaces may not always be available, the station bicycle parking demand analysis is based on the number of riders who would arrive at the Sounder station with a bicycle but would choose not to take their bicycle on board the train. For this analysis, the assumption is two bicycles per car, or 16 per northbound morning train and eight per southbound morning train in the future. Assuming 10 northbound morning trains, the on-board bicycle parking supply could accommodate up to 160 bicycles. To spread the demand for bringing bicycles on board, the capacity was divided evenly among the eight southern stations (including each of the study stations plus Tukwila). The same analysis for the Everett-Seattle Line yielded 84 bicycles divided among three stations. Therefore, to provide enough bicycle parking at each station, 20 of the Tacoma-Seattle Line morning bicycle boardings and 28 of the Everett-Seattle Line boardings could be accommodated aboard Sounder trains; the remainder would require parking at the station. Table 4-2 below illustrates the bicycle parking analysis.

Table 4-2: Summary of Bicycle Parking Analysis[1]

Station	Current Bike Mode Share	Potential Future Bike Mode Share	Future Bicycle Boardings	Existing Bicycle Parking Spaces	On-Board Vehicle Parking Supply	Bicycle Parking Deficiency
Mukilteo	0.6%	3%	8	6	28	16*
Kent	0.8%	3%	62	52	20	0
Auburn	1.1%	5%	66	72	20	0
Sumner	3.0%	4%	57	24	20	13
Puyallup	1.0%	2%	40	45	20	0
Tacoma Dome	1.0%	4%	68	48	20	0
South Tacoma	N/A	6%	52	24	20	8
Lakewood	N/A	2%	25	18	20	0

1: Analysis is based on TCRP Report 153 station-type data.
* Deficiency based on minimum desirable bike parking spaces, rather than projected demand.

A review of national station access data shows that the median bicycle parking supply at rail stations is 16 spaces; this is used as the minimum threshold for Table 4-2. Based on this analysis, additional bicycle parking is needed at three of the stations: Mukilteo, Sumner and South Tacoma. At Mukilteo, the projected deficiency is based not on projected demand but on the minimum number of desirable bicycle parking spaces at any given station. Sound Transit

policy does not specify a minimum, but the Sound Transit Bicycle Administrative Policy states that Sound Transit should promote bicycle access to transit and also encourage cyclists to store/park their bikes at stations. Providing some bike parking at each station is consistent with this policy.

In addition to simply providing sufficient bicycle parking capacity, passengers considering accessing Sounder by bicycle are also concerned with the type of bicycle parking offered at the station. Many cyclists will not leave their bicycles for extended periods in an uncovered or unsecure location. There are a variety of options for bike storage at Sounder stations that could provide more secure bike storage than bike racks (Table 4-3). Providing additional secure bicycle parking may help to attract bicycle access riders to Sounder and reduce the number of on-board bicycles.

Table 4-3: Summary of Secure Bicycle Parking Options

	Bike Stations	Bike Lockers: Subscription	Bike Lockers: Shared System	Self-Service Bike Cage
Description	Provides valet attended parking. Other services (lockers, changing rooms, showers, bicycle repair, etc.) are optional.	Metal or plastic containers for storing bicycles. Self-serve.	Metal or plastic containers for storing bicycles. Self-serve.	Bicycle racks inside a locked, secure room. Free-standing cages, or fenced-in room.
Method of Access	Electronic key access, must purchase membership.	Subscribers assigned a specific locker.	Electronic key accesses network of lockers on first-come, first-served basis.	Electronic payment and/or access for subscribers.
Typical Fee Payment Method	Monthly/annual subscription.	Deposit and monthly/annual fee.	Fees charged electronically by use (several cents per hour).	On demand or annual subscription.
Benefits	High level of service and security.	Users guaranteed a spot. More secure than racks.	Higher utilization than subscription lockers. Users pay only for what they use. More secure than racks.	Lower operating costs than attended parking. More secure than open racks. High potential utilization.
Cons	High capital and operating costs. Requires a vendor to run and manage the Bike Station as a separate business.	Potential for patrons to store items other than bicycles. Waitlists for subscriptions common. Low daily utilization, and when not in use, it's not available for others to use.	Potential for patrons to store items other than bicycles. Electronic payment system increases operating costs. Being able to use ORCA for payment is several years in the future.	Lower security and service to patrons than bike stations. Potential for more bicyclists to subscribe than there are rack spaces.

Passenger Drop-Off/Pick-Up Access

In addition to evaluating the ridership impacts of various access improvements, the potential need for additional drop-off (and pick-up) capacity was evaluated. Drop-offs at Sounder stations occur during morning periods and pick-ups occur during the evening. Of drop-off and pick-up trips, pick-up trips are the primary concern. Typically drop-offs are quick, with vehicles

leaving after passengers exit the vehicle. With pick-up trips vehicles usually arrive before the train, requiring one parking space for each pick-up. Typically, where demand for drop-off/pick-up exceeds capacity, transit riders and their drivers find alternative parking arrangements (e.g., double-parking, parking in access lanes, parking in station parking lot aisles, or parking on surrounding neighborhood streets) rather than not making the trip at all. As a result, increased drop-off/pick-up capacity is unlikely to significantly impact ridership. However, it is still desirable to provide sufficient capacity for drop-off patrons to avoid the negative impacts that illegally parked drivers can have on station parking lots, neighborhood streets, traffic, and transit operations in the vicinity of stations.

To determine the potential demand for additional drop-off capacity, the team reviewed typical drop-off access by station type based on a review of national data collected for the TCRP Report 153. The typical percentage of drop-off demand at stations ranged from 11% at Suburban Neighborhood stations to 36% at Intermodal Transit Center stations. The amount of pick-up parking necessary to support this typical demand was then estimated and compared to the stations' current capacity to estimate the potential demand for additional pick-up parking (Table 4-4).

Table 4-4: Summary of Passenger Pick-Up Analysis[1]

Station	Future Passenger Pick-Up Boardings	Space Demand	Existing Supply	Pick-Up Space Deficiency
Mukilteo	11	2	8	0
Kent	329	60	39	21
Auburn	259	47	37	10
Sumner	186	34	20	14
Puyallup	322	58	38	20
Tacoma Dome	88	16	56	0
South Tacoma	91	17	22	0
Lakewood	140	25	14	11

1: Analysis is based on TCRP Report 153 station-type data.

Kent, Auburn, Sumner, Puyallup, and the future Lakewood Stations all have pick-up demand forecasts that exceed the available supply of short-term parking. However, additional unused space at each of those stations could be converted to short-term parking (without decreasing the amount of long-term parking) to meet demand.

The following section provides a summary of the estimated future access mode-share by station based on the 2030 ST Access Tool Model Forecast. Changes to the future planned density scenario (2030 ST Access Tool Model Forecast) that could result if potential improvement projects are implemented are shown for each station.

Station-by-Station Access Summary

Mukilteo Station

The population and employment within ½ mile of the station is anticipated to grow by nearly 30% by 2030. Access improvements analyzed at the Mukilteo Station primarily focus on better integration of commuter rail and ferry services, including a pedestrian bridge, enhanced wayfinding, and schedule coordination with feeder transit. To evaluate the impact of these improvements, a 20% increase in feeder transit service was modeled, which resulted in a projected two additional riders during the morning peak period.

Riders not accessing the station by ferry currently must walk to the SR 525 bridge, ¼ mile west of the station, to cross the BNSF Railway tracks to the station. A proposed bridge connection would help these passengers access the station from the adjacent neighborhood to the south. This new connection could result in as many as 80 additional riders accessing the station by foot and 10 by bicycle (Table 4-5). Additional improvements that could be implemented in the vicinity of the station are listed on pages 4-9 and 4-10.

Table 4-5: Summary of Mukilteo Station Access Analysis

Access Mode	Modeled 2010 Ridership	2030 ST Access Tool Model Forecast [1,2]	ST 2030 Fare Model Forecast with Mode/Land Use Shift		Change to 2030 ST Access Tool Model Forecast with Improvements[3]
Auto (Park-and-Ride)	70	50	65		-<10
Auto (Drop-off/Pick-up)	<10	<10	25		--
Feeder Transit	30	50	30		+<10
Bicycle	<10	<10	<10		+<10
Pedestrian	<10	<10	80		+80
TOTAL	**110**	**110**	**200**		**+80**

1. 2030 ST Access Tool Model Forecast based on PSRC land use projections (through Sound Transit Access Tool).
2. Current auto parking supply is limited to 63 vehicles. If no additional parking is provided, some forecast auto access passengers may switch to other modes, park in the surrounding neighborhood, or avoid accessing Sounder from this station altogether.
3. This column describes the projected additional riders or reduction in riders to the 2030 ST Access Tool Model Forecast based on implementation of potential improvement projects, which are listed beginning on page 4-9 and are described in Appendix H.

The graphs shown below are based on PSRC land use projections for population and employment and the Sound Transit Access Tool Model. Figures 4-2 and 4-3 use the ST 2030 Fare Model projection applied to a "suburban-village" and "TOD" station type, respectively. The TOD type has a higher density than the existing (or future) Mukilteo Station area, given current land use planning.

Figure 4-1: 2030 ST Access Tool Model Forecast

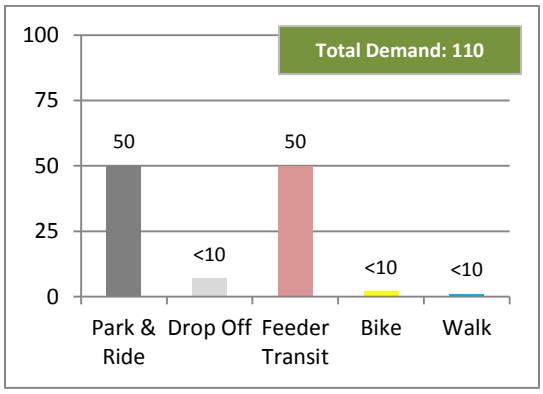


Figure 4-2: ST 2030 Fare Model Forecast without Mode/Land Use Shift

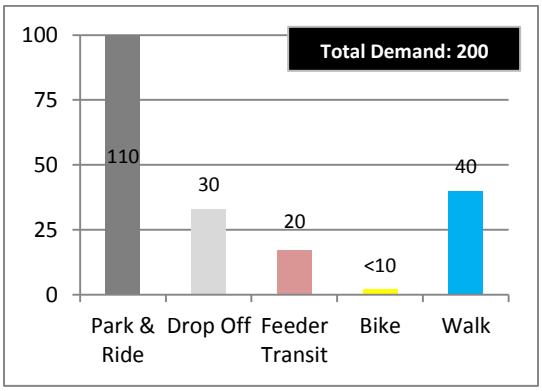
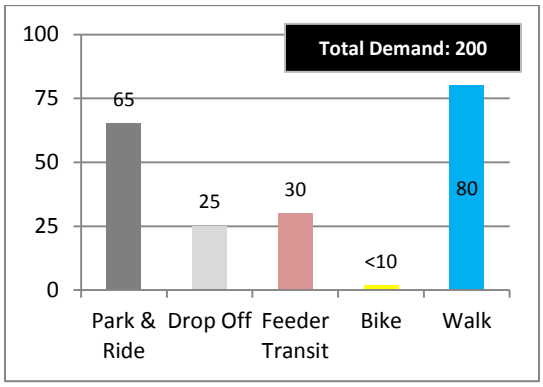


Figure 4-3: ST 2030 Fare Model Forecast with Mode/Land Use Shift



The following list of potential improvement projects and estimated costs came from a combination of city plans, input from the public, and/or observed conditions. This is a representative list of the types of access improvement projects that Sound Transit could choose to invest in or partner with the City of Mukilteo.

Trails and Bike Lanes

- Shoreline Trail: Shoreline Walk with signage program that may include both public and private tidelands. Access will be subject to property owner permission. May include BNSF Railway overpass/underpass. Approximately eight miles long with an estimated cost of $27,000 per mile. Each BNSF Railway crossing would cost about $2.6 million (Bicycle, Trails & Pedestrian Plan 2009).

- Waterfront Promenade: Multipurpose trail from Lighthouse Park to Tank Farm. 0.4 mile long; $4.75 million (Bicycle, Trails & Pedestrian Plan 2009).
- Japanese Gulch Trail: Neighborhood trail/sidewalk improvements. 2.5 miles long; $2.4 million (Bicycle, Trails & Pedestrian Plan 2009).
- Waterfront Pedestrian Bridge: Bridge from 2nd Street to the waterfront. Cost is to be determined (Bicycle, Trails & Pedestrian Plan 2009).

Infrastructure

- Parking and Pedestrian Bridge: Construct parking (80-100 stalls) and pedestrian access bridge connecting Mukilteo with the Mukilteo Multi-modal Terminal between Park Avenue and the Mt. Baker crossing. $1 million appropriated, to be completed in 2020. This project has been amended to reduce costs (PSRC Transportation 2040 Appendix M, T2040 ID #4010).
- Pedestrian Wayfinding: Construct wayfinding signage between the WSF terminal, downtown, key waterfront locations, transit center and Mukilteo Station (WSDOT Ferries Division Final Long-Range Plan, Appendix J Proposed Transit Enhancements by Terminal).
- Bike lockers: Install four bike lockers and 12 racks (Sound Transit).

Parking

Policies that could increase access and manage the demand for parking at the Mukilteo Station could be implemented, such as parking pricing. No additional space for drop-off/pick-up is assumed to be needed to meet future demand.

Kent Station

The population within ½ mile of the station is anticipated to grow by nearly 10% by 2030, while employment is projected to increase by about 70%. Sound Transit can support the City of Kent's investments in their non-motorized transportation network and capitalize on improved access by supporting implementation and increasing bicycle parking at Kent Station. Improving pedestrian and bicycle connections to the station from the surrounding area, combined with improved King County Metro feeder bus service, could result in as many as 90 additional riders; the majority of which are projected to be pedestrian and bicycle access trips (Table 4-6).

