
6.0 Level 2 Findings & Conclusions

– Alignment Alternatives

This section summarizes the key data and analyses from the earlier chapters of this report, and presents the relevant findings and conclusions related to each of the Level 2 alternatives. Each of the following sections provides a table summarizing the relative strengths and weaknesses of each alternative. These strengths and weaknesses have been identified based on the alignment alternative definitions presented in Chapter 3, the evaluation criteria and measures described in Chapter 4, and the data and analysis results presented in Chapter 5. Following the strengths and weaknesses table for each alternative, there is a brief narrative that provides the summary conclusions and key findings for each alternative. A summary of conclusions is provided at the end of the chapter.

The findings and conclusions in this chapter are organized to compare the alternatives in two groups (the SR 99 alternatives and the I-5 alternatives) to identify the best alternatives within each corridor (the SR 99 alternatives are compared to each other and the I-5 alternatives are compared to each other). In addition the alternatives are compared across these two corridors within the study area. This approach has been taken because despite the amount and variety of data collected for Level 2 screening, the results provided both useful comparisons within each set of alternatives and do not paint a clear picture of whether or not one corridor performs clearly better than the other. In addition, the analysis suggests that alternatives from each corridor should be studied further in the Draft Environmental Impact Statement (EIS). The alternatives will be refined and developed to a higher level of detail before undergoing a more rigorous analysis in the Draft EIS.

6.1 SR 99 Corridor Alternatives

The SR 99 corridor generally features robust land use variety and corridor access, with areas of opportunity for targeted transit-oriented land use improvements along the proposed Light Rail Transit (LRT) alternatives. The SR 99 alternatives have been designed to connect these areas and optimize ridership by balancing the need for LRT system access with the need to serve regional destinations. The following subsections compare the SR 99 alternatives to each other.

6.1.1 SR 99 Elevated Median Alternative

TABLE 6-1
SR 99 Elevated Median Alternative: Summary of Strengths and Weaknesses

Strengths	Weaknesses
<ul style="list-style-type: none"> No wetland effects Fewest potential residential displacements No potential for direct effects to community facilities Fewer right of way effects due to available existing median space Lowest estimated capital cost 	<ul style="list-style-type: none"> Higher potential length of stream effect Higher potential effects on business traffic due to recirculation Highest potential traffic effects during construction due to median guideway and stations Challenge of crossing SR 99/Kent-Des Moines Road and other major intersections in median

The **SR 99 Elevated Median** alternative would include a light rail guideway on vertical columns in the median of SR 99. It would require construction of guideway support columns in the median of SR 99, which currently has a planted strip or intersection turning lanes for nearly all of the length of the study corridor.

The location of the columns for the proposed transit guideway in the existing median of SR 99 would be positive for this alternative because it would, in many locations, minimize or eliminate the need to widen the SR 99 roadway. Where the proposed columns would be placed in an existing planted strip, it has been assumed that the columns would fit within the available space. As a result, the SR 99 Elevated Median alternative would have fewer business displacements than the SR 99 Hybrid alternative. With the SR 99 Elevated Median alternative, residential displacements would be less than with each of the other SR 99 alternatives. Lane closures during construction activities would affect mobility within the SR 99 corridor. The elevated guideway would cross over major intersections such as the Kent-Des Moines Road intersection on a long elevated structure in the median of SR 99, which would increase cost and complexity.

With the elevated alignment in the median of SR 99, the number and locations of mid-block left turns and U-turns could be reduced and the revised median configuration could require additional roadway improvements to facilitate local circulation. This could result in additional traffic impacts at nearby signalized intersections.

The SR 99 Elevated Median alternative would be somewhat close to noise-sensitive receivers on both sides of the roadway, resulting in more potential noise effects than the SR 99 Hybrid alternative, as well as more potential indirect effects on community facilities.

Key Findings

- 1) The SR 99 Elevated Median alternative would have lower overall right-of-way requirements than other SR 99 alternatives.

- 2) It would have the greatest disruption to the community during construction of the SR 99 alternatives.
- 3) It would have the greatest potential for disruption to the community of the SR 99 alternatives once operations begin because of traffic and noise effects.
- 4) It would involve complex structural solutions (such as long spans and straddle bents) and/or substantial widening at major intersections to accommodate the median elevated guideway.

6.1.2 30th Avenue S. Elevated West Side with SR 99 Elevated Median Alternative

TABLE 6-2

30th Avenue S. Elevated West Side with SR 99 Elevated Median Alternative: Summary of Strengths and Weaknesses

Strengths	Weaknesses
<ul style="list-style-type: none"> No wetland effects Fewest business displacements No potential for direct effects to community facilities 	<ul style="list-style-type: none"> Higher potential for stream effects Higher potential for visual effects Most potential residential displacements Highest number of noise-sensitive receivers Highest number of Category 2 vibration-sensitive receivers Higher potential traffic effects during construction due to median guideway and stations

The **30th Avenue S. Elevated West Side** alternative would include a light rail guideway on vertical columns on the west side of 30th Avenue S. between S. 220th Street and S. 240th Street. North and south of these points it would have the same alignment as the SR 99 Elevated Median alternative, and effects in these areas would be the same as the SR 99 Elevated Median alternative. North of Kent-Des Moines Road, 30th Avenue S. is a primarily residential street with several large multi-family complexes as well as some single family homes. Locating the alignment on 30th Avenue S. in this area would avoid the traffic, design and cost issues associated with putting the light rail guideway through the complex SR 99/Kent-Des Moines Road intersection. It has greater potential for residential displacements and visual, noise and vibration effects than the other SR 99 alternatives, but would have fewer effects on businesses along SR 99 in this area.

Some of the negative effects could be reduced by moving the transition from SR 99 to 30th Avenue S. farther south than S. 220th Street. Also, although this alternative was evaluated as if it was connected to the SR 99 Elevated Median alternative, it could be combined with the SR 99 Hybrid alternative to the north or the south, or it could be connected to an I-5 alternative to the south.

Key Findings

- 1) The 30th Avenue S. Elevated West Side alternative would avoid the challenges associated with the complex crossing of the SR 99/Kent Des Moines Road intersection.
- 2) It would have greater potential for effects on residences than other SR 99 alternatives, especially north of Kent-Des Moines Road.
- 3) It would have lower potential for effects on businesses than other SR 99 alternatives.

6.1.3 SR 99 Hybrid Alternative

TABLE 6-3
SR 99 Hybrid Alternative: Summary of Strengths and Weaknesses

Strengths	Weaknesses
<ul style="list-style-type: none"> • Lower potential for stream effects • Lowest number of Category 2 noise-sensitive receivers • Lowest number of Category 2 vibration-sensitive receivers • Fewer congested intersections with potential traffic effects for SR 99 alternatives • Less potential for traffic effects during construction 	<ul style="list-style-type: none"> • Potential effects to McSorley Creek wetland area • Most potential business displacements • Highest potential for direct effects to community facilities

The SR 99 Hybrid alternative light rail guideway would be constructed primarily on either the east or the west side of SR 99, minimizing reconstruction of SR 99 and potential traffic effects associated with occupying the median. It would also avoid crossing the SR 99/Kent Des Moines Road intersection in the median by crossing Kent Des Moines Road on the west side of SR 99. This alternative would have the least potential for noise and vibration effects on residences among the SR 99 alternatives, as well as less potential for effects on traffic during construction and operation.

This alternative would be located on the east side of SR 99 near the McSorley Creek wetland complex, resulting in potential effects to this wetland. These effects would be further defined in the EIS and would require additional information on the wetland boundary and the extent to which the wetland could be avoided. Being located on the side of the predominantly commercial SR 99 corridor, however would result in the greatest number of business displacements of any alternative, and could displace up to 3 commercial buildings where space is leased for religious facilities. The design of this alternative could be further refined to further avoid or minimize many of the identified adverse effects.

Key Findings

- 1) The SR 99 Hybrid would avoid most of the traffic and construction issues associated with construction and operation in the SR 99 median.

- 2) It is the only alternative with potential for effects on wetlands.
- 3) It would have greater impacts on businesses and community facilities than the other SR 99 alternatives.

6.2 I-5 Corridor Alternatives

The I-5 corridor studied is primarily within the I-5 right-of-way, which is adjacent to primarily single family land uses, except at the interchanges at Kent-Des Moines Road and S. 317th/320th streets, which have commercial land uses. The alternatives within this corridor are designed to connect access points at freeway interchanges to optimize ridership by balancing the need for LRT system access with the need to serve regional destinations.

The I-5 alternatives are subject to ongoing review and coordination with WSDOT. The “SR 167, SR 509, and I-5 Puget Sound Gateway Project” (“the Gateway Project”) is a long-term effort to improve roadway access to the ports of Seattle and Tacoma, in the interest of maintaining and enhancing Washington’s global economic competitiveness. The Gateway Project features three projects that, when combined, could add substantial width to I-5 in the FWTE project study area. In some parts of the study area, this additional roadway width would occupy all or most of the available WSDOT right-of-way.

The two I-5 alternatives being considered in this Level 2 screening process are subject to substantial change as new information becomes available about the spatial needs of the Gateway Project. Although these widening projects are not currently funded, discussions continue regarding the appropriate placement of the proposed LRT guideway along I-5. The assumptions contained in this report about LRT guideway placement represent the best information available at the time regarding right-of-way availability and WSDOT design coordination.

The following subsections compare the I-5 alternatives to each other.

6.2.1 I-5 Mixed West Side Alternative

TABLE 6-4
I-5 Mixed West Side Alternative: Summary of Strengths and Weaknesses

Strengths	Weaknesses
<ul style="list-style-type: none"> Lower potential for traffic effects during construction Lower estimated cost 	<ul style="list-style-type: none"> Higher potential for visual effects Higher number of Category 2 and Category 3 noise-sensitive receivers Higher number of Category 2 vibration-sensitive receivers Cost and challenge of crossing Midway Landfill

The I-5 Mixed West Side alternative would be along the west side of I-5, primarily within or adjacent to the WSDOT right-of-way. It would be at-grade in some locations and grade-separated in others. Construction within WSDOT right-of-way on the west side of I-5 would minimize the need for lane closures on local roads as well as on I-5. The land uses adjacent to I-5 are primarily residential; consequently, this alignment has more potential for effects on residences, including displacements, noise, vibration and visual effects. This alternative would cross the Midway Landfill, which presents engineering challenges and additional costs. Both I-5 alternatives would also need to avoid or relocate the Highline Water District tanks and a major Puget Sound Energy substation. Coordination with WSDOT during the Level 2 process indicated that the availability of their right-of-way may be limited north of Kent-Des Moines Road, due to potential conflicts with the planned SR 509 extension (as part of the Gateway Project).