The parking supply at Kent Station exceeds the current and forecast demand. However, if parking pricing at Sumner, Puyallup, and/or Auburn Stations is implemented, this may result in additional parking demand at Kent Station. Note that the modeled ridership for Kent does not account for the potential of diverted riders caused by parking pricing. Depending on the extent to which riders divert to Kent, Sound Transit may want to consider pricing at this station to offset diverted park-and-ride trips. Alternatively, as downtown Kent continues to transform into a walkable, transit-oriented center, there may be opportunities to convert existing parking spaces into other uses. For example, surface lots could be declared surplus and subsequently made available for TOD.

Table 4-6: Summary of Kent Station Access Analysis

Access Mode	Modeled 2010 Ridership	2030 ST Access Tool Model Forecast[1]	ST 2030 Fare Model Forecast with Mode/Land Use Shift		Change to 2030 ST Access Tool Model Forecast with Improvements[2]
Auto (Park-and-Ride)	640	640	810		-<10
Auto (Drop-off/Pick-up)	100	120	330		+<10
Feeder Transit	50	90	110		+10
Bicycle	<10	10	30		+30
Pedestrian	50	200	720		+50
TOTAL	**840**	**1,060**	**2,000**		**+90**

1. 2030 ST Access Tool Model Forecast based on PSRC land use projections (through Sound Transit Access Tool).
2. This column describes the projected additional riders or reduction in riders to the 2030 ST Access Tool Model Forecast based on implementation of potential improvement projects, which are listed beginning on page 4-14 and in Appendix H.

The data shown below is based on PSRC land use projections for population and employment and the Sound Transit Access Tool Model. Figures 4-5 and 4-6 use the ST 2030 Fare Model projection applied to a "suburban-village" and "TOD" station type, respectively. As the residential density for the station-area is not specified by the City of Kent, it is assumed that the TOD type has a slightly higher density than the existing (or future) Kent Station area.

Figure 4-4: 2030 ST Access Tool Model Forecast

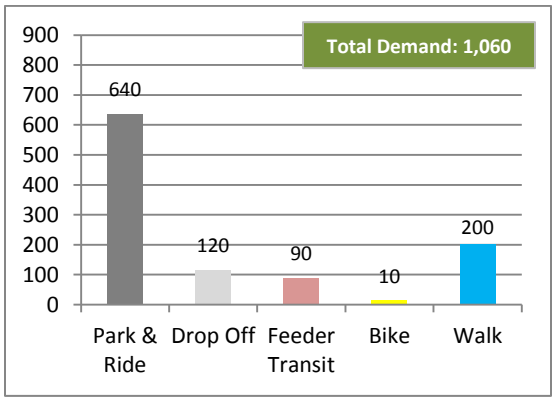


Figure 4-5: ST 2030 Fare Model Forecast without Mode/Land Use Shift

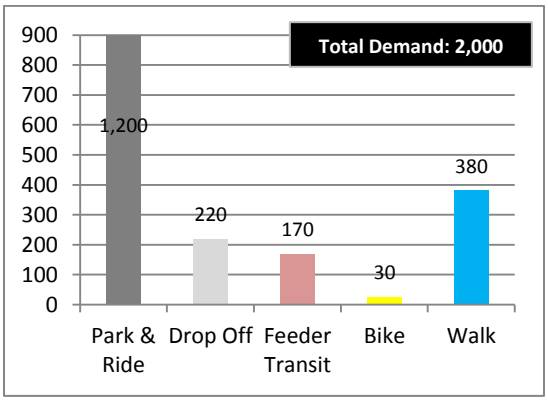
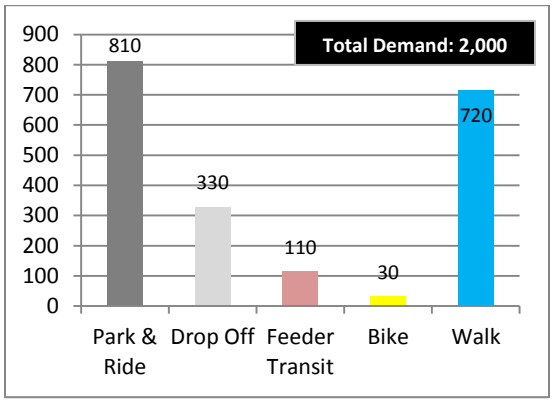


Figure 4-6: ST 2030 Fare Model Forecast with Mode/Land Use Shift



The following list of potential improvement projects and estimated costs is drawn from a combination of city plans, input from the public, and/or observed conditions. This is a representative list of the types of access improvement projects that Sound Transit could choose to invest in or partner with the City of Kent.

Roads and Sidewalks

- Mill Creek Pedestrian Bridge: Enhance or replace the existing pedestrian bridge over Mill Creek (from Kennebeck Ave N to E Temperance St) to increase connectivity between downtown and the East Hill neighborhood (2011-2016 TIP).
- Reiten Rd Sidewalks: Complete sidewalks along Reiten Rd from E Titus St to E Guiberson St, on the southwest side of the road only.

Trails and Bike Lanes

- Gowe St/Titus St Bike Lane/Sharrow: Add bike lane or sharrows, including necessary signage on Gowe St and Titus St from E Meeker St to E Smith St.
- 2nd Ave Bike Lane/Sharrow: Add bike lane or sharrows, including necessary signage on 2nd Ave from Gowe St to James St.
- Shared facility project along James St: Participate in the "bike-by-bus" program with the City of Kent and King County Metro. This would include adding signage or other information to bike riders along James Street to S 240th St.
- Reiten Rd Sharrows: Add sharrows, including necessary signage on Reiten Rd from E Titus St to E Maple St.

Infrastructure

- Real-time Parking Availability Signage: Install real-time parking availability information signage on major access route and parking guidance at garage.
- Bike Lockers: Install eight new bike lockers.

Parking

Policies that could manage the demand for parking at the Kent Station could be implemented, such as:

- Parking pricing (if also implemented at Auburn, Puyallup, and/or Sumner Stations).
- Expanded drop-off/pick-up capacity at the station.

Auburn Station

Downtown Auburn is expected to grow considerably by 2030, with a nearly 50% increase in employment and 30% increase in population projected within ½-mile of the station. Planned improvements in the vicinity of Auburn Station are fairly comprehensive and could significantly increase ridership at the station. They include supporting the City's Downtown Plan and improving bicycle and pedestrian accommodation around the station.

By improving pedestrian and bicycle connections, as many as 190 additional riders could result. Model results indicated that there could be a decrease of up to 20 park-and-ride access trips (Table 4-7). Some of those passengers could divert to drop-off/pick-up and/or feeder transit, while others may seek alternate travel options. Up to 140 new pedestrian access trips and 40 new bicycle access trips could result from access improvements to Auburn Station. The ridership increase at this station is the largest forecast for any existing Sound Transit station and is second only to Lakewood among the study stations. At the station itself, Sound Transit could implement parking demand management measures such as parking pricing.

Table 4-7: Summary of Auburn Station Access Analysis

Access Mode	Modeled 2010 Ridership	2030 ST Access Tool Model Forecast[1]	ST 2030 Fare Model Forecast with Mode/Land Use Shift		Change to 2030 ST Access Tool Model Forecast with Improvements[2]
Auto (Park-and-Ride)	490	520	500		-20
Auto (Drop-off/Pick-up)	100	140	190		+10
Feeder Transit	130	80	210		+<10
Bicycle	<10	20	10		+40
Pedestrian	20	340	590		+140
TOTAL	**750**	**1,100**	**1,500**		**+190**

1. 2030 ST Access Tool Model Forecast based on PSRC land use projections (through Sound Transit Access Tool).
2. This column describes the projected additional riders or reduction in riders to the 2030 ST Access Tool Model Forecast based on implementation of potential improvement projects, which are listed beginning on page 4-15 and in Appendix H.

The graphs shown below are based on PSRC land use projections for population and employment and the Sound Transit Access Tool Model. Figures 4-8 and 4-9 use the ST 2030 Fare Model projection applied to a "suburban-village" and "TOD" station type, respectively. The TOD type has a higher density than the existing (or future) Auburn Station area, given current land use planning.

Figure 4-7: 2030 ST Access Tool Model Forecast

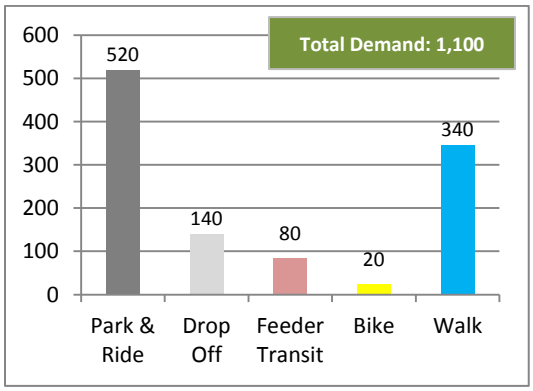


Figure 4-8: ST 2030 Fare Model Forecast without Mode/Land Use Shift

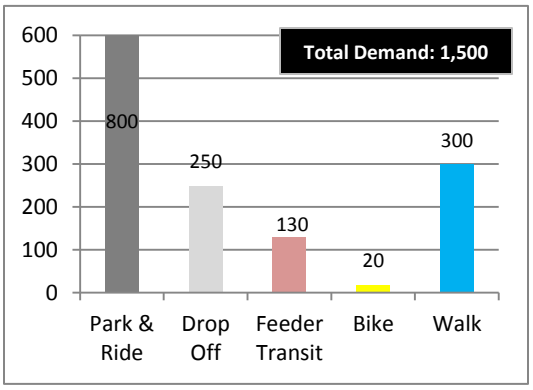
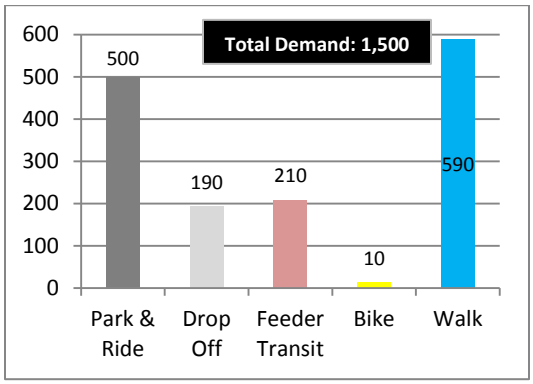


Figure 4-9: ST 2030 Fare Model Forecast with Mode/Land Use Shift



The following list of potential improvement projects and estimated costs came from a combination of city plans, input from the public, and/or observed conditions. This is a representative list of the types of access improvement projects that Sound Transit could choose to invest in or partner with the City of Auburn:

Roads and Sidewalks

- A St NE pedestrian improvements – Complete pedestrian connection between downtown and 8th St NE business district. Improve pedestrian crossing at 3rd St NE and construct sidewalks/access ramps along A St NE (2011-2016 TIP).

Trails and Bike Lanes

- A St NE Bike Wayfinding and Bike Boulevard: Add wayfinding to non-motorized trail connection on A St NE between 10th St NE and 7th St NE. Construct sidewalk between 7th St NE and 3rd St NE St NE and calm traffic (2006 Future Trail and Bike Network).
- A St SW Sharrows: Add sharrows, including necessary signage along A St SW from Main St. to 2nd St SW (2006 Future Trail and Bike Network).
- 2nd St SW Sharrows: Add sharrows and signage on 2nd St SW from A St SW to F St SE.
- W Main St Bike Lanes: Add bike lanes and signage on W Main St west of the Interurban Trail crossing (2006 Future Trail and Bike Network).
- R St NE Bike Lanes: Add bike lanes and signage on R St NE from E Main St to 8th St NE (2006 Future Trail and Bike Network).
- C St SW Trail: Construct a trail along the west side of C St SW from the SR-18 & C St SW interchange to 15th St SW (2006 Future Trail and Bike Network).

Infrastructure

- Parking Garage: Construct a 300-stall parking garage on the west side of the station.
- Bike lockers: Install 20 new bike lockers and six new racks.
- Real-time Parking Availability Signage: Install real-time parking availability information signage on major access route and parking guidance at garage.

Parking

Policies that could manage the demand for parking at the Auburn Station could be implemented, such as:

- Parking pricing (if also implemented at Kent, Puyallup, and/or Sumner Stations).
- Expanded drop-off/pick-up capacity at the station.

Sumner Station

Population and employment growth in downtown Sumner are forecast to drive significant ridership growth at Sumner Station. The population within ½ mile of the station is anticipated to grow by 50% by 2030, while employment downtown is projected to increase by nearly 40%. Sumner is investing in its non-motorized transportation network, including new bicycle and pedestrian facilities.

At the station itself, Sound Transit could implement parking demand management measures such as parking pricing and access improvements such as increasing drop-off/pick-up capacity (Table 4-8). These improvements, along with increased and better coordinated feeder transit service, could result in additional new riders from all access modes except park-and-ride. The net impact of these changes could result in up to 180 additional riders, with the majority arriving by bicycle or foot.

Table 4-8: Summary of Sumner Station Access Analysis

Access Mode	Modeled 2010 Ridership	2030 ST Access Tool Model Forecast[1]	ST 2030 Fare Model Forecast with Mode/Land Use Shift		Change to 2030 ST Access Tool Model Forecast with Improvements[2]
Auto (Park-and-Ride)	550	440	370		-<10
Auto (Drop-off/Pick-up)	110	150	140		+<10
Feeder Transit	60	30	150		+<10
Bicycle	20	20	10		+40
Pedestrian	30	310	430		+140
TOTAL	**770**	**950**	**1,100**		**+180**

1. 2030 ST Access Tool Model Forecast based on PSRC land use projections (through Sound Transit Access Tool).
2. This column describes the projected additional riders or reduction in riders to the 2030 ST Access Tool Model Forecast based on implementation of potential improvement projects, which are listed beginning on page 4-18 and in Appendix H.

The data shown below is based on PSRC land use projections for population and employment and the Sound Transit Access Tool Model. Figures 4-11 and 4-12 use the ST 2030 Fare Model projection applied to a "suburban-village" and "TOD" station type, respectively. The TOD type has a higher density than the existing (or future) Sumner Station area, given current land use planning (the majority of the land around the station is zoned for 7-15 dwelling units per acre).

Figure 4-10: 2030 ST Access Tool Model Forecast

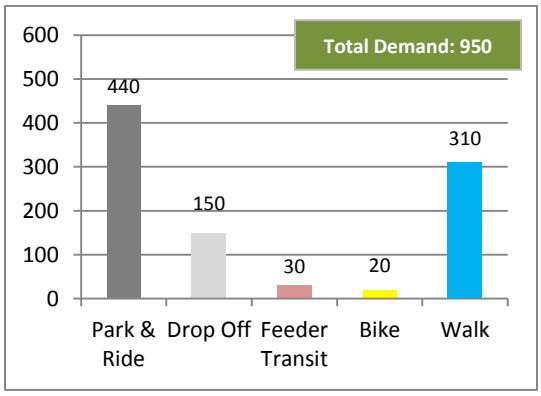


Figure 4-11: ST 2030 Fare Model Forecast without Mode/Land Use Shift

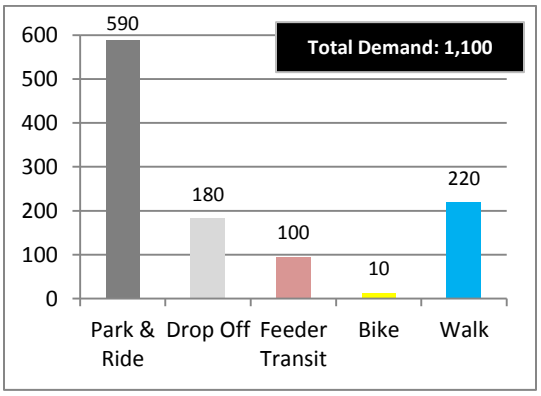
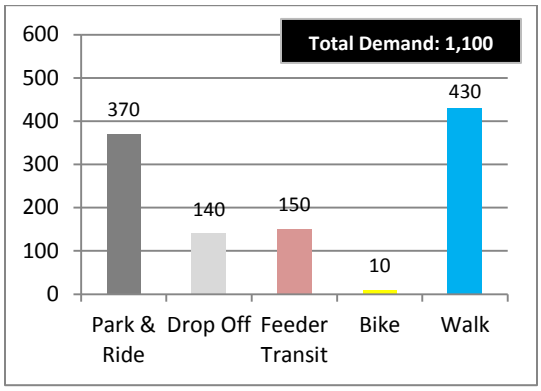


Figure 4-13: ST 2030 Fare Model Forecast with Mode/Land Use Shift



The following list of potential improvement projects and estimated costs came from a combination of city plans, input from the public, and/or observed conditions. This is a representative list of the types of access improvement projects that Sound Transit could choose to invest in or partner with the City of Sumner.

Roads and Sidewalks

- Linden Drive/SR-410 Crossing Improvements: Construct sidewalks north and south of the bridge structure; widen sidewalk along SW side of the bridge structure.
- SR-410 Non-Motorized Bridge: Construct a new bridge for non-motorized users over SR-410, connecting Sumner Ave and 143rd Ave E.

Trails and Bike Lanes

- Puyallup River Trail Extension: Extend existing trail along north side of the Puyallup River from 72nd St E to Traffic St (2008 Trail Master Plan).
- Riverwalk Trail Access Point: Connect 134th Ave E with the Riverwalk Trail on the south side of Puyallup River with a paved connection and remove barriers.
- White River Trail Extension: Extend/connect fragmented existing trail running along the east side of the White River from State St north to Stewart Rd (2009-2014 TIP).
- Academy St Bike Boulevard: Construct a bicycle boulevard from Sumner Station to Valley Ave, including signage, traffic calming and intersection improvements at Wood Ave and Valley Ave E.

Infrastructure

- Station Pedestrian Bridge: Construct a pedestrian bridge over railroad tracks roughly in line with Elizabeth St connecting the east and west side of station.
- Bike lockers: Install 20 new bike lockers and nine new racks.
- Parking Garage: Construct a small (150-stall) or large (450-stall) parking garage.

Parking

Policies that could increase access and manage the demand for parking at the Sumner Station could be implemented, such as:

- Parking pricing (if also implemented at Kent, Auburn, and/or Puyallup Stations).
- Expanded drop-off/pick-up capacity at the station.

Puyallup Station

The population within ½ mile of the station is anticipated to grow by nearly 30% by 2030, while employment is projected to increase by about 35%. A new pedestrian bridge over the rail tracks, along with improved feeder bus service and parking demand management measures, would support the projected population and employment growth within ½-mile of Puyallup Station. Planned improvements could result in a 50% daily ridership increase. Currently most passengers access the station as park-and-ride users, but that could trend toward a more balanced access mode share following planned growth.

Improving pedestrian and bicycle connections to the Puyallup Station from the surrounding area could add up to 30 additional riders in the morning (Table 4-9). Implementing parking demand management measures, such as parking pricing at the station, could slightly reduce park-and-ride demand, though many of those passengers could switch to other access modes.

Table 4-9: Summary of Puyallup Station Access Analysis

Access Mode	Modeled 2010 Ridership	2030 ST Access Tool Model Forecast[1]	ST 2030 Fare Model Forecast with Mode/Land Use Shift		Change to 2030 ST Access Tool Model Forecast with Improvements[2]
Auto (Park-and-Ride)	630	580	670		-20
Auto (Drop-off/Pick-up)	100	160	250		+10
Feeder Transit	60	100	280		+20
Bicycle	<10	30	20		+<10
Pedestrian	30	390	780		--
TOTAL	**830**	**1,260**	**2,000**		**+30**

1. 2030 ST Access Tool Model Forecast based on PSRC land use projections (through Sound Transit Access Tool).
2. This column describes the projected additional riders or reduction in riders to the 2030 ST Access Tool Model Forecast based on implementation of potential improvement projects, which are listed beginning on page 4-21 and in Appendix H.

The graphs shown below are based on PSRC land use projections for population and employment and the Sound Transit Access Tool Model. Figures 4-14 and 4-15 use the ST 2030 Fare Model projection applied to a "suburban-village" and "TOD" station type, respectively. The TOD type has a higher density than the existing (or future) Puyallup Station area, given current land use planning (the majority of the land around the station is zoned for 18 dwelling units per acre).

Figure 4-13: 2030 ST Access Tool Model Forecast

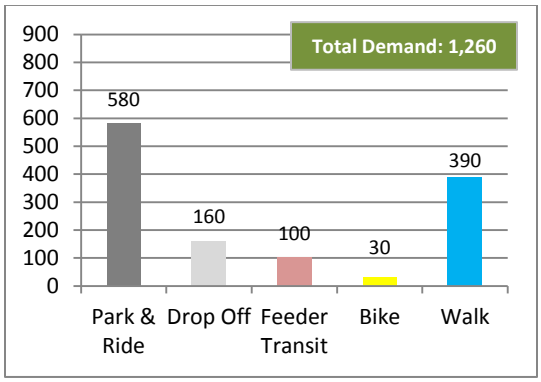


Figure 4-14: ST 2030 Fare Model Forecast without Mode/Land Use Shift

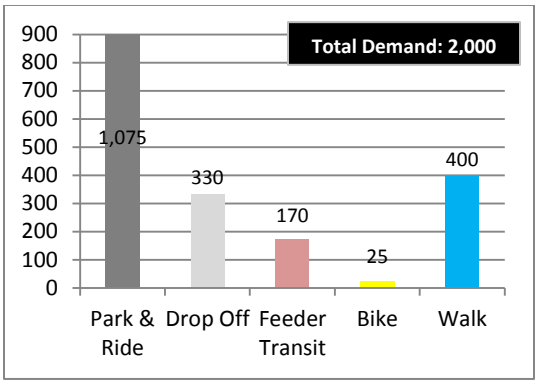
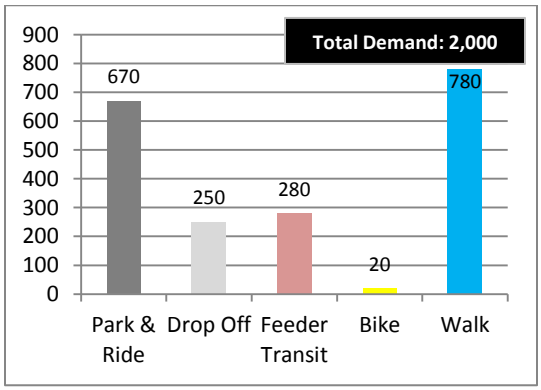


Figure 4-15: ST 2030 Fare Model Forecast with Mode/Land Use Shift



The following list of potential improvement projects and estimated costs came from a combination of city plans, input from the public, and/or observed conditions. This is a representative list of the types of access improvement projects that Sound Transit could choose to invest in or partner with the City of Puyallup.

Roads and Sidewalks

- Station Area Crosswalk Improvements: Improve crosswalks at several locations in the vicinity of the station to meet ADA standards, including at 2nd St SW, 3rd St SW, W Stewart Ave, and 5th St SW (Puyallup Public Open House comment).
- Railroad Crossing Improvements: Improve railroad crossings at S Meridian and 5th St SW to meet ADA standards.

Trails and Bike Lanes

- 7th Ave Bike Lanes and Sharrow: Add bike lanes and sharrows, including signage, on 7th Ave from 18th St SW to 21st St SE.
- 21st Ave NW to 4th St NW Bike Boulevard: Add a bicycle boulevard, including signage, starting at 21st Ave NW heading east on 10th Ave NW, then south on 13th St NW, then east on 7th Ave NW, ending at 4th St NW.
- 4th St NW Bike Lane: Add bike lane, including signage, on 4th St NW from the Puyallup River trail to W Stewart Ave.
- 2nd St SW Sharrow/Bicycle Boulevard: Add a bicycle boulevard, including signage, on 2nd St SW starting at E Main and ending at 9th Ave SW.
- 7th St SW Bicycle Boulevard: Add a bicycle boulevard, including signage, on 7th St SW from Fairview Dr to W Main Ave.
- W Main Ave Sharrows and Bike Lanes: Add sharrows and bike lanes, including signage, from 7th St NW to 5th St SE.

Feeder Transit

- Turning Radius Improvements: Improve the turn movements to accommodate transit turns at the intersection of 5th St and W Pioneer Ave for more direct access to the station (Pierce Transit 2011).

Infrastructure

- Station Pedestrian Bridge: Construct a pedestrian bridge over the tracks half way between 2nd St NW on the north and 3rd St SW on the south (Comprehensive Plan Downtown Revitalization Neighborhood Plan, Puyallup Public Open House comment; Pierce Transit 2011).
- Parking Garage: construct a small (255-stall), medium (400-stall) or large (490-stall) parking garage.
- Install real-time arrival signs (Pierce Transit 2011).

Parking

Policies that could increase access and manage the demand for parking at the Puyallup Station could be implemented, such as:

- Parking pricing (if also implemented at Kent, Auburn, and/or Sumner Stations).
- Expanded drop-off/pick-up capacity at the station.

Tacoma Dome Station

Population and employment within ½ mile of the Tacoma Dome Station area are expected to grow by more than 50% by 2030. As a result, Sound Transit ridership at the Tacoma Dome Station is forecast to increase considerably. The parking garage has capacity in excess of future demand, as some demand will shift to South Tacoma and Lakewood Stations when they become operational in 2012.

Improvements to the pedestrian and bicycle networks in the vicinity of the station would help increase non-motorized station access. Improving coordination between Sounder trains and feeder transit buses encourages additional feeder transit access. In all, by improving pedestrian and bicycle connections to the station from the surrounding area ridership could increase by an additional 160 passengers above the baseline (Table 4-10).

Table 4-10: Summary of Tacoma Dome Station Access Analysis

Access Mode	Modeled 2010 Ridership	2030 ST Access Tool Model Forecast[1]	ST 2030 Fare Model Forecast with Mode/Land Use Shift		Change to 2030 ST Access Tool Model Forecast with Improvements[2]
Auto (Park-and-Ride)	600	810	600		--
Auto (Drop-off/Pick-up)	60	60	160		--
Feeder Transit	40	120	240		+<10
Bicycle	<10	<10	50		+50
Pedestrian	10	<10	560		+100
TOTAL	**720**	**1,000**	**1,900**		**+160**

1. 2030 ST Access Tool Model Forecast based on PSRC land use projections (through Sound Transit Access Tool).
2. This column describes the projected additional riders to the 2030 ST Access Tool Model Forecast based on implementation of potential improvement projects, which are listed beginning on page 4-24 and in Appendix H.

The graphs shown below are based on PSRC land use projections for population and employment and the Sound Transit Access Tool Model. Figures 4-17 and 4-18 use the ST 2030 Fare Model projection applied to a "suburban-village" and "Urban Neighborhood with Parking" station type, respectively. The Urban Neighborhood type has a higher density than the existing (or future) Tacoma Dome Station area that reflects current land use planning underway by the City of Tacoma.