Key Findings

- 1) The I-5 Mixed West Side alternative would have greater potential for effects on residences.
- 2) Crossing the Midway Landfill would present engineering challenges and increased costs.
- 3) Use of WSDOT right-of-way may be limited north of Kent-Des Moines Road.

6.2.2 I-5 Mixed West Side/Median Alternative

TABLE 6-5

I-5 Mixed West Side/Median Alternative: Summary of Strengths and Weaknesses

Strengths	Weaknesses
<ul style="list-style-type: none"> • Lower potential for visual effects • Lower number of Category 2 and Category 3 noise-sensitive receivers • Lower number of Category 2 vibration-sensitive receivers • Avoids the Midway Landfill 	<ul style="list-style-type: none"> • Lower potential for traffic effects during construction • Uncertainty regarding availability of the median for transit guideway due to the potential Puget Sound Gateway project • Crossing I-5 southbound lanes to get into and out of the median • Higher estimated cost

The I-5 Mixed West Side/Median alternative would be along the west side of I-5 primarily within or adjacent to the WSDOT right-of-way and within the median between the north and south bound lanes of I-5. This alternative would transition from west of I-5 to the I-5 median near S. 240th Street, primarily to avoid crossing the Midway Landfill, and would cross back to the west side of I-5 for stations at S. 272nd Street and the Federal Way Transit Center. Construction in the I-5 right-of-way would minimize disruption to the community, but could have effects on I-5 traffic. Construction in the median and to cross into and out of the median would result in lane closures and some traffic disruption on I-5, which would not occur with the I-5 Mixed West Side alternative.

Land use adjacent to I-5 is primarily residential, and therefore the alignment would have less potential for effect on businesses. The potential for noise, vibration, and visual effects on residences would be similar to the I-5 Mixed West Side alternative where the alignment is on the west side of I-5, but would be avoided when in the median. Coordination with WSDOT during the Level 2 process indicated that the availability of their right-of-way may be limited north of Kent-Des Moines Road, due to potential conflicts with the planned SR 509 extension (as part of the Gateway Project). Other components of the Gateway Project may require use of the median south of Kent-Des Moines Road.

Key Findings

- 1) The I-5 Mixed West Side/Median alternative would have less potential for effects on residences.
- 2) Constructing in the median and crossing I-5 would be more disruptive to I-5 traffic and more expensive than the I-5 Mixed West Side alternative.
- 3) Availability of WSDOT right-of-way for this project is uncertain.

6.3 Comparing SR 99 to I-5

TABLE 6-6
SR 99 and I-5: Summary of Strengths and Weaknesses by Corridor

SR 99 Corridor	I-5 Corridor
Strengths <ul style="list-style-type: none"> • More subsidized housing within ½ mile • Greater area zoned for high density development • More employment (existing and future) within ½ mile • More potential for non-motorized access • Fewer potential residential displacements • Avoids important large utility sites (e.g. water tanks, electrical substation) Weaknesses <ul style="list-style-type: none"> • Slightly longer travel time • More potential business displacements • Greater potential for indirect effects to community facilities • More Category 3 noise-sensitive receivers • Higher potential for effects to community during construction • Higher estimated cost 	Strengths <ul style="list-style-type: none"> • Slightly shorter travel time • Fewer potential business displacements • Less potential for indirect effects to community facilities • Fewer Category 3 noise-sensitive receivers • Lower potential for effects to community during construction • Lower estimated cost than SR 99 alternatives Weaknesses <ul style="list-style-type: none"> • Less subsidized housing within ½ mile • Smaller area zoned for high density development • Less employment (existing and future) within ½ mile • Less potential for non-motorized access • More potential residential displacements • Affects important large utility sites (e.g. water tanks, electrical substation)

The SR 99 and I-5 corridors each offer strengths and weaknesses that are generally different from the other corridor, resulting in trade-offs of benefits and effects that are more different between the two corridors than between the various alternatives in each corridor. The SR 99 corridor is more densely developed and of a commercial and mixed use nature, and therefore has greater potential for effects to existing development, as well as more potential for new

development. The SR 99 corridor is more accessible by all modes (vehicle, transit or non-motorized) and more integrated into the communities along the route. The I-5 corridor is primarily residential on both sides, and therefore has less potential for overall community disruption such as effects to traffic, but greater potential for effects to individual residences, including noise, vibration and visual effects. The I-5 corridor generally has more existing express transit and better utilized park and rides. Alternatives in the SR 99 corridor have higher estimated costs than alternatives in the I-5 corridor.

6.4 Special Alignment Issues

This section documents issues related to alignments for which discussion does not fit easily within the context of the alternatives analysis documented in this report.

6.4.1 SR 99/I-5 Connection

With the exception of both ends of the FWTE corridor where the guideway would connect to the stations that define its limits (Angle Lake and FWTC), the Level 2 alignment alternatives were defined as running along either SR 99 or I-5 for the entirety of the corridor. However, throughout the Level 1 and Level 2 analysis process, the project team has heard input and collected data indicating that the two alignments could each perform higher in different parts of the corridor. It is possible that an LRT alignment that crosses over from one to the other could perform better than the best alternative confined to each corridor for the entire length of the corridor and/or might be preferred in the study area. The combination of segments of the SR 99 and I-5 alignment alternatives would affect alignment development in the following two primary ways:

- Such a combination would require the conceptual design and analysis of a new track route between SR 99 and I-5 that has not been specifically analyzed so far in the study, and
- The resulting alternative would represent a new concept to the residents, business-owners, and other stakeholders in the corridor.

In order to avoid creating a route that would slow trains by forcing out-of-direction travel and having tight curves that would slow down the trains and increase travel time, the optimum connection location would be located where I-5 and SR 99 are close together, such as in the Kent-Des Moines Road area, rather than where they are not.

Although potential connections between the SR 99 and I-5 corridors have not been included formally in the alternatives analysis process, project planners and engineers have identified multiple potential locations to connect these corridors that could be considered. Examples of considerations that could influence a decision to investigate such a connection alignment include:

- Potential physical limitations in the I-5 right of way north of Kent-Des Moines Road;
- Challenges in crossing the Midway Landfill; or
- Local concerns regarding potential adverse effects.

While detailed alignments for potential connection locations have not been investigated, there are four general areas between the Kent-Des Moines and 272nd stations that have been identified in early discussions thus far. These areas are discussed in the following subsections and are illustrated in **Exhibit 6-1**.

1. Near Kent-Des Moines Road

A connection from SR 99 to I-5 (or I-5 to SR 99) could be located in the vicinity of Kent-Des Moines Road, such that the guideway would transition to the east out of the SR 99 corridor north of the Kent-Des Moines intersection and cross over Kent-Des Moines Road at or near the intersection with 30th Avenue S. It could continue along the south side of Kent-Des Moines Road to the I-5 corridor and turn south along the west side of I-5. Such a connection would be consistent with a proposed Kent-Des Moines station location near the I-5 right of way just south of Kent-Des Moines Road, as proposed in the City of Kent's Midway Subarea Plan.

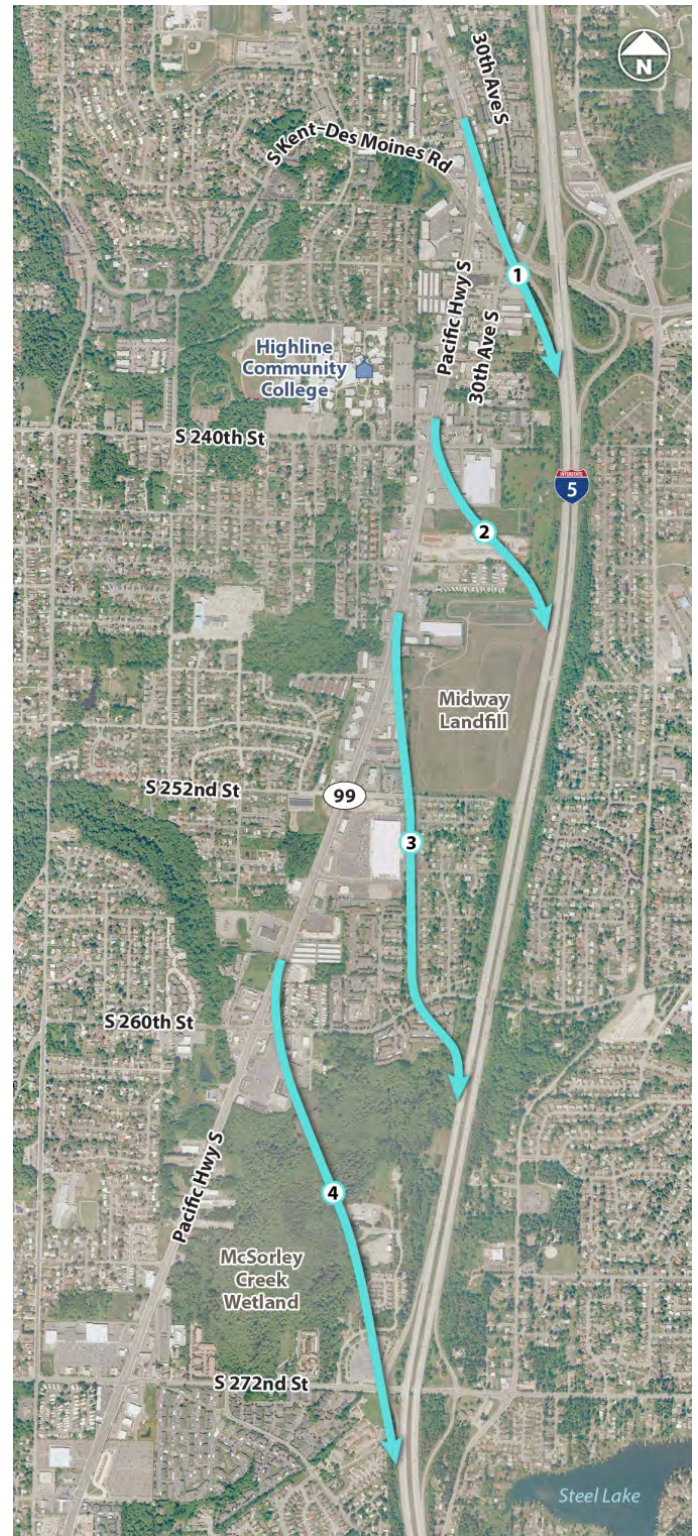


EXHIBIT 6-1
Potential SR 99/I-5 Connection Alignments

2. Between S. 240th St. and the Midway Landfill

This portion of the corridor could include a connection in either direction—from I-5 to SR 99 or from SR 99 to I-5—depending on the preferred alignment to the north and south of the connection. If the Kent-Des Moines station is located closer to S. 240th than to Kent-Des Moines Road, a connection could generally traverse vacant and lightly-used commercial land without substantially slowing down the train or increasing travel time. A connection in this area would have the advantage of being relatively short, but might still require crossing the Midway Landfill and/or be constrained by future WSDOT right-of-way needs in the I-5 right-of-way.

3. Between the Midway Landfill and the McSorley Creek Wetland Complex

The area south of the Midway Landfill and north of the McSorley Creek wetland complex consists almost entirely of existing single-family and multi-family residential land uses, and contains almost no vacant land. A potential connection through this area that would not impact either the landfill to the north or the wetland to the south could only be constructed by displacing multiple single family and multifamily residences. This location would avoid the challenge of crossing the Midway Landfill and the wetlands, but comes with the disadvantage of relatively extensive impacts to the existing residential community.

4. Crossing the McSorley Creek Wetland Complex

The McSorley Creek wetland complex is a potential opportunity to connect SR 99 and I-5 alternatives because it could be crossed diagonally on primarily undeveloped land. This potential alignment would access the Star Lake Park and Ride at S. 272nd Street and would allow trains to maintain desirable speeds and not affect travel time. This crossing could occur at the narrowest area of the wetland, minimizing effects on the wetland. While such a connection alignment has not been designed, it is possible with the elevated nature of the proposed guideway that the actual project footprint on the ground could be limited to fewer than ten columns in the area of the wetlands complex. A connection at this location has the advantage of avoiding effects on residential neighborhoods and the challenges of crossing the landfill, but the disadvantage of direct and indirect wetland effects. In addition, much of this property has been purchased by the City of Kent for preservation purposes, and this area is considered ecologically important by multiple government agencies because of its size. It is the headwaters for McSorley Creek, which supports anadromous and resident fish.

6.4.2 Future HCT Extension to the South

The choice between SR 99 and I-5 for the preferred FWTE alignment could influence (and/or be influenced by) a potential future extension of the Link system further south to Tacoma. In order to not preclude either SR 99 or I-5 as a feasible alignment for the future extension south, the

guideway and station could be located between these two major roadways and oriented north-south so as not to require a large amount of turning, which reduces train speeds, in order to reach either corridor.

If the FWTE alignment terminates at a station platform within a short walk of the existing FWTC bus platform location, the alignment would be somewhat likely to include low-speed curves and/or represent a crossing from I-5 to SR 99 (or vice versa) in the vicinity of the FWTC.

The future connection of the FWTE farther south to Tacoma is the subject of the South Corridor Alternatives Planning Study, which is being conducted concurrently with this alternatives analysis effort. Its purpose is to inform Sound Transit's Long Range Plan regarding the needs and opportunities for high capacity transit in that area, and may or may not identify a preferred corridor in this area.

6.5 Summary of Conclusions

The Level 2 evaluation has provided substantial additional data on the five alternatives considered, including a range of strengths and weaknesses that inform comparisons both within and across the two corridors under consideration. Because these comparisons have not indicated clear decisions regarding either advancing or removing any of the Level 2 alternatives, Sound Transit has determined that all five will be carried forward into the environmental scoping process for consideration as potential alternatives to study in a Draft EIS.

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7.0 Station Evaluation

The Level 2 alignment alternatives were evaluated with three proposed station locations as defined by previous planning documents, which are the Kent/Des Moines, S. 272nd Street and Federal Way Transit Center (FWTC) stations. These three station locations are considered part of the baseline project definition and are referred to as “baseline” stations in this analysis. As part of the Level 2 Evaluation, a comprehensive look at potential additional station locations was undertaken.

The station evaluation began with identification of an initial list of potential station locations. The initial list was based on input received from the public during early scoping and agencies through agency coordination, and staff assessment of possible station locations. The initial list included 22 potential additional locations that were subjected to a pre-screening process. Additional locations that were in very close proximity to baseline stations were combined with these stations for purposes of this evaluation.

After the pre-screening a smaller list of 11 potential station locations remained, which were evaluated in Level 2. These included the 4 baseline stations (at Kent/Des Moines Road, two at S. 272nd Street, and one at the FWTC) and 7 potential additional station locations. Four of the additional potential station locations are associated with the SR 99 alternatives and three are associated with the I-5 alternatives.

Section 7.1 describes how the stations were identified and evaluated, Section 7.2 presents the data developed to evaluate the stations, Section 7.3 provides the findings by station location and Section 7.4 provides a summary of the evaluation results. Data is first presented for the stations defined as part of the baseline project, and is then followed by data for the potential additional stations.

7.1 Station Evaluation Methodology

7.1.1 Initial List of Potential Station Locations

In addition to the four baseline stations located generally at Kent/Des Moines, S. 272nd Street (two locations) and FWTC, 21 potential additional station locations were initially identified, for a total of 25 possible station locations. The list of possible station locations came from multiple sources, including ST2, the early scoping process, the PSRC “Growing Transit Communities” Existing Conditions report and staff assessment of potential station locations. The initial list of potential additional station locations is provided in **Table 7-1** below (from north to south in the study area) and the locations are shown on **Exhibit 7-1**.

Table 7-1
Initial List of Potential Additional Station Locations

Station Location	Corridor (SR 99, I-5 or other)	In Vicinity of Baseline Station?
S. 216th St	SR 99, I-5	No
Kent/Des Moines Park-and-Ride	I-5	No
Highline Community College (HCC) parking lot	SR 99	Yes, in vicinity of Kent/Des Moines Station
Lowes parking lot along SR 99 (near HCC)	SR 99	Yes, in vicinity of Kent/Des Moines Station
S. 252nd Street Near Fred Meyer	SR 99	No
S. 260th Street	SR 99, I-5	No
Woodmont Library	SR 99	Yes, in vicinity of S. 272 nd Station
LA Fitness parking lot (near Redondo Heights Park-and-Ride lot)	SR 99	Yes, in vicinity of S. 272 nd Station
S. 288th Street	SR 99, I-5, Military Road	No
S. Dash Point Road	SR 99	No
Easter Lake (approximately S. 312 th Street)	SR 99	No
S. 320th Street	SR 99	Yes, in vicinity of FWTC Station
The Commons at Federal Way	One location would connect to either SR 99 or I-5	Yes, in vicinity of FWTC Station
S. 320 th Park-and-Ride at I-5	I-5	Yes, in vicinity of FWTC Station
21 st Avenue S. near S. 336 th Street	Beyond limits of study area	No
S. 348 th Street Park-and-Ride	Beyond limits of study area	No
Kent Sounder Station	Beyond limits of study area	No

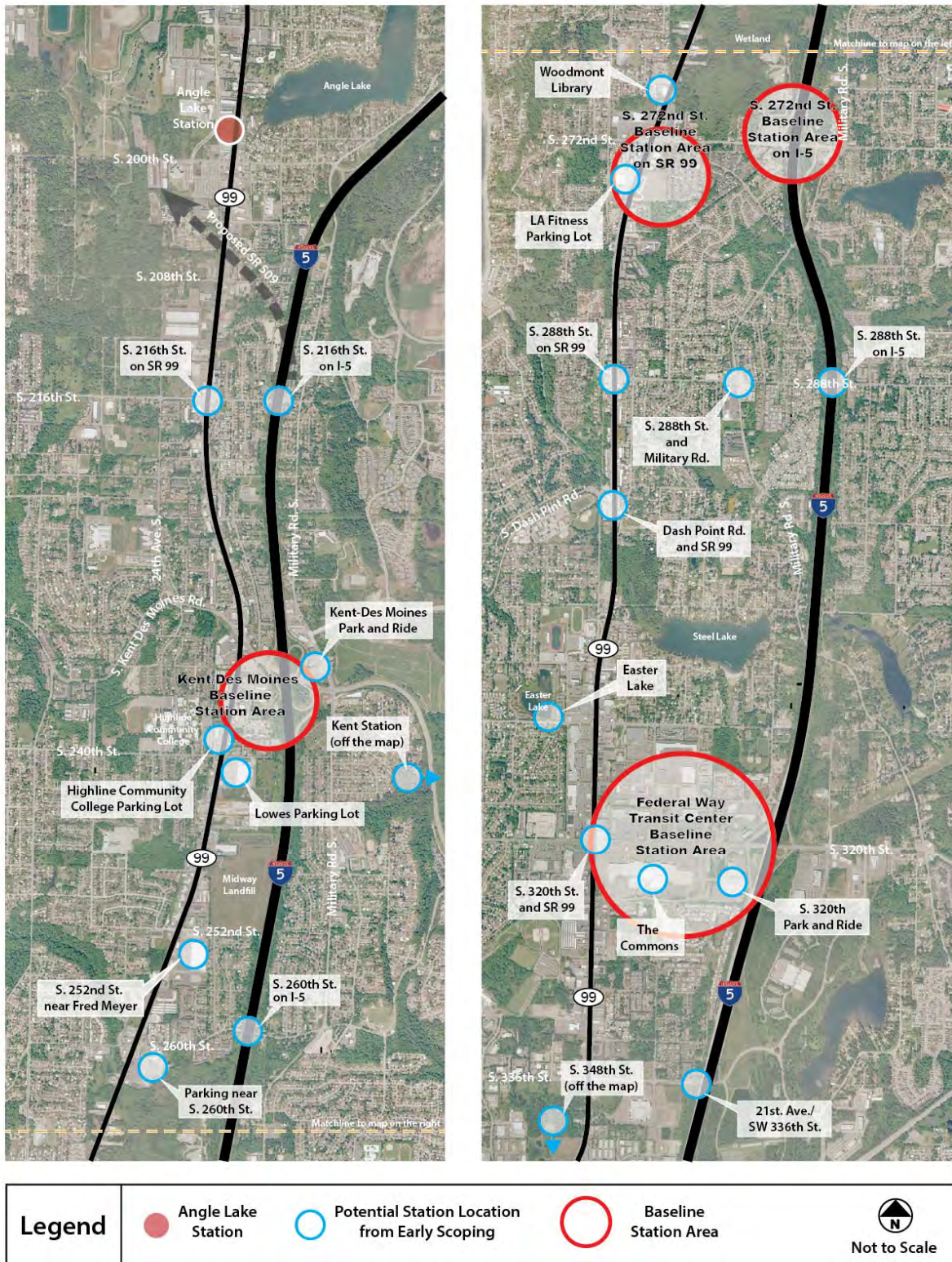


Exhibit 7-1
Initial List of Potential Station Locations

7.1.2 Pre-Screening of Initial Station Locations

Several of the initial station locations were pre-screened out prior to the more detailed Level 2 evaluation. The list of pre-screened locations and the reason for pre-screening them and excluding them from further analysis is summarized below in **Table 7-2**.