Figure 4-16: 2030 ST Access Tool Model Forecast

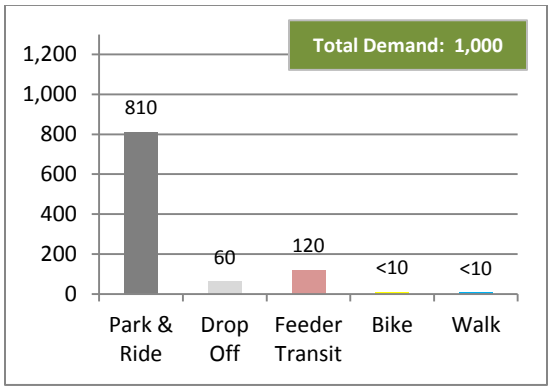


Figure 4-17: ST 2030 Fare Model Forecast without Mode/Land Use Shift

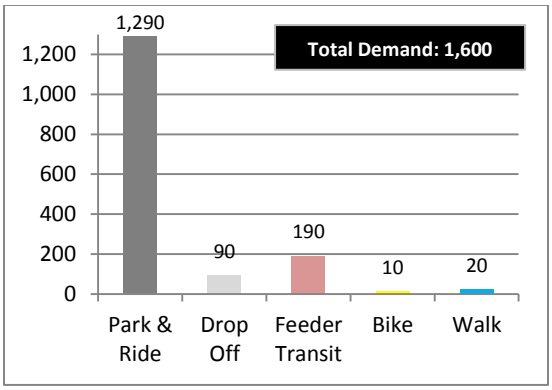
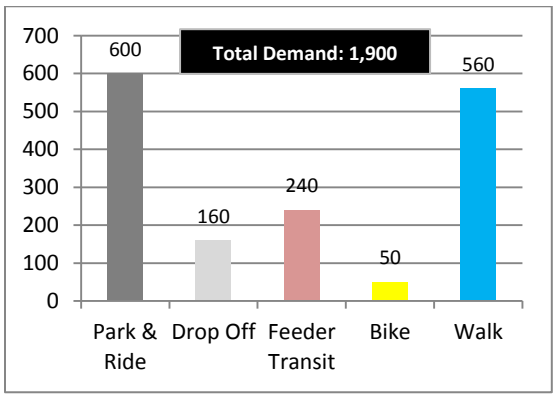


Figure 4-18: ST 2030 Fare Model Forecast with Mode/Land Use Shift



The following list of potential improvement projects and estimated costs came from a combination of city plans, input from the public, and/or observed conditions. This is a representative list of the types of access improvement projects that Sound Transit could choose to invest in or partner with the City of Tacoma for the Tacoma Dome Station.

Roads and Sidewalks

- Puyallup Ave Crossing Improvement: Construct crosswalks and add lighting for Puyallup Ave at E C St or E 22nd St.
- Station-Area Pedestrian Lighting: Pedestrian safe lighting for Puyallup Ave, East D St and Puyallup Ave at Tacoma Dome Station (Tacoma Public Open House comment).

Trails and Bike Lanes

- Pipeline Trail: Construct a shared-use path along Pipeline Rd from the E 40th St to Waller Rd (2010 Mobility Master Plan).
- East K St/E Wright Ave Bicycle Boulevard: Add a bicycle boulevard, including signage, along E K St and E Wright Ave from McKinley Park to the Pipeline Trail.
- Puyallup Ave Bike Lanes: Add bike lanes and signage along Puyallup Ave from S C St to Milwaukee Way (2010 Mobility Master Plan).
- E McKinley Way Bike Lanes: Add bike lanes and signage along E McKinley Way from E D St to E 56th St.
- Prairie Line Trail – Phase 2 (Water Ditch Trail Extension): Construct a non-motorized vehicle trail along the Prairie Line Rail right of way from S 21st St to S Pine St (Transportation 2040).
- East L St Climbing Bike Lane/Sharrow Combination and Bike Boulevard: Add a climbing lane and sharrow combination from Puyallup Ave to E 29th St bicycle boulevard, and add signage along E Upper Park Rd from E 29th St to E McKinley Ave.
- Portland Ave Bike Lanes: Add bike lanes and signage along Portland Ave from Puyallup Ave to E to E 56th St.

Feeder Transit

- E G St Boarding Area and Layover Zone Improvements: Expand the transit bus bay on G Street adjacent to the Tacoma Dome Station facility to increase passenger boarding areas and bus layover zones (Pierce Transit 2011).

Infrastructure

- Station Pedestrian Bridge: Construct a pedestrian bridge over the tracks in line with East E St from Freighthouse Square to E 26th St.
- Bike Lockers: Install 20 new bike lockers.
- Contribute 400 stalls (of a proposed 3,000-stall garage).

Parking

Policies that could increase access and manage the demand for parking at the Tacoma Dome Station could be implemented, such as:

- Parking pricing (if also implemented at South Tacoma and Lakewood Stations).
- Install real-time parking availability signage (Pierce Transit 2011).

South Tacoma Station

The Sound Transit Access Tool model estimated station access for the future South Tacoma Station, assuming it were open in 2010. Model results indicated that slightly more than 500 riders would use the service in 2010 based on station-area characteristics, which is about 200 riders less than the Sound Transit forecast passenger volumes for 2030. The Sound Transit Access Tool model estimate for 2030 was very close to the Sound Transit model estimate. Without existing access data to calibrate the model, these estimates were used to perform the access improvements analysis.

Significant station-area improvements within the station area that are included in Tacoma's Mobility Master Plan (which includes shared use paths, bicycle lanes, and bike boulevards) would encourage passengers to access the system at South Tacoma Station. Additionally, Sound Transit could encourage feeder bus schedule coordination to further boost ridership. In all, station-area pedestrian and bicycle access improvements could result in as many as 190 additional riders in 2030 (Table 4-11).

Table 4-11: Summary of South Tacoma Station Access Analysis

Access Mode	Modeled 2010 Ridership	2030 ST Access Tool Model Forecast[1,2]	ST 2030 Fare Model Forecast with Mode/Land Use Shift		Change to 2030 ST Access Tool Model Forecast with Improvements[2]
Auto (Park-and-Ride)		290	230		--
Auto (Drop-off/Pick-up)		90	90		--
Feeder Transit		70	100		+<10
Bicycle		20	<10		+30
Pedestrian		200	270		+160
TOTAL	**500**[4]	**670**	**700**		**+190**

1. 2030 ST Access Tool Model Forecast based on PSRC land use projections (through Sound Transit Access Tool).
2. There are 220 existing parking stalls in the lot at the South Tacoma Station. If no additional parking is provided, some forecast auto access passengers could switch to other modes, park in the neighborhood, or avoid accessing Sounder from this station altogether.
3. This column describes the projected additional riders to the 2030 ST Access Tool Model Forecast based on implementation of potential improvement projects, which are listed beginning on page 4-27 and in Appendix H.
4. A breakdown by access mode was not modeled as Sounder service had not begun at the South Tacoma Station at the time of this study. The total Modeled 2010 Ridership is based on the November 2010 surveys and is modeled based on station-area population and employment.

The graphs shown below are based on PSRC land use projections for population and employment and the Sound Transit Access Tool Model. Figures 4-20 and 4-21 use the ST 2030 Fare Model projection applied to a "suburban-village" and "TOD" station type, respectively. The TOD type has a higher density than the existing (or future) South Tacoma Station area, given current land use planning (the majority of the land around the station is zoned for 9-15 dwelling units per acre).

Figure 4-19: 2030 ST Access Tool Model Forecast

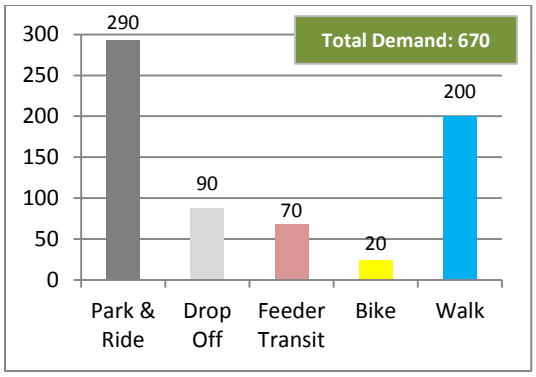


Figure 4-20: ST 2030 Fare Model Forecast without Mode/Land Use Shift

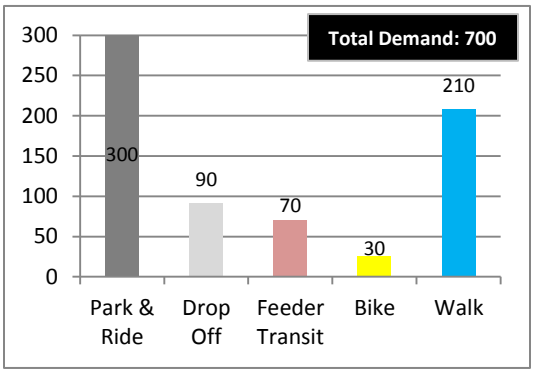
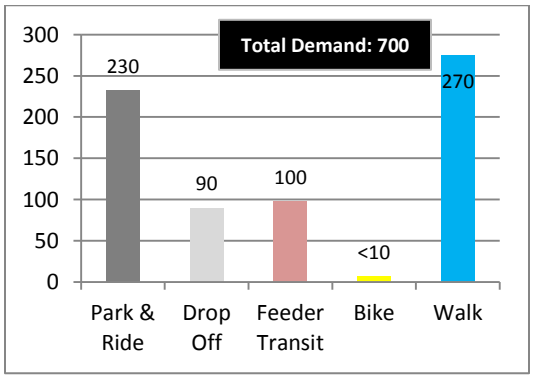


Figure 4-21: ST 2030 Fare Model Forecast with Mode/Land Use Shift



The following list of potential improvement projects and estimated costs came from a combination of city plans, input from the public, and/or observed conditions. This is a representative list of the types of access improvement projects that Sound Transit could choose to invest in or partner with the City of Tacoma for the South Tacoma Station.

Roads and Sidewalks

- Station Area Access Improvements: Construct and install street lighting, sidewalks and curb ramps between the South Tacoma Station and the business district near S 56th St (2010-2015 CTP).

- S Tacoma Way Crossing Improvements: Improve signalized crossings at S 56th St to ADA standards, improve S 58th St to ADA standards, and improve S 60th crossing to ADA standards (Tacoma Public Open House comment).
- S 56th St Crossing Improvements: Improve the crosswalks at the intersection of S 56th St and S Washington St to meet ADA standards.
- Sidewalk Improvements Near Station: Construct a sidewalk on north side of S 60th St between the railroad tracks and tie into the sidewalk along S Tacoma Way; construct sidewalks on both the north and south sides of S 58th St from S Washington St that tie into the sidewalk along to Tacoma Way; and improve the sidewalk on the south side of S 56th St between S Adams St and S Tyler St to meet ADA standards.
- S 56th St and I-5 Interchange Crossings: Improve the freeway ramp crosswalks to meet ADA standards; increase visibility of crosswalk locations; and improve connection between the sidewalks on the north side of S 56th St and the S Railroad St bicycle boulevard (Comprehensive Plan).

Trails and Bike Lanes

- S 66th St Bike Boulevard: Add a bicycle boulevard and signage along S 66th St from S Tacoma Way to S Wapato St (2010 Mobility Master Plan).
- Oaks St Bike Lane: Add bike lanes and signage along Oaks St from S 66th St to S 47th St (2010 Mobility Master Plan).
- S 54th St/S Railroad St Bicycle Boulevard: Add a bicycle boulevard and signage from S Washington St to Tacoma Mall Blvd (2010 Mobility Master Plan, Tacoma Open House public comment).
- Water Ditch Trail TAC-40: Construct a non-motorized trail along the Water Flume Line from A Street to S 56th Street to S 60th St.
- S 58th St Non-Motorized Connection: Construct a high quality walking and biking connection (part or cycle track) along S 58th St between S Washington St and S Fife St.
- S 60th St Trail: Construct a trail from S Adams St to S Tyler St through Metro Parks Baseball Fields and along the north edge of Grays Middle School.
- S 56th St Bike Lanes: Add bike lanes along S 56th St from S Washington St to S Tyler St.
- S Washington Way Bike Lanes: Add bike lanes along S Washington Way from S 47th St to S 58th St.
- S 66th St Sharrows: Add sharrows on S 66th St from Lakewood Dr W to S Tyler St.

Feeder Transit

- Install improved bus stop zones at the two bus stops on S 56th St adjacent to the station with shelters and pedestrian amenities (Pierce Transit 2011).

- Identify, design, and implement transit signal priority and/or lane improvements that would benefit connections from the new University Place Town Center park-and-ride facility to the station (Pierce Transit 2011).

Infrastructure

- Bike Lockers: install eight new bike lockers and four new bike racks.

Parking

Policies that could increase access and manage the demand for parking at the South Tacoma Station could be implemented, such as:

- Parking pricing (if also implemented at Tacoma Dome and Lakewood Stations).

Lakewood Station

As with the South Tacoma Station, no existing station access data was available for the future Lakewood Sound Transit Station. Because this is a terminal station, there are many bus connections. Current bus/transit service is anticipated to change when the station opens. The Sound Transit Access Tool model predicts 970 riders would use Lakewood Station in 2010, which would increase to about 1,000 riders in 2030. The station area is bisected by I-5, which creates a significant access barrier for potential riders accessing the station by foot or bicycle. Therefore, the station-area population as defined by a ½-mile radius does not accurately reflect those within a comfortable walking distance of the station. Base ridership estimates were reduced to account for this access barrier.

Major improvements to Lakewood's non-motorized transportation system are planned, including recommendations described on page 37 of the Lakewood Non-Motorized Transportation Plan. These improvements include constructing a pedestrian bridge in 2012, numerous bicycle facilities, and sidewalks in the vicinity of the station. The bridge will effectively triple the amount of residents within a 15-minute walk of the station as well as improve and increase bicycle access. In all, these pedestrian and bicycle access improvements may result in 260 additional riders to the 1,000 previously forecast, the vast majority of which would likely access the station as pedestrians (Table 4-12).