Table 7-2
Pre-Screening of Initial List of Potential Station Locations

Station Location	Pre-Screening Results
Kent/Des Moines Park-and-Ride (east side of I-5)	This station location would only work with an east of I-5 alignment. An east of I-5 alignment is not under consideration. Existing land uses and planned land uses would not be very supportive of a light rail station in this location.
S. 252 nd Street near Fred Meyer	This location is not well connected to cross streets that would provide good access to a station and additional transit transfer opportunities.
S. 288 th Street at Military Road	This location is approximately 0.5 miles east of the SR 99 alternatives and 0.4 miles west of the I-5 alternatives.
Easter Lake	This location is approximately 0.2 miles west of the SR 99 alternatives, is farther away from the FWTC, and in a predominantly single-family neighborhood.
21 st Ave/S. 336 th Street	There is no proposed light rail alignment in this area. This location is over 1 mile south of the southern terminus at the FWTC and outside the study area.
S. 348 th Park-and-Ride	There is no proposed light rail alignment in this area. This location is approximately 3 miles southwest of the southern terminus at the FWTC and outside the study area.
Kent Sounder Station	There is no proposed light rail alignment near the Sounder alignment through Kent. This location is approximately 3 miles east of I-5 in downtown Kent and is outside the FWTE study area.

7.1.3 Station Locations Evaluated in Level 2

Following the pre-screening of the initial list of potential station locations, some remaining locations that were in very close proximity to baseline stations were combined with these stations. These locations are noted in the third column on **Table 7-1** and include the Highline Community College and Lowe's parking lots, which are in the general vicinity of the Kent/Des Moines Station, the Woodmont Library and the LA Fitness parking lot, which are in the general vicinity of the S. 272nd Street Station, and S. 320th Street, The Commons at Federal Way, and the S. 320th Street Park-and-Ride at I-5, which are in the general vicinity of the FWTC Station.

Consolidating these stations resulted in seven potential additional station locations remaining for further and more detailed evaluation in Level 2. These remaining stations are listed in **Table 7-3** and shown in **Exhibit 7-2**.

Table 7-3
Level 2 Station Locations

Baseline Stations	Potential Additional Stations-SR 99	Potential Additional Stations-I-5
Kent/Des Moines	S. 216 th Street	S. 216 th Street
S. 272 nd Street (Redondo Heights Park-and-Ride)	S. 260 th Street	S. 260 th Street
S. 272 nd Street (Star Lake Park-and-Ride)	S. 288 th Street	S. 288 th Street
FWTC	S. Dash Point Road	

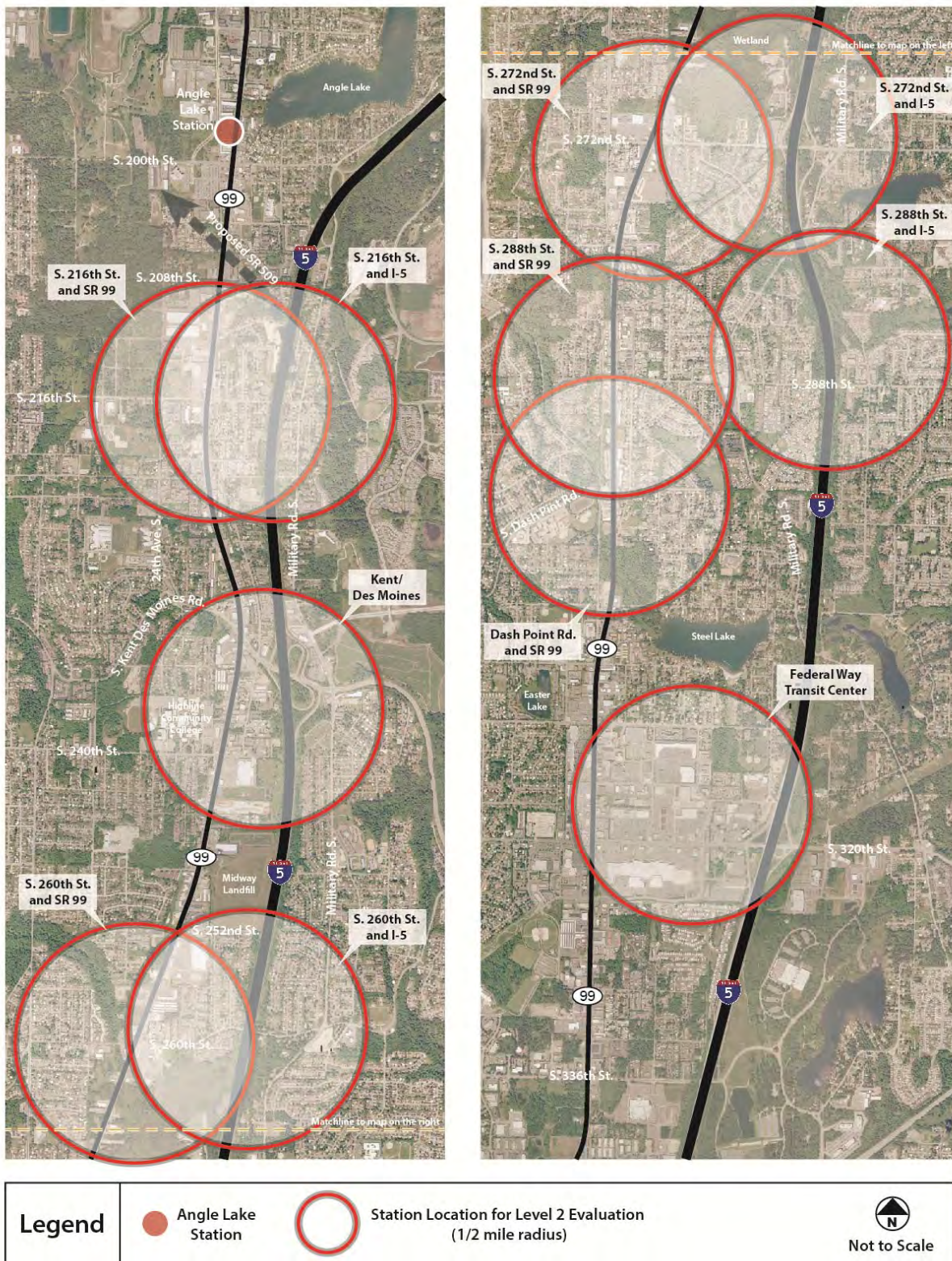


Exhibit 7-2
Level 2 Station Locations

7.1.4 Station Evaluation Criteria and Measures

Eleven station locations (4 baseline stations, 4 potential additional stations on SR 99, and 3 potential additional stations on I-5) were evaluated using primarily the same evaluation measures as described for evaluation of the Level 2 study alignment alternatives, *Objective 3: Serve Supportive Land Use Plans and Economic Development Objectives*. These measures were applied to a half mile radius around each potential station location in order to provide a more direct comparison between potential station locations. Additional measures for station boardings, access to activity centers and motorized access were also included. **Table 7-4** lists these measures and a brief statement explaining the methodology used.

7.2 Station Evaluation – Data Results

The following sections present the data that was compiled for each evaluation measure for each of the potential additional station locations.

7.2.1 Daily Project Ridership and Station Boardings

As presented in Chapter 5, the year 2035 project-wide ridership for all alignment alternatives is forecasted to be approximately 23,500 riders per day. The similarity in the ridership forecasts between the alternatives is due in part to two of the three stations (Kent/Des Moines and FWTC) associated with all the alternatives being in similar locations and therefore serving similar transit markets.

Table 7-5 shows the projected LRT ridership in the study area for all alternatives in the SR 99 and I-5 corridors for the three baseline stations as well as with three potential additional stations. The ridership estimate for the six station options would result in about 1,000 additional riders over the entire project length, for a total project-wide ridership of 24,500 riders per day. This slight ridership difference suggests that the ridership potential difference between three and six stations along SR 99 or I-5 is relatively small.

Table 7-6 presents projected station boardings for individual stations if additional stations were to be added to SR 99 and I-5 alternatives, and compares these with boardings for the three baseline station locations. The station area boardings at the potential additional stations at S. 216th Street, S. 260th Street, S. 288th Street and S. Dash Point Road would average between 500 and 1,000 boardings per day. In most cases, the majority of the boardings at these additional stations would result from shifting boardings from adjacent stations. These boardings would likely be from non-motorized and bus access as these additional stations were not assumed to have additional parking provided at the stations.