Table 4-12: Summary of Lakewood Station Access Analysis

Access Mode	Modeled 2010 Ridership	2030 ST Access Tool Model Forecast[1,2]	ST 2030 Fare Model Forecast with Mode/Land Use Shift		Change to 2030 ST Access Tool Model Forecast with Improvements[3]
Auto (Park-and-Ride)		830	230		-<10
Auto (Drop-off/Pick-up)		100	90		--
Feeder Transit		20	100		+<10
Bicycle		<10	<10		+20
Pedestrian		50	270		+240
TOTAL	**970**[4]	**1,000**	**700**		**+260**

1. 2030 ST Access Tool Model Forecast based on PSRC land use projections (through Sound Transit Access Tool).
2. Future planned auto parking supply is limited to 600 vehicles. If no additional parking is provided, some forecast auto access passengers may switch to other modes, park in the neighborhood, avoid accessing Sounder from this station altogether, or access transit via the nearby I-5/SR-512 park-and-ride.
3. This column describes the projected additional riders or reduction in riders to the 2030 ST Access Tool Model Forecast based on implementation of potential improvement projects, which are listed beginning on page 4-31 and in Appendix H.
4. A breakdown by access mode was not modeled as Sounder service had not begun at the Lakewood Station at the time of this study. The total Modeled 2010 Ridership is based on the November 2010 surveys and is modeled based on station-area population and employment.

The graphs shown below are based on PSRC land use projections for population and employment and the Sound Transit Access Tool Model. Figures 4-23 and 4-24 use the 2030 Maximum Growth projection applied to a "suburban-village" and "TOD" station type, respectively. The TOD type has a higher density than the existing (or future) Lakewood Station area, given current land use planning.

Figure 4-22: 2030 ST Access Tool Model Forecast

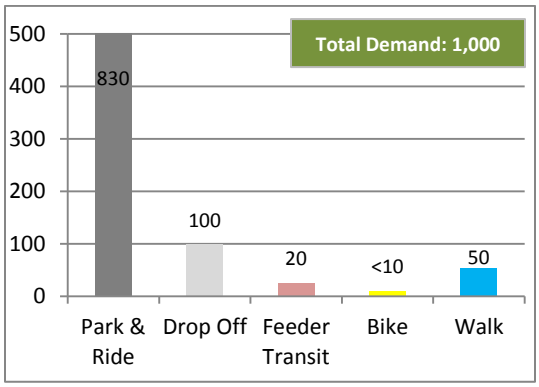


Figure 4-23: ST 2030 Fare Model Forecast without Mode/Land Use Shift

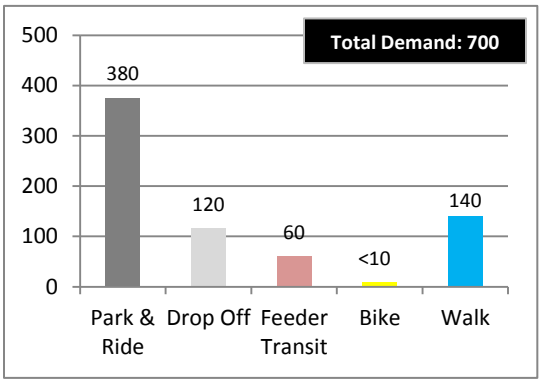
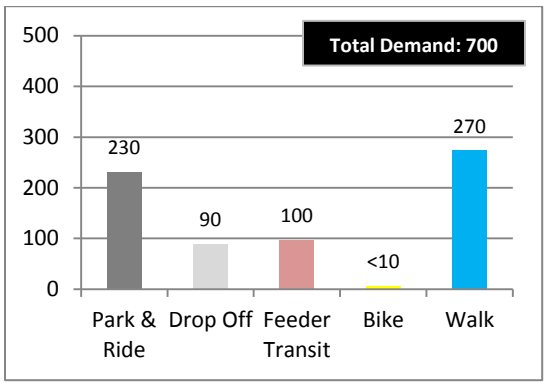


Figure 4-24: ST 2030 Fare Model Forecast with Mode/Land Use Shift



The following list of potential improvement projects and estimated costs came from a combination of city plans, input from the public, and/or observed conditions. This is a representative list of the types of access improvement projects that Sound Transit could choose to invest in or partner with the City of Lakewood.

Roads and Sidewalks

- Bridgeport Way SW Sidewalk: Add a sidewalk on the east side of Bridgeport Way SW from SB Interstate 5 Exit to McChord Dr SW.
- 111th/112th St SW Sidewalk: Expand the sidewalk on the south side of 112th St SW to meet with 111th St SW to form a continuous sidewalk from Bridgeport Way SW to Lakeview Ave SW (2009 Non-Motorized Transportation Plan).

- Lakeview Ave SW Sidewalk: Expand the sidewalk at the corner of 108th St SW and Lakeview along the west side of Lakeview Ave SW from 108th St SW to 112th St SW.
- 47th Ave SW Sidewalk: Add a sidewalk along the east side of 47th Ave SW from 108th St SW to 111th St SW.

Trails and Bike Lanes

- 112th St SW Bike Lanes: Add bike lanes, including signage and re-striping, on 112th St SW from Gravelly Lake Drive SW to 111th St SW (2009 Non-Motorized Transportation Plan).
- Bridgeport Way SW Sharrows: Add sharrows on Bridgeport Way SW from McChord Dr SW to Gravelly Lake Dr SW (2009 Non-Motorized Transportation Plan).
- Main St Sharrows: Add sharrows on Main St from Gravelly Lake Dr SW to 112th St SW.
- 47th Ave SW Bicycle Boulevard: Add a bicycle boulevard, including signage, from McChord Dr SW to Pacific Hwy SW with a new non-motorized link between 124th St Ct SW and 127th St Ct SW.
- 111th St SW/Lakeview Ave SW Bike Lanes: Add bike lanes where 111th St SW and Lakeview Ave SW converge; on Lakeview Ave SW from 108th St SW to 111th St SW; and on 111th St SW from 112th St SW to Lakeview Ave SW.

Infrastructure

- Bike Lockers: install four new bike lockers and four new racks.
- Install real-time parking availability signage.

Parking

Policies that could increase access and manage the demand for parking at the Lakewood Station could be implemented, such as:

- Parking pricing (if also implemented at Tacoma Dome and South Tacoma Stations).
- Expanded drop-off/pick-up capacity at the station.

Chapter 5: Station Access Improvement Projects Evaluation (Phase 6)

This chapter summarizes the results of the evaluation of the effectiveness of potential improvement projects for each station, developed from the list of projects detailed in Chapter 4. Each of the potential improvement projects were analyzed and ranked based on the top six evaluation criteria identified in Chapter 3.

Analysis Criteria

The analysis criteria were applied as follows:

- Cost Effectiveness (cost/new rider): To assess the value of potential specific station-area projects, the team conducted a high-level cost-benefit analysis on each project. Anticipated ridership effects were compared with the estimated construction costs to identify the cost per new rider. The costs of the proposed projects were also compared to the anticipated benefits to both new and existing riders. The costs were then annualized.
- Increases Ridership: For each project, the effect or potential increase in ridership by access mode were assessed. Bicycle- and pedestrian-oriented projects were reviewed considering proximity to the station, the value of improvement, and projected station-area land uses. Auto-oriented projects were reviewed considering projected ridership changes associated with the increase or decrease in parking supply, station-area roadway capacity changes, and implementation of parking pricing. Feeder bus projects were evaluated based on the increase or decrease in feeder bus service based on the value of the service change (in travel time or frequency), and the increased area served by the improvement.
- Leverages Previous Investments: The amount that the potential improvement projects would leverage existing investments to each Sounder station was also analyzed. This includes improvements to station-vicinity circulation, access, and connections to existing bicycle system networks near the station. Negative effects of projects that would require the removal or modification of existing station infrastructure, such as construction of a new parking garage on existing station parking areas which would temporarily displace existing parking spaces, were also considered.
- Decreases Travel Time, Increases Reliability: Faster travel times both to and from the station for various access modes were analyzed. Other benefits such as safety, improved intersection/railroad crossings, and parking availability information were shown to increase reliability.
- Partnership Potential with Other Agencies: The potential for cost-sharing by partnering with other agencies was considered. This includes potential partnerships with cities, transit service providers (e.g. King County Metro or Pierce Transit), and WSDOT.
- Environmental Benefits: The environmental benefits of each project were considered. This includes reductions in single-occupancy vehicles by facilitating bicycling and walking to the station, encouraging car/vanpools. Projects without a significant environmental benefit were ranked as “low.”

The projects were also evaluated using information gathered from public outreach conducted by Sound Transit in Fall 2011 and Spring 2012. An open house was held at each of the stations in the study, and surveys were gathered from riders with feedback on how to prioritize improvements (Appendix G).

The highest and lowest priorities from the rider surveys are summarized below by station- It should be noted that the highest priority improvements from the rider surveys does not necessarily match the highest ranked projects resulting from the consultant team evaluation:

- Mukilteo Station: highest = pedestrian connections; lowest = bicycle access
- Kent Station: highest = parking facilities; lowest = bicycle access
- Auburn Station: highest = parking facilities; lowest = bicycle access
- Sumner Station: highest = parking facilities; lowest = bicycle access
- Puyallup Station: highest = parking facilities; lowest = bicycle access
- Tacoma Dome Station: highest = parking facilities; lowest = bicycle access
- South Tacoma Station: highest = parking facilities and bus facilities; lowest = bicycle access.
- Lakewood Station: highest = parking facilities; lowest = drop-off/short-term access and pedestrian connections.

Station-by-Station Project Rankings Summary

The remainder of this chapter provides a summary of the project rankings by station. For each station a summary table is used to show the rankings by a symbol indicating “low”, “medium”, or “high”. For this report, the summary tables show the projects ranked in order of cost per new rider, starting with the lowest cost per rider. The other criteria may be used to prioritize projects. For additional details including a project description and rationale for each ranking, see the Evaluation Criteria Table shown in Appendix H. Select projects are shown on maps following each station’s table, corresponding to the map identification (Map ID) number listed on each table. A ¼- and ½-mile radius around the station is shown on each map in white.

Preliminary order-of-magnitude cost-estimates for selected proposed improvements projects are included in Appendix I.

Mukilteo Station

The highest-ranked project is installation of new bike lockers, which is projected to generate two new riders and has the lowest annualized cost per new rider (less than $1.00). The Waterfront Pedestrian Bridge project is also highly ranked because of its benefits to new ridership, low annualized cost per new rider (approximately $6.00), and benefits to travel time and reliability. In the survey of riders, improved pedestrian connections also ranked highest while bicycle access was rated lowest.

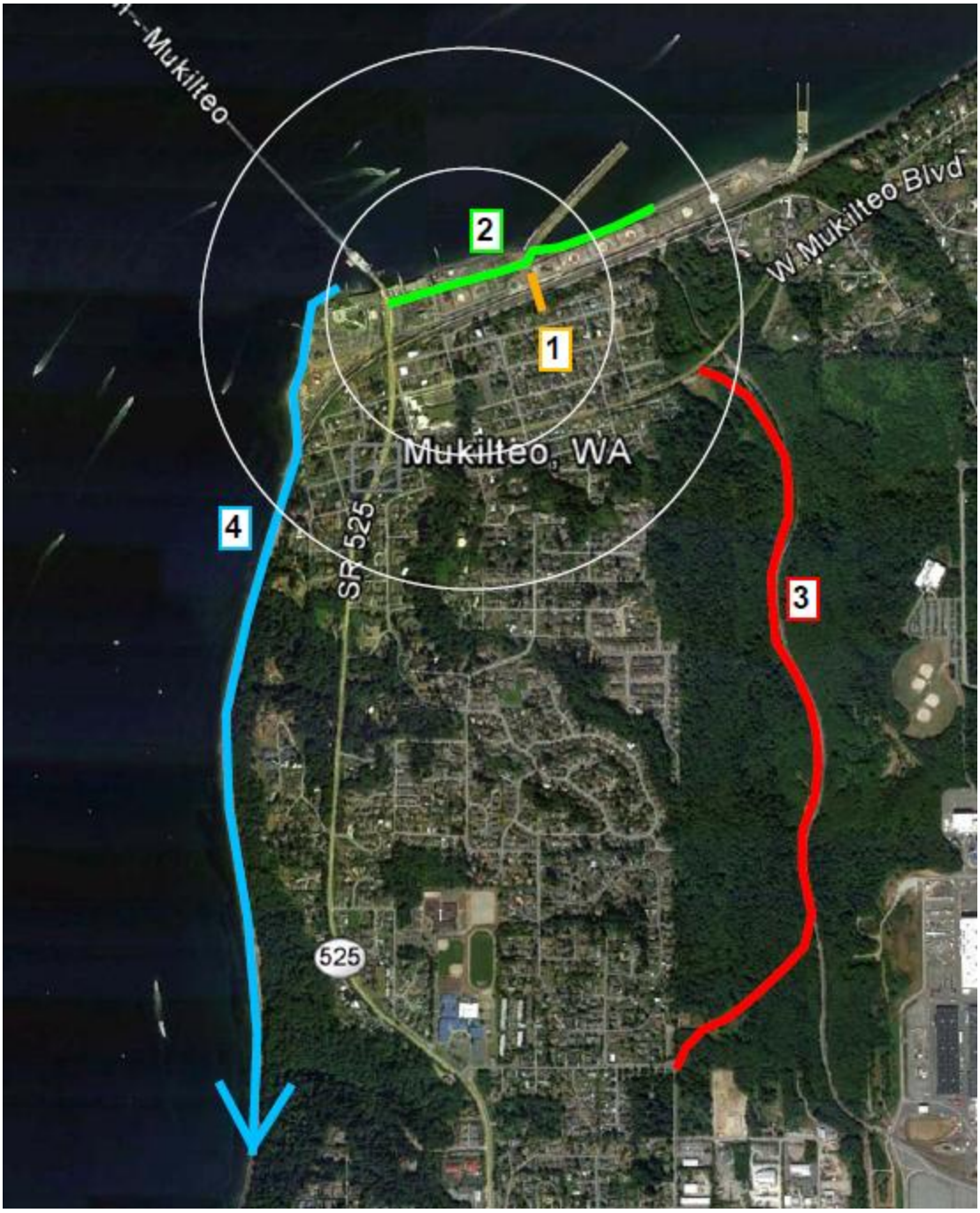
Overall, the potential improvement projects near Mukilteo Station have a moderate to high increase in riders, quicker travel times and increased reliability, and a high partnership potential. As the last two projects listed in Table 5-1 would not increase ridership, a cost per new rider is not calculable. These projects, along with the rationale for each ranking, are described in greater detail in Appendix H.