TABLE 7-4
Evaluation Measures Used for Station Evaluation

Measure	Methodology
Daily project ridership and station boardings	Using the ST forecasting model and general station area assumptions, produced 2035 estimated daily and annual ridership. Using the Sound Transit forecasting model and general station area assumptions, 2035 estimated station boardings were calculated. <u>Unit of measure:</u> 2035 Daily station boardings.
Travel time	Travel times were developed for new alternatives using a simple distance/speed estimate with time added for each station. <u>Unit of measure:</u> One way travel time between S. 200 th Street and S. 320 th Street.
Existing land use	Determined percentage of single family residential, multi-family residential, commercial, industrial, institutional, public and vacant land uses within ½ mile of each station using King County Assessor data. Land uses were generalized between jurisdictions as necessary. <u>Unit of measure:</u> Percent of each existing land use.
Planned land use	Determined percentage of planned land uses based on local comprehensive plans within ½ mile of each station. Land uses were generalized between jurisdictions as necessary. <u>Unit of measure:</u> Percent of each comprehensive land use.
High Density/TOD Zoning	Determined acres and percentage of existing zoning that is either high-density residential, transit oriented development (TOD), or allows mixed use within a 1/2 mile of each station. Zoning data was obtained from the cities of SeaTac, Des Moines, Kent and Federal Way. <u>Unit of measure:</u> Acres and percent of high density/TOD zoning.
Underutilized parcels	Determined number of parcels considered underutilized based on ratio of building to land value within ½ mile of each station. Underutilized parcels are those with a ratio of improvement value to land value of 1:1 or less, based on King County Assessor data. <u>Unit of measure:</u> Acres of underutilized land.
Population	Determined total population within ½ mile of each station based on U.S. Census data. Population was estimated based on percentage of each census blocks within study area. <u>Unit of measure:</u> Total existing population within ½ mile (rounded to nearest 1,000).
Employment	Determined total employment within ½ mile of each station based on data supplied by the Employment Securities Department (ESD) through PSRC. Employment data exists as points that were aggregated for a ½ mile buffer around each station. <u>Unit of measure:</u> Total employment (rounded to the nearest 1,000).
Households	Determined total number of households within ½ mile of each station based on U.S. Census data. Households were estimated based on percentage of each census blocks within study area. <u>Unit of measure:</u> Total households (rounded to the nearest 1,000).
Access to Regional Activity Centers	Determined if station provides access to regional level activity centers, defined as Highline Community College and Federal Way Transit Center. <u>Unit of measure:</u> Qualitative discussion.
Parking opportunities	This measure included the current number of park & ride parking spaces (publicly owned or leased facilities) and the number of potential park & ride facilities (such as church parking lots) within a ½ mile of each station. Utilization of existing parking lots was reported. The measure also qualitatively discussed areas where overflow parking from park & rides could be a problem. <u>Unit of measure:</u> Number and utilization of existing park-and-ride spaces, number of potential park and ride locations, and qualitative discussion.
Motorized Access	Determined the degree of access to a station from north, south, east and west, and determined the number of bus routes that provide direct access to the site. <u>Unit of measure:</u> Qualitative discussion of roadway access and quantitative evaluation of bus routes.
Non – motorized access	This measure qualitatively discusses existing and planned bike and pedestrian facilities and options for each station. Density of roadways that are arterials or smaller were calculated within a ½ mile of each station. The presence of bike lanes and sidewalks is also discussed. <u>Unit of measure:</u> Linear feet of roadway within ½ mile of each potential station location. Qualitative discussion of existing and planned bike lanes and sidewalks.
Estimated cost	Using Sound Transit's database of recent capital costs, a range of capital cost estimates was determined for alternatives in current year dollars. Annual operations and maintenance (O&M) costs were modeled using the Sound Transit O&M model. <u>Unit of measure:</u> Range of capital costs for alternatives (\$2013); Annual O&M cost (\$2013) provided by Sound Transit.

Table 7-5
2035 Alignment Ridership Potential

Corridor	2035 Daily Riders	2035 Annual Riders
Baseline Stations		
SR 99 or I-5 with 3 Stations ending at FWTC	23,500	7.4 million
Potential Additional Stations		
SR 99 or I-5 with 6 Stations ending at FWTC	24,500	7.6 million
<i>Note: 2035 Daily riders are rounded to the nearest 500. 2035 Annual riders are rounded to the nearest 0.1 million.</i>		

Table 7-6
Year 2035 Daily Station Boardings

Station Location	SR 99		I-5	
	3 Stations ending at FWTC	6 Stations ending at FWTC	3 Stations ending at FWTC	6 Stations ending at FWTC
S. 216th Street	n/a	1,000	n/a	1,000
Kent/Des Moines	3,000	2,000	2,500	1,500
S. 260th Street	n/a	1,000	n/a	500
S. 272nd Street	2,000	1,000	2,000	1,500
S. 288th Street	n/a	500 ^a	n/a	500 ^a
Dash Point Rd. S.	n/a	500 ^a	n/a	n/a
FWTC	8,000	8,000	8,500	8,000
Total Boardings	13,000	13,500	13,000	13,000
<i>Notes: 2035 Daily boardings are rounded to the nearest 500. For the 272nd Street corridor, the SR 99 alternatives include a station near the Redondo Heights Park-and-Ride, while the I-5 alternatives include a station near the Star Lake Park-and-Ride.</i>				
^a It is assumed that the S. 288th Street and Dash Point Road S. stations would serve similar travel markets and that both would not be constructed since they are approximately 0.5 mile apart.				

7.2.2 Travel Times

The projected travel time for the SR 99 and I-5 alternatives, each with three stations, is about 14 minutes. They would have generally similar travel times because they have similar lengths and all the alternatives are either elevated or grade-separated. The minor differences in alignment lengths and curvatures would result in slight travel time differences of one minute or less.

Table 7-7
Travel Times for Alignments with Station Options

Light Rail Alternative	Travel Time (minutes)
Baseline Stations	
SR 99 with 3 Stations ending at FWTC	14.5
I-5 with 3 Stations ending at FWTC	14.0
Potential Additional Stations	
SR 99 with 6 Stations ending at FWTC	16.5
I-5 with 6 Stations ending at FWTC	16.0
<i>Note: Travel Times are rounded to the nearest half minute.</i>	

Adding up to three additional stations (at S. 216th Street, S. 260th Street, and S. 288th or S. Dash Point Road) would add about two minutes of travel time to the SR 99 or I-5 alternatives, as shown in **Table 7-7**. The added travel time is due to a dwell time at the stations, and acceleration and deceleration of the trains at these stations. Each potential additional station would add approximately 40 seconds.

7.2.3 Land Use

This section discusses how well existing land uses would support a station location, and the potential for future development at station locations based on planned land use, zoning and underutilized parcels. Areas that are currently or proposed to be densely developed with commercial, mixed use or multi-family land uses are considered to be more supportive of a station than lower density land uses such as single-family residential or industrial. In addition, parcels that are currently vacant or considered underutilized area more likely to be redeveloped with land uses that may support a station, depending on zoning. Areas zoned for TOD or high-density zoning are also more likely to be redeveloped in a way that is supportive of a station. Existing land uses within a ½ mile of station locations are presented in **Table 7-8** and **Exhibit 7-3**.

Table 7-8
Existing Land Use by Station Area by Acres and (Percent of Total)

Station Location	Single Family	Multi-family	Commercial	Industrial	Institutional	Parks/ Open Space	Vacant
Baseline Stations							
Kent/Des Moines	102 (21%)	37 (7%)	101 (10%)	<1 (<1%)	41 (9%)	1 (<1%)	82 (17%)
S. 272nd Street (Redondo Heights Park-and-Ride)	183 (36%)	99 (20%)	46 (9%)	0	17 (3%)	5 (1%)	81 (16%)
S. 272nd Street (Star Lake Park-and-Ride)	122 (24%)	69 (14%)	30 (6%)	0	31 (6%)	29 (6%)	108 (21%)
FWTC	27 (5%)	53 (10%)	219 (44%)	0	16 (3%)	45 (9%)	36 (7%)
Potential Additional Stations							
SR 99							
S. 216th Street	136 (27%)	60 (12%)	57 (11%)	2 (<1%)	27 (5%)	7 (1%)	105 (21%)
S. 260th Street	158 (31%)	72 (14%)	64 (13%)	3 (1%)	8 (2%)	19 (4%)	92 (18%)
S. 288th Street	221 (44%)	78 (16%)	17 (3%)	0	10 (2%)	0	75 (15%)
S. Dash Point Road	223 (44%)	32 (6%)	18 (4%)	0	25 (5%)	18 (4%)	93 (19%)
I-5							
S. 216th Street	146 (29%)	92 (18%)	46 (9%)	0	23 (4%)	2 (0%)	78 (15%)
S. 260th Street	163 (32%)	47 (9%)	48 (10%)	3 (1%)	25 (5%)	6 (1%)	79 (16%)
S. 288th Street	194 (39%)	111 (22%)	12 (2%)	0	3 (1%)	1 (0%)	54 (11%)
<i>Note: Presented land use data excludes public and private rights-of-way and therefore percentages do not total 100.</i>							

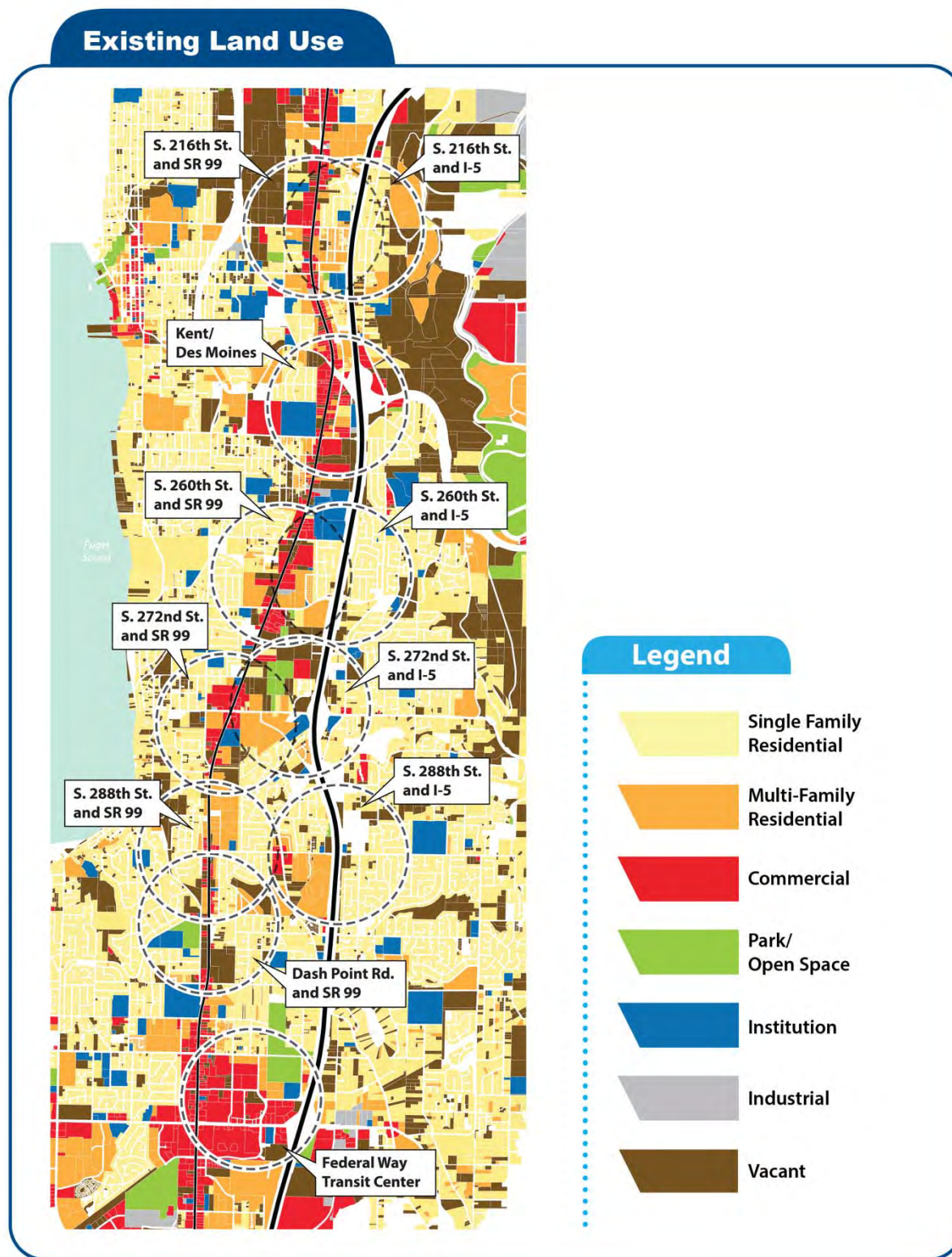


Exhibit 7-3
Existing Land Use by Station Area

The amount of the various existing land uses varies substantially between stations. The primary land uses within ½ mile of all station locations include:

- Commercial (ranging from 2-44% of the land in the station area)
- Single Family residential (ranging from 5-44% of the land in the station area)
- Vacant (ranging from 7-21% of the land in the station area)
- Multi-family residential (ranging from 6-22% of the land in the station area)
- All other uses account for 10% or less of the existing land use in the station areas.

Existing land uses at the baseline stations is generally diverse, with a mixture of single family and multi-family residential, commercial, institutional and park/open space land uses. Of the potential additional station locations, the one at SR 99 and S. 260th Street has the greatest amount of commercial land, while the potential stations at SR 99 and S. 288th and Dash Point Road have the greatest amount of single family residential land. The location at I-5 and S. 288th Street has the most multi-family residential land. The potential station location at SR 99 and S. 216th Street has the most vacant land within the half mile radius.

Existing land uses within a ½ mile of station locations are presented in **Table 7-9** and **Exhibit 7-4**. Planned land uses for the land within the study station areas are pretty similar to the existing land use for commercial, single and multi-family residential land uses; however with the planned land use, there is an increase in single family residential for all of the potential additional stations, with the exception of the location at S. 216th Street and SR 99, where there is an increase in multi-family and mixed use planned. The primary planned land uses include:

- Single Family residential (ranging from 6-64% of the land in the station area)
- Multi-family residential (ranging from 5-26% of the land in the station area)
- Commercial (ranging from 6-32% of the land in the station area)
- Mixed Use (0-57% of the land in the station area)
- All other uses account for less than 15% of the planned land use.

Both the Kent/Des Moines and FWTC stations have over 30 percent of land designated for mixed use, and have the most diverse planned land uses. Only the potential station locations at S. 216th Street (both SR 99 and I-5) and S. 260th and SR 99 have planned mixed use within a half mile. The S. 216th Street locations also have the largest planned commercial areas.

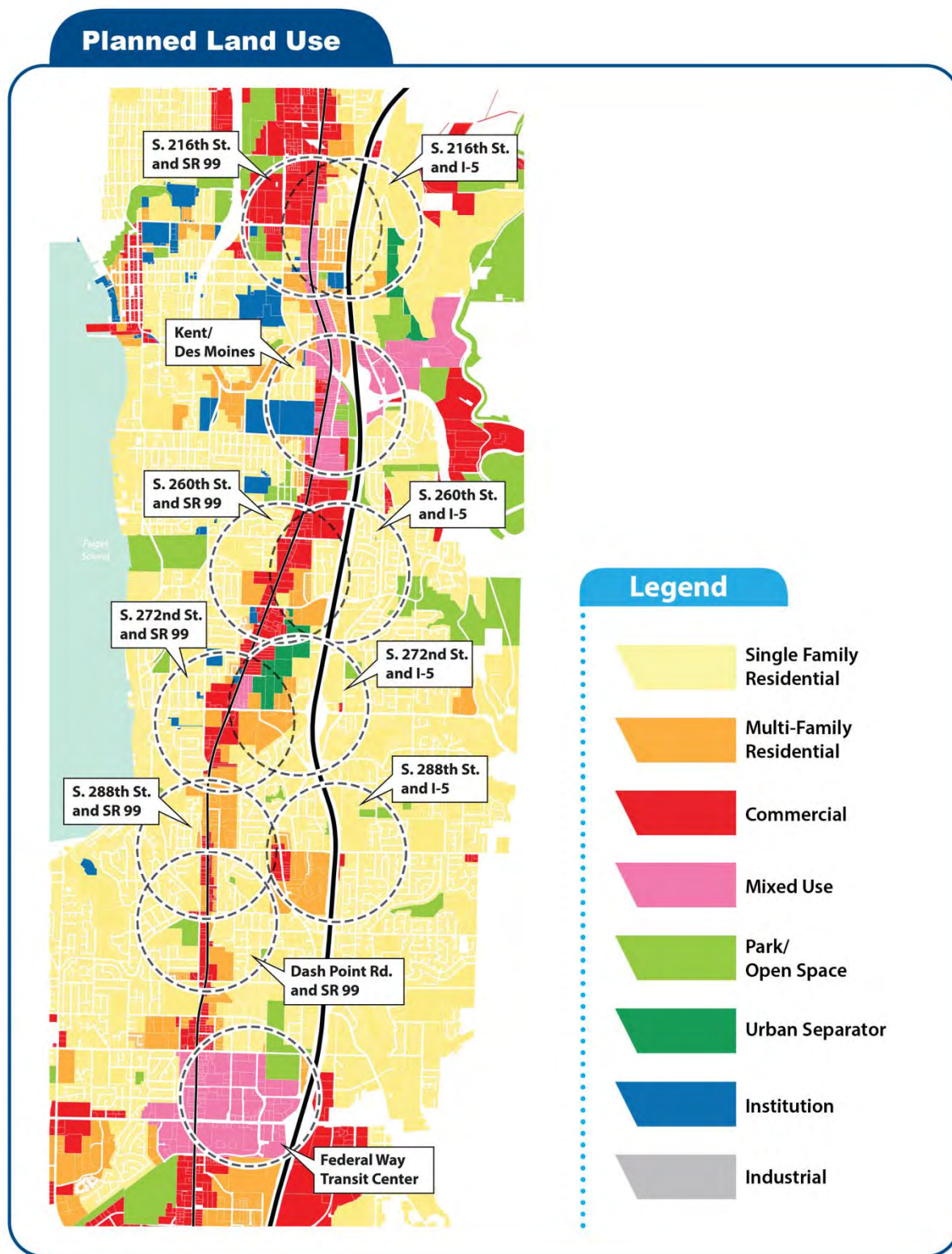


Exhibit 7-4
Planned Land Use by Station Area

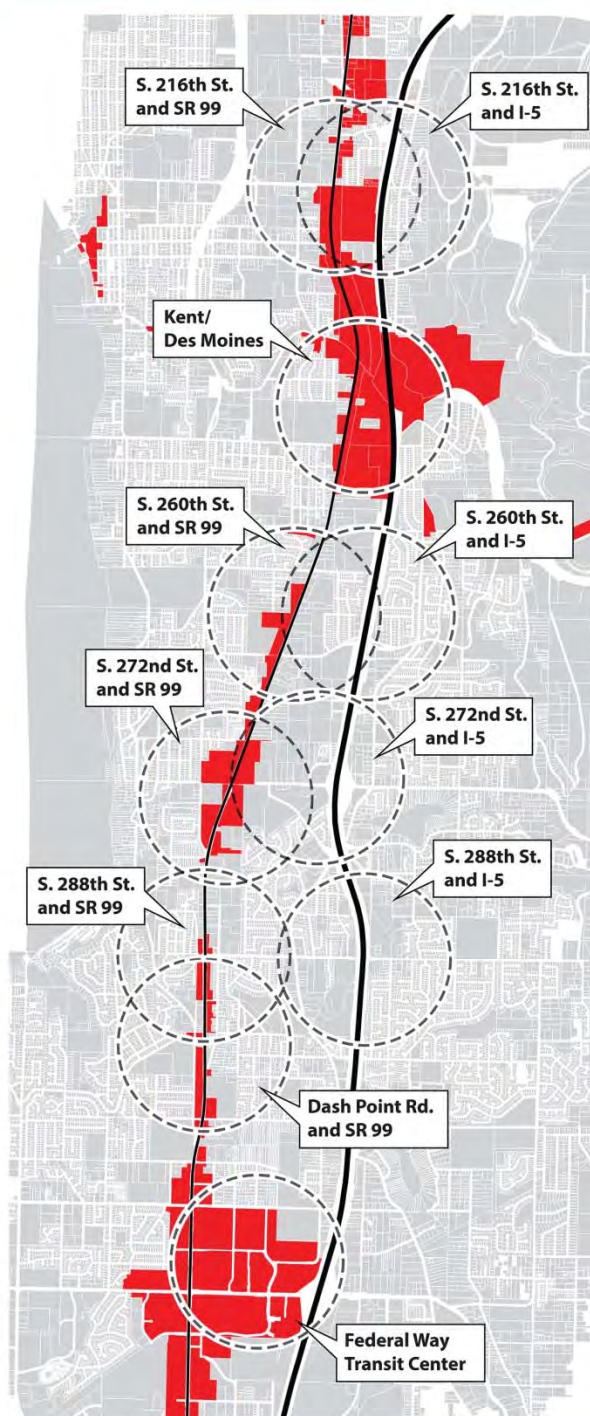
Table 7-9
Planned Land Use by Station Area by Acres and (Percent of Total)