Table 5-1: Mukilteo Station – Potential Improvement Projects

Project Name *(Map ID)*	Cost/New Rider	Ridership	Leverages Investments	Travel Time & Reliability	Partnership	Environment
Bike lockers *(Not Shown on Map)*	●	●	●	●	◑	●
Waterfront Pedestrian Bridge *(1)*	●	●	◑	●	●	●
Parking Garage and Pedestrian Bridge *(Not Shown on Map)*	○	●	○	●	◑	○
Waterfront Promenade *(2)*	○	◑	○	●	●	●
Japanese Gulch Trail *(3)*	○	◑	●	●	●	◑
Shoreline Trail *(4)*	○	◑	○	◑	●	◑
Pedestrian Wayfinding *(Not Shown on Map)*	N/A	○	◑	◑	●	●
Parking Pricing *(Not Shown on Map)*	N/A	○	◑	◑	●	◑

Key:
○ = low ◑ = medium ● = high

Figure 5-1: Mukilteo Station Project Map



Source: Google Earth PRO

Note: A ¼- and ½-mile radius around the station is shown in white.

Kent Station

The highest-ranked project is the bike lockers installation project because of its low annualized cost per new rider (less than $1.00) and high leveraging of previous investments. Also highly ranked was the Mill Creek Pedestrian Bridge, due to its high benefits to existing riders and high leveraging of previous investments. In the survey of riders, improved parking facilities were ranked highest while bicycle access was rated lowest.

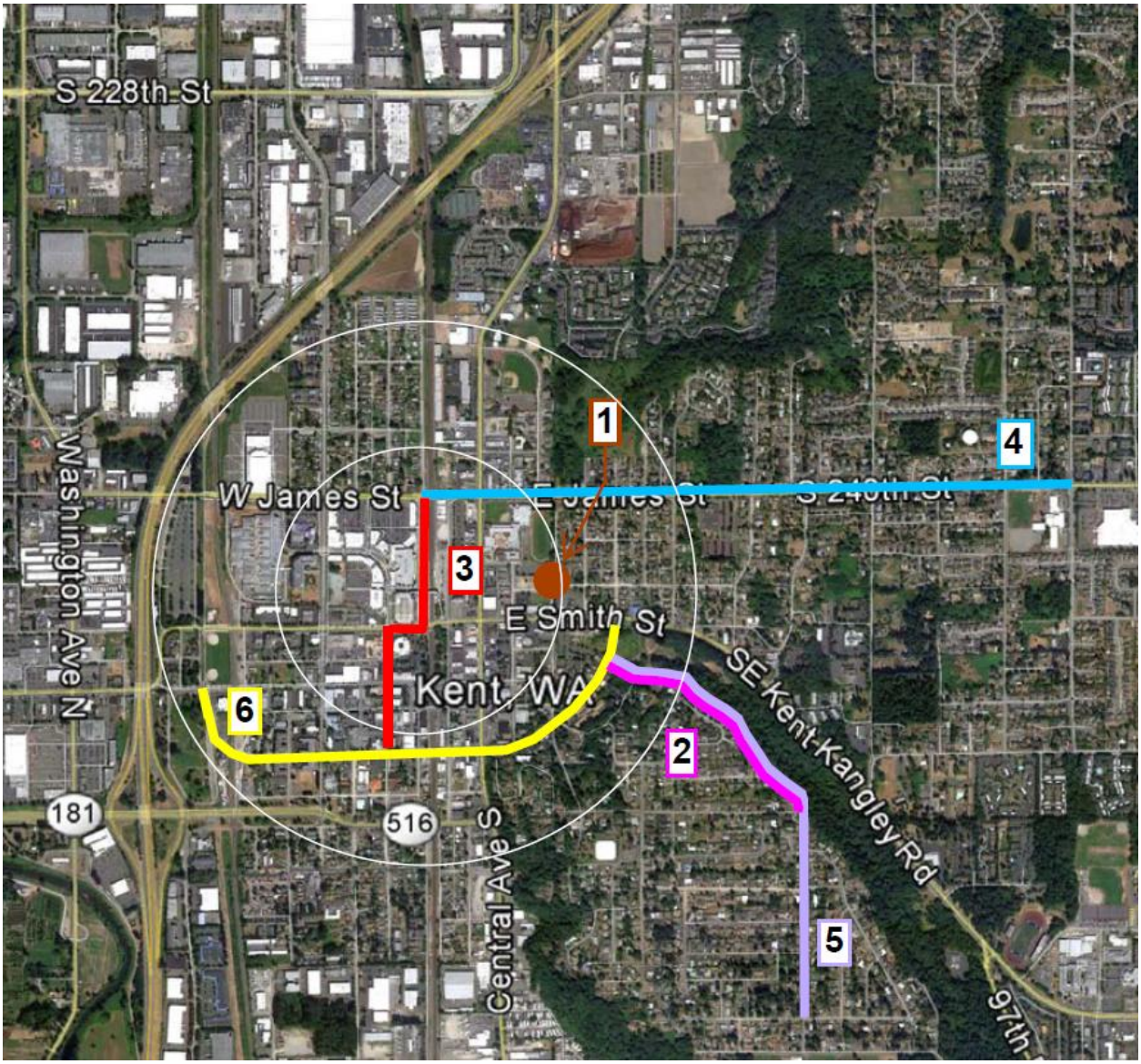
Overall, the potential improvement projects near Kent Station have relatively high marks for all categories, with the exception of the following two projects which are not expected to increase ridership: parking pricing and real-time parking availability signage projects. A cost per new rider was not calculable for these projects. These projects, along with the rationale for each ranking, are described in greater detail in Appendix H.

Table 5-2: Kent Station – Potential Improvement Projects

Project Name *(Map ID)*	Cost/New Rider	Ridership	Leverages Investments	Travel Time & Reliability	Partnership	Environment
Bike Lockers *(Not Shown on Map)*	●	◑	●	●	◑	●
Mill Creek Pedestrian Bridge *(1)*	●	●	●	○	○	○
Reiten Rd Sidewalks *(2)*	●	●	◑	●	●	●
2nd Ave Bike Lane/Sharrow *(3)*	◑	●	●	●	●	●
Expand Drop-Off Capacity *(Not Shown on Map)*	●	◑	●	○	●	○
Shared Facility Project along James St *(4)*	◑	◑	◑	◑	●	●
Reiten Rd Sharrows *(5)*	◑	◑	◑	◑	●	●
Gowe St/Titus St Bike Lane/Sharrow *(6)*	◑	◑	●	●	●	●
Parking Pricing *(Not Shown on Map)*	N/A	○	●	●	◑	◑
Real-time Parking Availability Signage *(Not Shown on Map)*	N/A	○	●	●	◑	○

Key:
○ = low ◑ = medium ● = high

Figure 5-2: Kent Station Project Map



Source: Google Earth PRO

Note: A ¼- and ½-mile radius around the station is shown in white.

Auburn Station

The highest-ranked project is the A St NE Bike Wayfinding and Bike Boulevard project, which would add wayfinding to a non-motorized trail connection and construct a sidewalk. The project is projected to attract up to 30 new riders daily and would have the lowest annualized cost per new rider (less than $1.00). The C St SW Trail was also highly ranked because of its low annualized cost per new rider (less than $1.00) and ridership increase (up to 16 new riders daily). In the survey of riders, improved parking facilities were ranked highest while bicycle access was rated lowest.

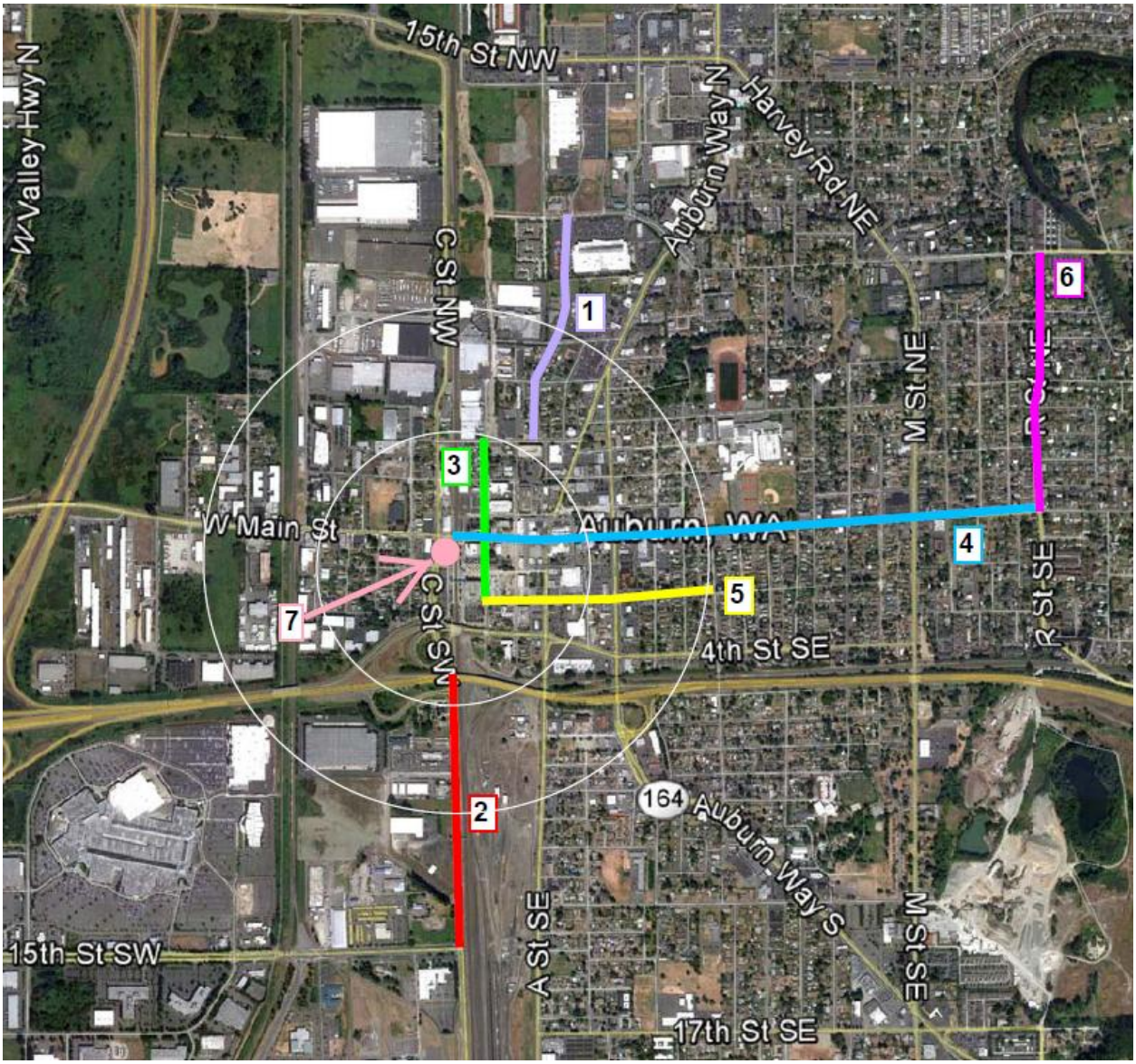
Overall, the potential improvement projects near Auburn Station have relatively high marks for all categories, with the exception of the parking garage project. These projects, along with the rationale for each ranking, are described in greater detail in Appendix H.

Table 5-3: Auburn Station – Potential Improvement Projects

Project Name *(Map ID)*	Cost/New Rider	Ridership	Leverages Investments	Travel Time & Reliability	Partnership	Environment
A St NE Bike Wayfinding and Bike Boulevard *(1)*	●	●	●	●	●	●
C St SW Trail *(2)*	◑	◑	●	●	●	●
A St SW Sharrows *(3)*	◑	◑	●	●	●	●
W Main St Bike Lanes *(4)*	◑	◑	●	●	●	●
2nd St SW Sharrows *(5)*	◑	◑	●	●	●	●
Expand Drop-Off Capacity *(Not Shown on Map)*	●	◑	●	○	●	○
Bike Lockers *(Not Shown on Map)*	●	◑	●	●	◑	●
A St NE Sidewalk and Ramp Improvements *(Not Shown on Map)*	◑	●	◑	●	●	◑
R St NE Bike Lanes *(6)*	○	○	●	●	●	●
Parking Garage *(7)*	○	○	○	●	◑	○
Parking Pricing *(Not Shown on Map)*	N/A	○	●	◑	●	◑
Real-time Parking Availability Signage *(Not Shown on Map)*	N/A	○	●	●	◑	○

Key:
○ = low ◑ = medium ● = high

Figure 5-3: Auburn Station Project Map



Source: Google Earth PRO

Note: A ¼- and ½-mile radius around the station is shown in white.