Station Location	Single Family	Multi-Family	Commercial	Industrial	Institution	Mixed Use	Parks/Open Space	Urban Separator
Baseline Stations								
Kent/Des Moines	138 (27%)	25 (5%)	76 (15%)	3 (<1%)	51 (11%)	178 (35%)	27 (5%)	0
S. 272nd Street and SR 99 (Redondo Heights Park-and-Ride)	242 (48%)	129 (26%)	61 (12%)	0	7 (1%)	19 (4%)	0	16 (3%)
S. 272nd Street and I-5 (Star Lake Park-and-Ride)	240 (48%)	79 (16%)	29 (6%)	0	2 (<1%)	19 (4%)	9 (2%)	67 (13%)
FWTC	29 (6%)	26 (5%)	12 (2%)	0	0	287 (57%)	44 (9%)	0
Potential Additional Stations								
SR 99								
S. 216th Street	114 (23%)	81 (16%)	159 (32%)	0	17 (3%)	43 (8%)	23 (5%)	0
S. 260th Street	229 (46%)	81 (16%)	128 (25%)	0	7 (1%)	<1 (<1%)	0	51 (10%)
S. 288th Street	296 (59%)	89 (18%)	28 (6%)	0	0	0	0	0
S. Dash Point Road	232 (64%)	28 (5%)	40 (8%)	0	0	0	21 (4%)	0
I-5								
S. 216th Street	201 (40%)	77 (15%)	63 (13%)	0	11 (2%)	40 (8%)	7 (1%)	20 (4%)
S. 260th Street	316 (63%)	52 (10%)	86 (17%)	0	0	0	14 (3%)	29 (6%)
S. 288th Street	260 (52%)	91 (18%)	22 (4%)	0	0	0	9 (2%)	0
<i>Note: Most Comprehensive Plan land use data excludes public and private rights-of-way and therefore percentages do not total 100.</i>								

Table 7-10 and **Exhibit 7-5** present the area with a ½ mile that is zoned for TOD or high-density land uses, such as mixed use or high-density multi-family residential. Of the baseline stations, both the Kent/Des Moines and FWTC stations have over 50 percent of land within a ½ mile zoned for TOD or high-density land uses, while the stations at S. 272nd Street have between 5 percent (Star Lake Park-and-Ride) and 16 percent (Redondo Heights Park-and-Ride). Of the potential additional stations, the stations at S. 216th Street and SR 99 or I-5 both have 21 percent of this area zoned for TOD or high-density land uses, while the rest of the potential stations have less than 10 percent zoned in this way.

As shown in **Table 7-11**, the amount of underutilized land is similar for most of the station areas, all ranging between 22-40%. At the baseline stations, the Kent/Des Moines and FWTC had the least amount of underutilized land with a half mile, with 26 and 23 percent, respectively. The stations at S. 272nd Street had between 30 percent (Star Lake Park-and-Ride) and 37 percent (Redondo Heights Park-and-Ride). Of the potential additional stations, the locations at S. 260th Street and SR 99 and I-5 have the greatest amount of underutilized land, with approximately 40 percent. Underutilized land within the station areas is shown in **Exhibit 7-6**.

TOD/High Density Zoning



Legend

 High Density Zoning

Exhibit 7-5
TOD/High-Density Zoning by Station Area

Table 7-10
TOD/High Density Zoning by Station Area by Acres and (Percent of Total)

Station	Acres	% of Total Land Use
Baseline Stations		
Kent/Des Moines	255	51%
S. 272 nd Street (Redondo Heights Park-and-Ride)	81	16%
S. 272 nd Street (Star Lake Park-and-Ride)	27	5%
FWTC	292	58%
Potential Additional Stations		
SR 99		
S. 216 th Street	108	21%
S. 260 th Street	36	7%
S. 288 th Street	20	4%
S. Dash Point Road	37	7%
I-5		
S. 216 th Street	104	21%
S. 260 th Street	16	3%
S. 288 th Street	0	0%

Table 7-11
Underutilized Parcels by Station Area by Acres and (Percent of Total)

Station	Acres	% of Total Land Use
Baseline Stations		
Kent/Des Moines	128	26%
S. 272 nd Street (Redondo Heights Park-and-Ride)	188	37%
S. 272 nd Street (Star Lake Park-and-Ride)	151	30%
FWTC	114	23%
Potential Additional Stations		
SR 99		
S. 216 th Street	161	32%
S. 260 th Street	200	40%
S. 288 th Street	109	22%
S. Dash Point Road	113	23%
I-5		
S. 216 th Street	165	33%
S. 260 th Street	194	39%
S. 288 th Street	120	24%

Vacant and Underutilized Parcels

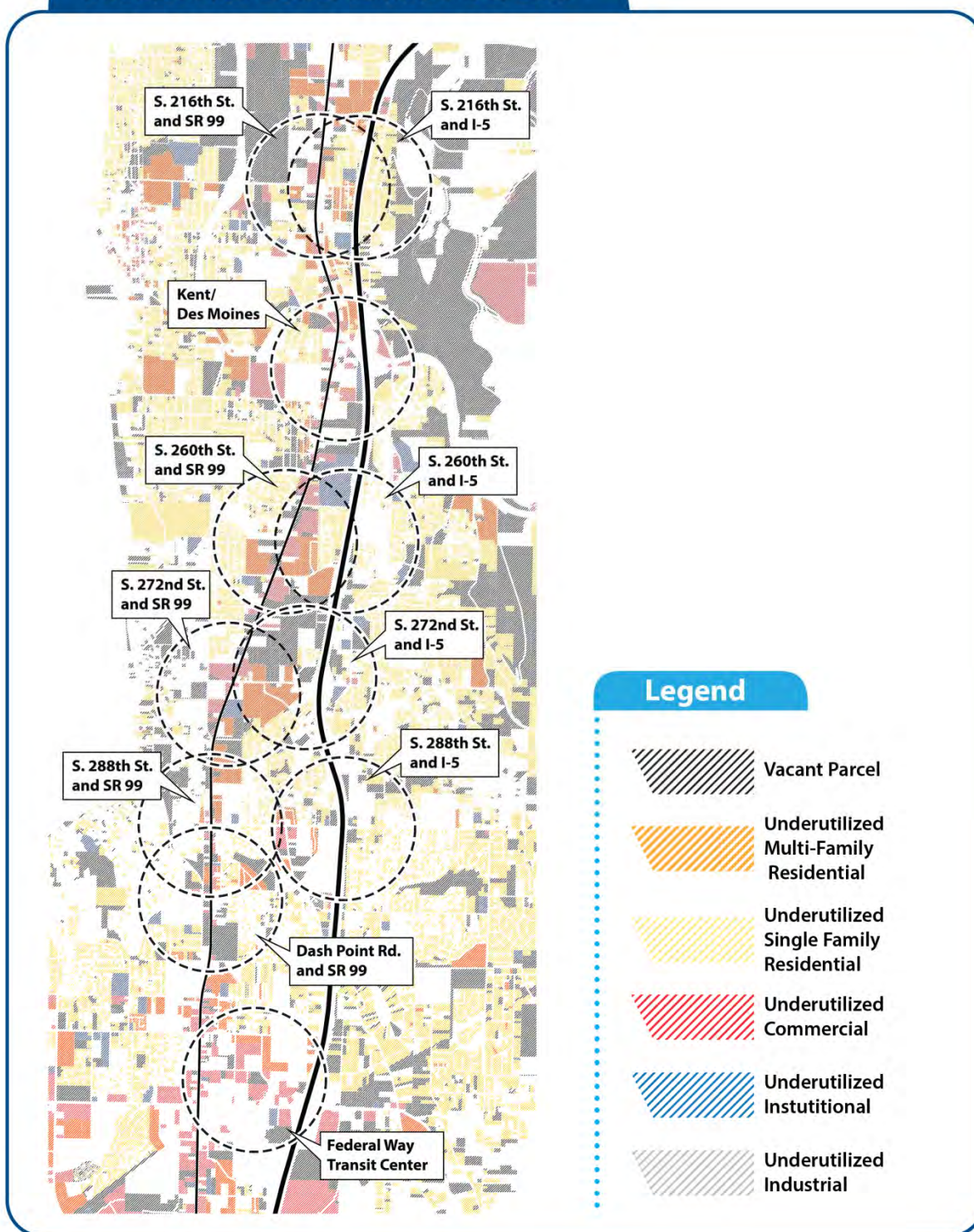


Exhibit 7-6
Vacant and Underutilized Parcels by Station Area

7.2.4 Population, Employment, and Households

Table 7-12 summarizes the current population, employment and households within a half mile of each station. The existing population and number of households do not differ substantially between the potential station areas, with the maximum variance between stations being 400 people and 500 households.

Employment at the baseline stations is highest at the FWTC station, with over 4,600 jobs, followed by the Kent/Des Moines station, with over 1,800 jobs. The stations at S. 272nd Street have smaller employment bases, with between 274 jobs (at I-5) and 580 jobs (at SR 99). Existing employment around the potential additional stations is highest at SR 99 and S. 216th Street, which is the only location with over 1,000 existing jobs. The station on I-5 at S. 288th Street has the lowest employment, likely because much of the area within a ½ mile is composed of I-5 and has no major commercial areas nearby.

Table 7-12

Current Population, Employment, and Households within Each 1/2-Mile Station Area

Station	Population	Households	Employment
Baseline Stations			
Kent/Des Moines	4,300	1,400	1,866
S. 272 nd Street (Redondo Heights Park-and-Ride)	3,000	1,700	580
S. 272 nd Street (Star Lake Park-and-Ride)	2,400	1,400	274
FWTC	3,900	1,200	4,670
Potential Additional Stations			
SR 99			
S. 216 th Street	3,300	1,300	1,052
S. 260 th Street	3,000	1,200	587
S. 288 th Street	3,200	1,600	568
S. Dash Point Road	3,400	1,400	410
I-5			
S. 216 th Street	3,100	1,200	856
S. 260 th Street	3,200	1,100	599
S. 288 th Street	3,100	1,600	249

7.2.5 Activity Centers

Major activity centers in the study area include HCC and the Federal Way City Center. The Kent/Des Moines Station would provide service to HCC, which is located west of SR 99, and the FWTC Station would provide service to the Federal Way City Center, which is located between SR 99 and I-5.