Sumner Station

The highest-ranked project is the Linden Dr/SR 410 Crossing Improvements project, which would include construction of sidewalks north and south of the bridge crossing SR 410. This project would have the lowest annualized cost per new rider (less than $1.00) and could attract up to 40 new riders per day. The Academy St Bike Boulevard project was also highly ranked because of its low annualized cost per new rider (less than $1.00), a projected increase of up to 60 new riders per day, and its positive environmental benefits. In the survey of riders, improved parking facilities were ranked highest while bicycle access was rated lowest.

Overall, the potential improvement projects near Sumner Station have a mixture of high and low marks for ridership, cost per new rider, leveraging of previous investments, and environmental benefits. These projects, along with the rationale for each ranking, are described in greater detail in Appendix H.

Table 5-4: Sumner Station – Potential Improvement Projects

Project Name *(Map ID)*	Cost/New Rider	Ridership	Leverages Investments	Travel Time & Reliability	Partnership	Environment
Linden Dr/SR 410 Crossing Improvements *(1)*	●	◑	●	◑	●	●
Academy St Bike Boulevard *(2)*	●	●	●	●	●	●
Riverwalk Trail Access Point *(3)*	●	○	●	●	●	●
Puyallup River Trail Extension *(4)*	●	◑	●	●	●	◑
Bike Lockers *(Not Shown on Map)*	●	○	◑	●	◑	●
White River Trail Extension *(5)*	●	○	○	○	●	◑
Parking Garage – Large *(Not Shown on Map)*	○	●	○	●	◑	○
Parking Garage – Small *(Not Shown on Map)*	○	●	○	◑	◑	○
Station Pedestrian Bridge *(6)*	○	◑	○	●	◑	○
SR 410 Non-Motorized Bridge *(Not Shown on Map)*	○	◑	●	●	●	◑
Parking Pricing *(Not Shown on Map)*	N/A	○	●	●	◑	◑
Expand Drop-Off Capacity *(Not Shown on Map)*	N/A	◑	●	○	●	○

Key:
○ = low ◑ = medium ● = high

Figure 5-4: Sumner Station Project Map

Source: Google Earth PRO

Note: A ¼- and ½-mile radius around the station is shown in white.

Puyallup Station

The highest-ranked project is the 2nd St SW Sharrow/Bicycle Boulevard project, which would include construction of a bicycle boulevard on 2nd St SW from E Main to 9th Ave SW. This project would have the lowest annualized cost per new rider (less than $1.00), would provide quicker travel time for bicyclists, have a high partnership potential, and benefit the environment. The Station Area Crosswalk Improvements project was also highly ranked because of its high projected ridership (up to 60 new riders daily) and low annualized cost per new rider (less than $1.00). In the survey of riders, improved parking facilities were ranked highest while bicycle access was rated lowest.

Overall, the potential improvement projects near Puyallup Station have generally low projected ridership increases and high costs per new rider but would provide benefits to travel time and reliability, and have high partnership potentials. These projects, along with the rationale for each ranking, are described in greater detail in Appendix H.

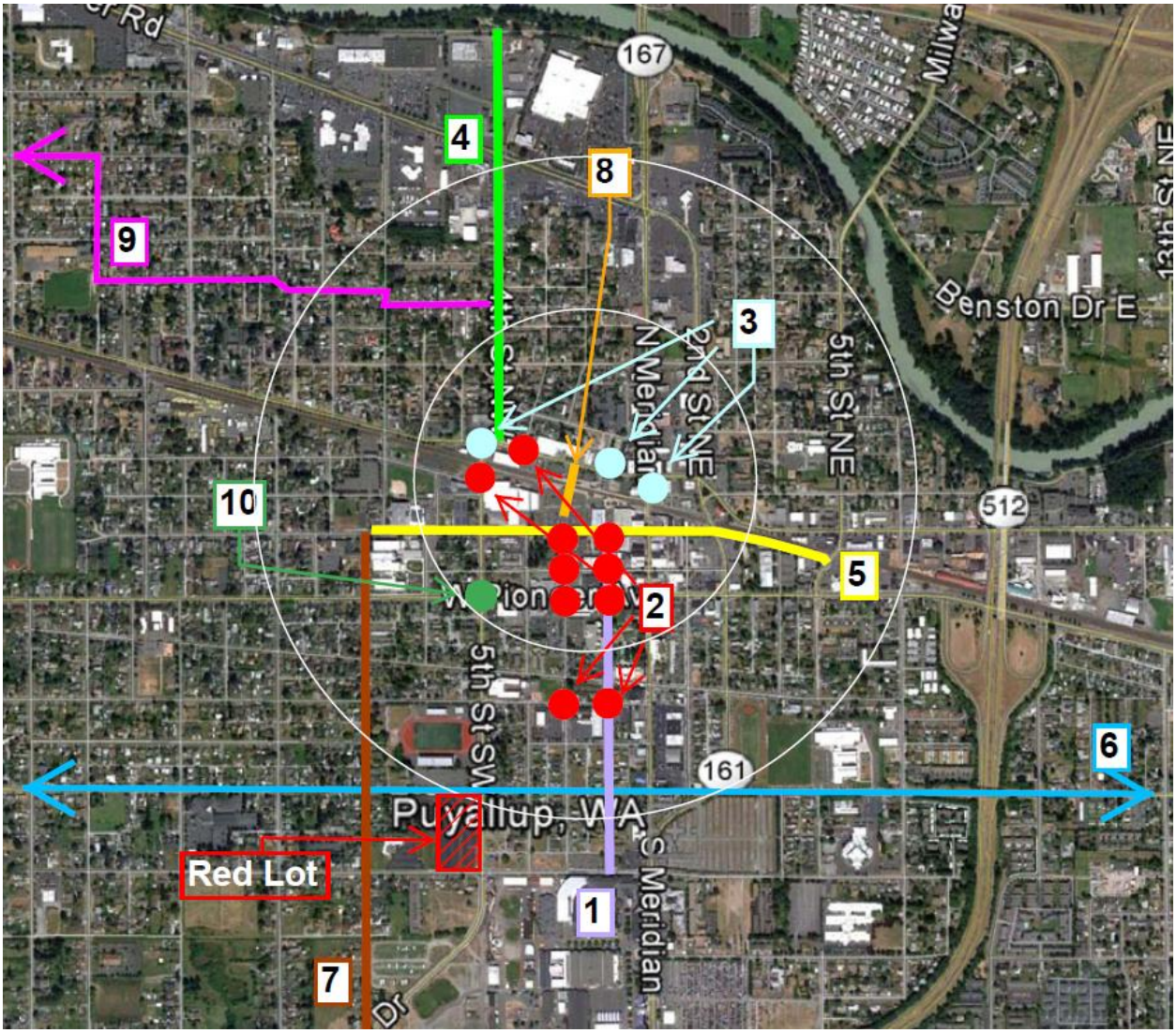
Table 5-5: Puyallup Station – Potential Improvement Projects

Project Name *(Map ID)*	Cost/New Rider	Ridership	Leverages Investments	Travel Time & Reliability	Partnership	Environment
2nd St SW Sharrow / Bicycle Boulevard *(1)*	●	◑	◑	●	●	●
Station Area Crosswalk Improvements *(2)*	●	●	●	◑	●	○
Railroad Crossing Improvements *(3)*	●	●	○	◑	●	○
4th St NW Bike Lane *(4)*	◑	○	●	●	●	●
W Main Ave Sharrows and Bike Lanes *(5)*	○	○	●	●	●	●
7th Ave Bike Lanes and Sharrow *(6)*	○	○	●	●	●	●
Parking Garage – Large *(Not Shown on Map)*	○	○	○	●	◑	○
Parking Garage – Medium *(Not Shown on Map)*	○	○	○	◑	◑	○
7th St SW Bicycle Boulevard *(7)*	○	○	●	●	●	●
Station Pedestrian Bridge *(8)*	○	●	○	●	◑	○
Parking Garage – Small *(Not Shown on Map)*	○	○	○	◑	◑	◑
21st Ave NW to 4th St NW Bike Boulevard *(9)*	○	○	●	●	●	●
Turning Radius Improvements *(10)*	–	◑	●	●	●	○
Real-time Arrival Signs *(Not Shown on Map)*	N/A	○	○	●	◑	○

Project Name *(Map ID)*	Cost/New Rider	Ridership	Leverages Investments	Travel Time & Reliability	Partnership	Environment
Drop-Off Capacity Improvements *(Not Shown on Map)*	N/A	◑	●	○	●	○
Parking Pricing *(Not Shown on Map)*	●	○	●	●	◑	◑

Key:
○ = low ◑ = medium ● = high

Figure 5-5: Puyallup Station Project Map



Source: Google Earth PRO

Note: A ¼- and ½-mile radius around the station is shown in white.

Tacoma Dome Station

The highest-ranked project is the E K St/E Wright Ave Bike Boulevard project, which would construct a bicycle boulevard along E K St and E Wright Ave from McKinley Park to the Pipeline Trail. This project would attract up to 15 new daily riders and would have the lowest annualized cost per new rider (less than $1.00). The Puyallup Ave Crossing Improvement project was also highly ranked because of its benefits to ridership (up to 20 new riders), low annualized cost per new rider (less than $1.00), and high partnership potential. In the survey of riders, improved parking facilities were ranked highest while bicycle access was rated lowest.

Overall, the potential improvement projects near the Tacoma Dome Station have benefits for travel time and reliability, high partnership potential, and relatively low increases in ridership. These projects, along with the rationale for each ranking, are described in greater detail in Appendix H.

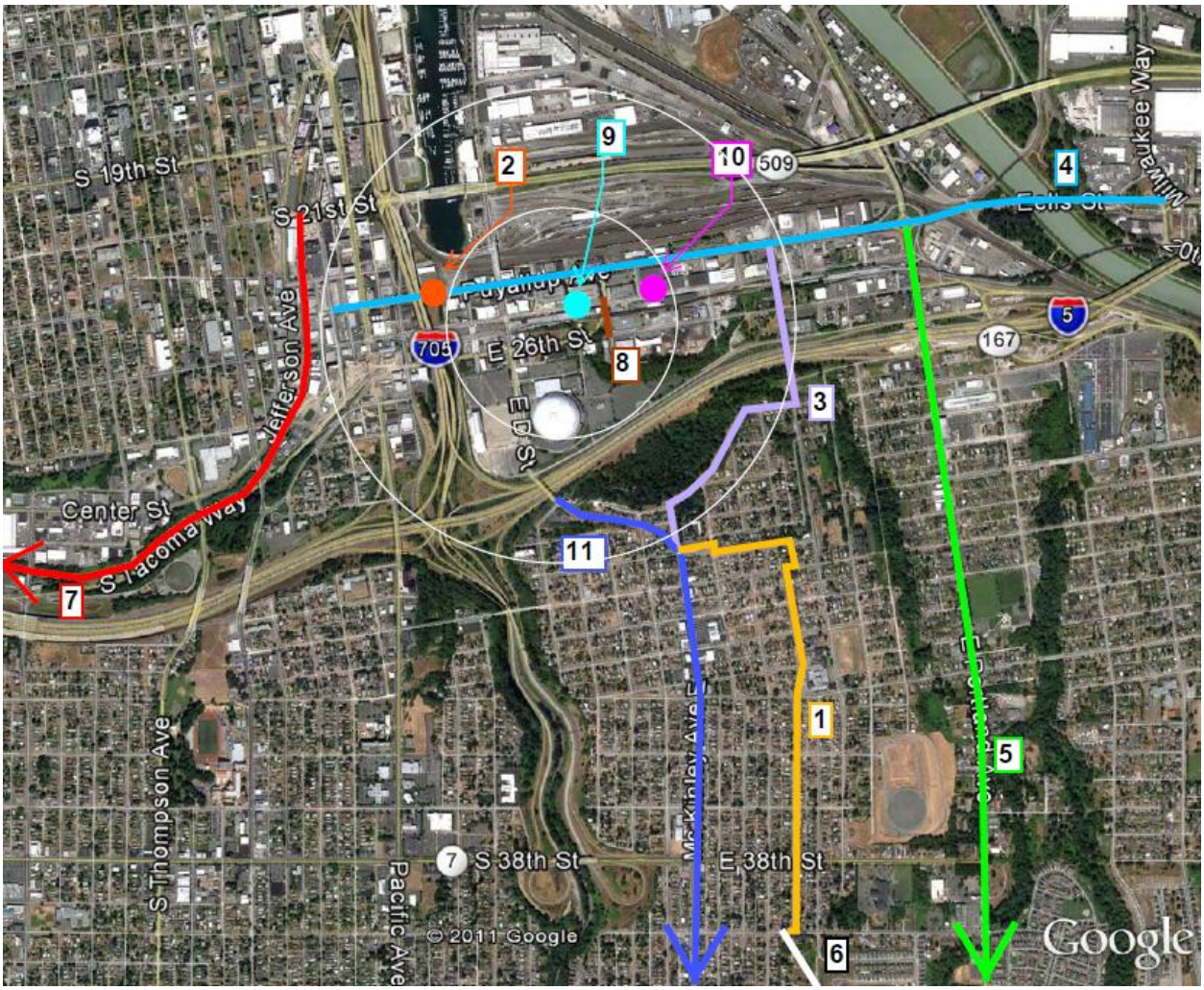
Table 5-6: Tacoma Dome Station – Potential Improvement Projects

Project Name *(Map ID)*	Cost/New Rider	Ridership	Leverages Investments	Travel Time & Reliability	Partnership	Environment
E K St/E Wright Ave Bike Boulevard *(1)*	●	◑	●	●	●	●
Puyallup Ave Crossing Improvement *(2)*	●	◑	○	●	●	○
E L St Climbing Bike Lane / Sharrow Combination & Bike Boulevard *(3)*	●	◑	◑	●	●	●
Bike lockers *(Not Shown on Map)*	●	○	◑	●	◑	●
Puyallup Ave Bike Lanes *(4)*	◑	○	●	●	●	●
Portland Ave Bike Lanes *(5)*	◑	○	●	●	●	●
Pipeline Trail *(6)*	◑	○	○	●	●	●
Contribute to Parking Garage *(Not Shown on Map)*	◑	●	○	●	◑	○
Prairie Line Trail – Phase 2 (Water Ditch Trail Ext.) *(7)*	○	◑	◑	◑	◑	◑
Station Pedestrian Bridge *(8)*	○	◑	●	●	◑	○
Station-Area Pedestrian Lighting *(9)*	N/A	○	○	●	●	○
Real-time Parking Availability Signage *(Not Shown on Map)*	N/A	○	●	●	◑	○
E G St Boarding Area and Layover Zone Improvements *(10)*	–	○	●	●	●	●
E McKinley Way Bike Lanes *(11)*	N/A	○	●	●	●	●

Project Name *(Map ID)*	Cost/New Rider	Ridership	Leverages Investments	Travel Time & Reliability	Partnership	Environment
Parking Pricing *(Not Shown on Map)*	N/A	○	◑	◑	●	◑

Key:
○ = low ◑ = medium ● = high

Figure 5-6: Tacoma Dome Station Project List



Source: Google Earth PRO

Note: A ¼- and ½-mile radius around the station is shown in white.

South Tacoma Station

The highest-ranked project is to improve sidewalks near the station, which would include construction of street lighting, sidewalks and curb ramps between the South Tacoma Station and the business district near S 56th St. This access improvement could attract up to 33 new daily riders and would have the lowest annualized cost per new rider (less than $1.00). The S 60th St Trail project was also highly ranked because of its high new daily riders estimate (up to 40), its low annualized cost per new rider (less than $1.00), and its high marks for all other categories. In the survey of riders, improved parking and transit facilities were ranked highest while bicycle access was rated lowest.

Overall, the potential improvement projects near the South Tacoma Station would leverage previous investments, would provide benefits to travel time and reliability, would have a high partnership potential, and moderate ridership increases. These projects, along with the rationale for each ranking, are described in greater detail in Appendix H.

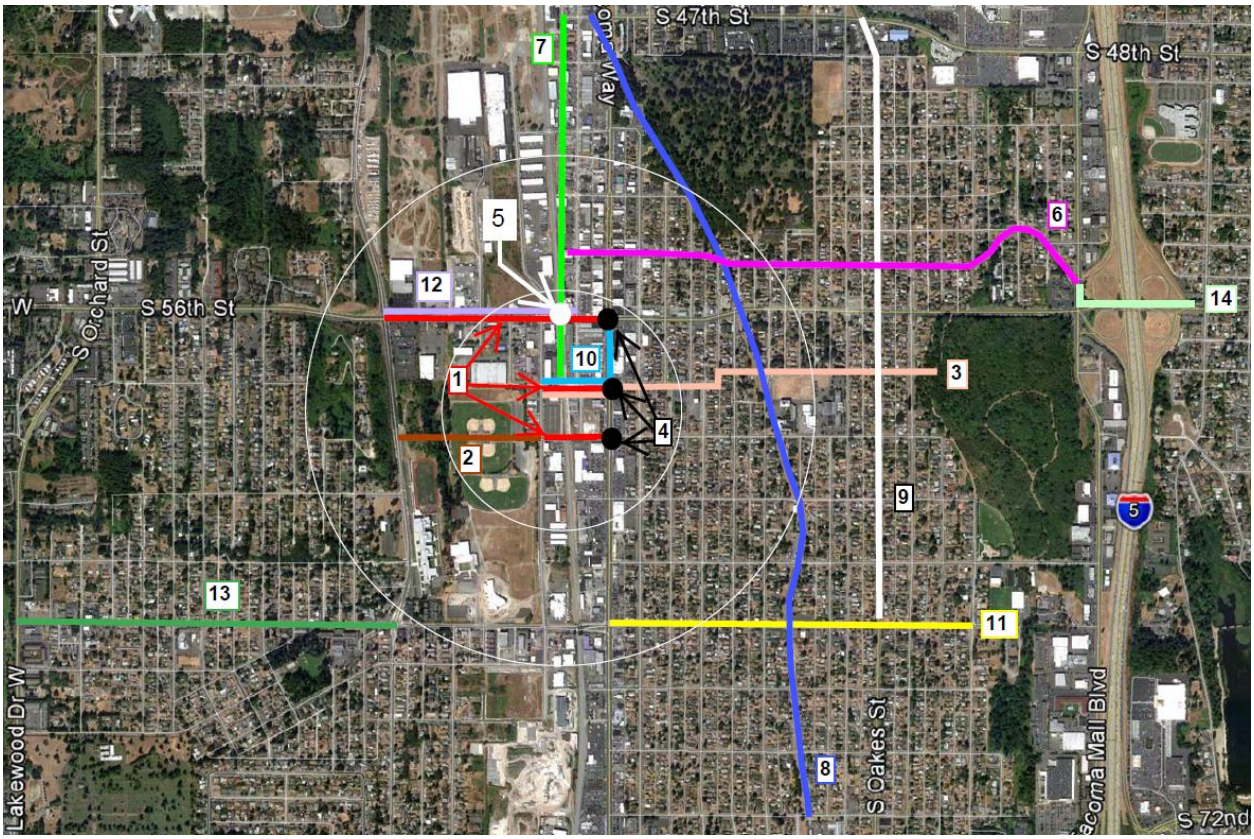
Table 5-7: South Tacoma Station – Potential Improvement Projects

Project Name *(Map ID)*	Cost/New Rider	Ridership	Leverages Investments	Travel Time & Reliability	Partnership	Environment
Sidewalks Improvements near Station *(1)*	●	●	●	◑	●	○
S 60th St Trail *(2)*	●	●	●	●	●	●
S 58th St Non-Motorized Connection *(3)*	●	●	●	●	●	●
Bike lockers *(Not Shown on Map)*	●	◑	●	●	◑	●
S Tacoma Way Crossing Improvements *(4)*	◑	◑	●	◑	●	○
S 56th St Crossing Improvements *(5)*	◑	◑	●	◑	●	○
S 54th St/S Railroad St Bike Boulevard *(6)*	○	◑	●	●	●	●
S Washington Way Bike Lanes *(7)*	◑	◑	●	◑	◑	◑
Water Ditch Trail TAC-40 *(8)*	◑	●	●	●	●	●
Oaks St Bike Lane *(9)*	○	◑	◑	◑	●	◑
Station Area Access Improvements *(10)*	○	◑	●	◑	◑	○
S 66th St Bike Boulevard *(11)*	○	◑	●	●	●	●
S 56th St Bike Lanes *(12)*	○	◑	◑	●	●	●
S 66th St Sharrows *(13)*	○	○	●	●	●	●

Project Name *(Map ID)*	Cost/New Rider	Ridership	Leverages Investments	Travel Time & Reliability	Partnership	Environment
S 56th St and I-5 Interchange Crossings *(14)*	○	◑	◑	●	●	●
Parking Pricing *(Not Shown on Map)*	N/A	○	●	◑	●	◑

Key:
○ = low ◑ = medium ● = high

Figure 5-7: South Tacoma Station Project Map



Source: Google Earth PRO
Note: A ¼- and ½-mile radius around the station is shown in white.

Lakewood Station

The highest-ranked project is the 47th Ave SW Sidewalk project, which would include construction of a sidewalk along 47th Ave SW from 108th St SW to 111th St SW. This project is projected to attract up to 24 new daily riders and would have the lowest annualized cost per new rider (less than $1.00). The Lakeview Ave SW Sidewalk project was also highly ranked because of its low annualized cost per new rider (less than $1.00), its benefits to travel time and reliability, high partnership potential, and environmental benefits. In the survey of riders, improved parking facilities were ranked highest while drop-off/short-term access and pedestrian connections were rated lowest.

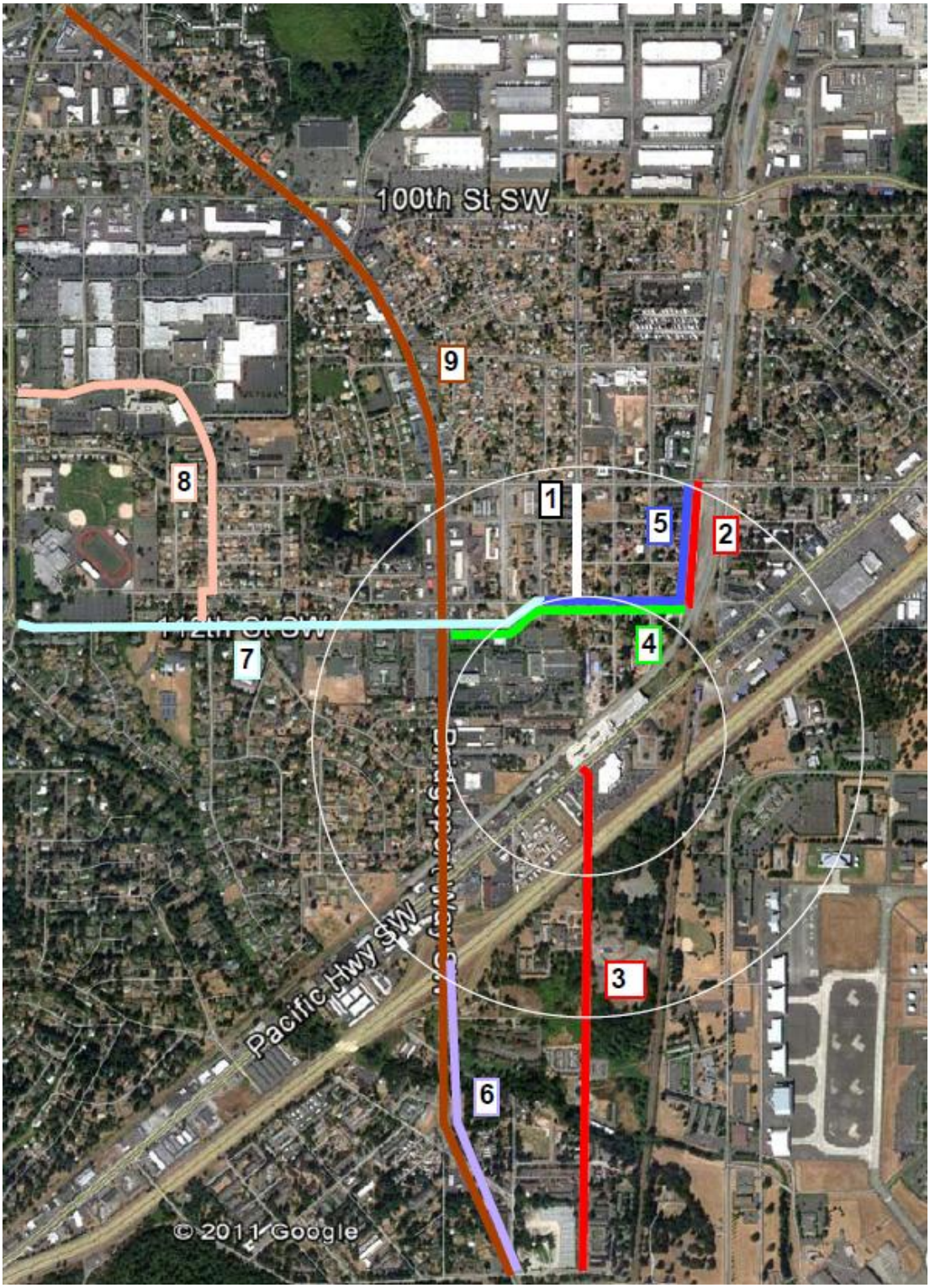
Overall, the potential improvement projects near Lakewood Station have low to moderate ridership increases, high partnership potentials, high environmental benefits, and leverage previous investments. As the last four projects listed in Table 5-8 would not increase ridership, a cost per new rider is not calculable. These projects, along with the rationale for each ranking, are described in greater detail in Appendix H.

Table 5-8: Lakewood Station – Potential Improvement Projects

Project Name *(Map ID)*	Cost/New Rider	Ridership	Leverages Investments	Travel Time & Reliability	Partnership	Environment
47th Ave SW Sidewalk *(1)*	●	◑	●	●	●	●
Lakeview Ave SW Sidewalk *(2)*	●	◑	◑	●	●	●
47th Ave SW Bike Boulevard *(3)*	●	●	●	●	●	●
111th/112th St SW Sidewalk *(4)*	●	◑	●	●	●	●
111th St SW/Lakeview Ave SW Bike Lanes *(5)*	◑	○	◑	●	●	●
Bike lockers *(Not Shown on Map)*	◑	○	●	●	◑	●
Bridgeport Way SW Sidewalk *(6)*	◑	◑	●	○	○	○
112th St SW Bike Lanes *(7)*	◑	◑	◑	◑	●	●
Main St Sharrows *(8)*	○	○	◑	◑	●	●
Bridgeport Way SW Sharrows *(9)*	N/A	○	◑	●	●	●
Real-time Parking Availability Signage *(Not Shown on Map)*	N/A	○	●	●	◑	○
Parking Pricing *(Not Shown on Map)*	N/A	○	◑	◑	●	◑
Expand Drop-Off Capacity *(Not Shown on Map)*	N/A	○	●	○	●	○

Key:
○ = low ◑ = medium ● = high

Figure 5-8: Lakewood Station Project Map



Source: Google Earth PRO

Note: A ¼- and ½-mile radius around the station is shown in white.