7.2.6 Parking Opportunities

There are existing Park-and-Ride lots within ½ mile of the baseline stations along SR 99 and I-5 but there are currently no Park-and-Ride facilities within a ½ mile of the potential additional stations at S. 216th Street, S. 260th Street, S. 288th Street or S. Dash Point Road. Below is a discussion of parking opportunities and potential for overflow parking issues at each station.

Baseline Stations

Kent/Des Moines at SR 99 or I-5

The Kent/Des Moines Park-and-Ride east of I-5 has 370 parking spaces and is currently 100% utilized. The neighborhoods surrounding this station area have a high degree of restricted parking with over 70 percent of the on-street parking restricted for residential use only. This park-and-ride is located on the east side of I-5, however, requiring users to cross under I-5 on Kent-Des Moines Road, a distance of approximately a 1/2 mile.

S. 272nd Street: Redondo Heights Park-and-Ride (SR 99) and Star Lake Park-and-Ride (I-5)

The Redondo Heights Park-and-Ride on SR 99 has 697 parking spaces and is currently 8% utilized. The Star Lake Park-and-Ride next to I-5 has 630 parking spaces and is currently 59% utilized. The majority of residential development south of the Star Lake Park-and-Ride and east of the Redondo Heights Park-and-Ride primarily is multi-family with private resident-only parking. The residential neighborhood north of the Star Lake Park-and-Ride lot off of 28th Avenue S. is relatively small with unrestricted on-street parking that is less than 10% utilized. The single-family neighborhood south of S. 272nd Street and west of Star Lake Road has on-street parking that is about 10% utilized during the day. The distance from this neighborhood is less than ½ mile from both the Star Lake and Redondo Heights Park-and-Ride lots; however due to a combination of vegetative barriers and street connectivity, access to either the Star Lake or Redondo station areas would require walking along S. 272nd Street, a 15- to 20-minute walk to either station location.

FWTC (SR 99 and I-5)

The FWTC has 1,190 parking spaces, which are currently 99% utilized. The Federal Way Park-and-Ride would be within a ½ mile of the FWTC station, and has 877 parking spaces, which are currently 45% utilized. Together, parking utilization in this area is approximately 76%. The nearest neighborhood to the FWTC area with on-street parking is located north of S. 312th Street. Access to a station at FWTC would require walking along 23rd Avenue S. or along 28th Avenue S and S. 317th Street. This is approximately a ½ mile walk that would take about 10

minutes. Therefore there is a low potential for riders parking in the neighborhood and walking to the transit center station.

Potential Additional Stations

S. 216th Street (SR 99 and I-5)

There are no existing Park-and-Ride lots within a ½ mile of these station locations. Immediately adjacent to SR 99 is mainly commercial or vacant property. To the east of SR 99, there are residential neighborhoods both north and south of S. 216th Street that are between a ¼ and ½ of a mile from SR 99. These neighborhoods have mostly unrestricted on-street parking that is 35 to 40 percent utilized during the day. These neighborhoods would be within a 10 - 15 minute walk of the potential stations at SR 99 and S. 216th Street. East of I-5 are smaller single family neighborhoods with some unrestricted on-street parking. These neighborhoods would be within a 15-minute walk of a potential station area at S. 216th Street and I-5 but would require walking across the S. 216th Street bridge crossing of I-5 which has narrow sidewalks in each direction.

S. 260th Street (SR 99 and I-5)

There are no existing Park-and-Ride lots within a ½ mile of these station locations. To the west between 20th Avenue S. and SR 99, the current land uses are a combination of multifamily housing and non-residential land uses with private parking. West of 20th Avenue S., there are single family residential neighborhoods with on-street parking that is underutilized during the day. East of SR 99, the area between I-5 and SR 99 is single family and multi-family neighborhoods. These neighborhoods would all be within a 15-minute walk of a potential station area at S. 260th Street and SR 99 or I-5. East of I-5 and north of S. 259th Pl./S. 260th Street are single family neighborhoods with unrestricted on-street parking. These neighborhoods would be within a 15-minute walk of a potential station area at S. 260th Street and I-5. The area south of S. 259th Pl./S. 260th Street is primarily undeveloped open space with a few large acre private residents that have no on-street parking.

S. 288th Street (SR 99 and I-5)

There are no existing Park-and-Ride lots within a ½ mile of either of these station locations. The neighborhoods west of the SR 99 station area are separated from SR 99 by a combination of green belt and non-residential land uses and would require walking along 16th Avenue S. to or from the north of S. 288th Street to access the station area. The land uses one block east of SR 99 to Military Road S. are generally single family residential in nature and have unrestricted on-street parking. Military Road S. is approximately ½ mile east of SR 99.

The development to the west of the I-5 station location and south of S. 288th Street is a combination of single and multi-family residents along with a large neighborhood of manufactured homes with limited on-street parking. The neighborhoods north of S. 288th Street are generally single-family residential with cul-de-sacs off of 30th Avenue with on-street parking space that is lightly utilized during the day. The distance from the neighborhoods north and south of S. 288th Street is about ½ mile from the I-5 and S. 288th Street station.

S. 288th Street crosses under I-5 and has narrow sidewalks on each side of the roadway. The residential development to the east of the I-5 station location and north of S. 288th Street is comprised mainly of a large multi-family complex with private resident only parking. Development south of S. 288th Street and east of I-5 is single family in nature with on-street parking that is underutilized during the day. These neighborhoods would be within a 15-minute walk of the potential station area at S. 288th Street and I-5.

S. Dash Point Road (SR 99)

There are no existing Park-and-Rides within a ½ mile of this station. The land uses directly adjacent to the possible Dash Point Road S. station location are Sacajawea Park and Middle School, multi-family residential and commercial. The neighborhoods west of the station area are separated from SR 99 by a combination of green belt and non-residential land uses and would require walking north or south along either 16th Avenue S. or Redondo Way to S. Dash Point Road. The land uses one block east of SR 99 are generally single family residential in nature and have on-street parking that is unrestricted and fairly underutilized during the day.

Table 7-13 summarizes the parking opportunities for each station area.

Table 7-13
Existing Park-and-Ride Spaces and Utilization within Station Areas

Station	Park-and-Ride Access (Number of Stalls / Percent Utilization)
Baseline Stations	
Kent/Des Moines	370 / 100%
S. 272 nd Street (Redondo Heights)	697 / 8%
S. 272 nd Street (Star Lake)	630 / 59%
FWTC	2,067 / 76%
Potential Additional Stations	
S. 216 th Street (SR 99 or I-5)	None
S. 260 th Street (SR 99 or I-5)	None
S. 288 th Street (SR 99 or I-5)	None
S. Dash Point Road (SR 99)	None

7.2.7 Motorized Access

The ability to access station locations via personal vehicles or transit was evaluated by looking at the number of cardinal directions that a station could be accessed from, based on the existing road network, and the number of bus routes that would directly serve the station location. **Table 7-14** summarizes existing vehicle and transit access to these station locations.

The baseline stations would have access from all four directions (north, south, east and west), as do stations along SR 99 at S. 216th and S. 260th Streets. Stations along SR 99 at S. 288th Street and S. Dash Point Road would have north and south access on SR 99, but limited to no access to the west and the east, respectively. Stations along I-5 and S. 216th Street, S. 260th Street and S. 288th Street would have east and west access, but would lack north and south access from I-5. The nearest north-south roadways to these stations are either SR 99 or Military Road S.

Table 7-14
Existing Road and Transit Access

Station Location	Road Access	Bus Routes	Route Frequency
Baseline Stations			
Kent/Des Moines	All 4 directions	RapidRide A Line KCM 166	10 minutes peak hours, 15 minutes off-peak hours 30 minutes all day
S. 272 nd Street (SR 99)	All 4 directions	RapidRide A Line	10 minutes peak hours, 15 minutes off-peak hours
S. 272 nd Street (I-5)	All 4 directions	KCM 152, 190, 192, 193, 197 Sound Transit 574	10- 30 minutes during peak hours 30 minutes all day
FWTC	All 4 directions	KCM RapidRide A Line, 177,178,179, 193,197 Sound Transit 574, 577and 578 Pierce Transit 402, 500, 501	15-30 minutes peak hours 10-15 minutes peak hours, 30 -40 minutes off peak hours 60 minutes all day
Potential Additional Stations			
SR 99			
S. 216 th Street	All 4 directions	RapidRide A Line	10 minutes peak hours, 15 minutes off-peak hours
S. 260 th Street	All 4 directions	RapidRide A Line	10 minutes peak hours, 15 minutes off-peak hours
S. 288 th Street	North, South and East only	RapidRide A Line	10 minutes peak hours, 15 minutes off-peak hours
S. Dash Point Road	North, South and West only	RapidRide A Line	10 minutes peak hours, 15 minutes off-peak hours
I-5			
S. 216 th Street	East and West only	None	Not applicable
S. 260 th Street	East and West only	None	Not applicable
S. 288 th Street	East and West only	KCM 183	30 minutes pm peak, 60 minutes off peak to 7 pm

Transit access was evaluated based on existing transit routes. All routes along SR 99 would have transit access from the King County Metro (KCM) RapidRide A Line, and the station at Kent/Des Moines would also have access from KCM Route 166, which travels east-west on Kent-Des Moines Road and S. 240th Street between Kent and Des Moines, and also provides access to/from Burien to the north. Along the I-5 corridor, the S. 272nd Station at the Star Lake Park-and-Ride serves multiple local and regional routes, as does the FWTC. The S. 216th Street and S. 260th Street station locations along I-5 would have no direct transit access, while the station at

S. 288th Street and I-5 would have access from one route, KCM 183, which provides service between Federal Way and Kent.

7.2.8 Non-Motorized Access

Potential for non-motorized access (walking and bicycling) to station locations was measured by the density of local streets within ½ mile of each station, which could be used by pedestrians and bicyclists to access the stations. Known plans for improvements in these areas by local jurisdictions were also evaluated to determine if sidewalks or bike lanes are likely to be added to areas that currently lack them.

Baseline Stations

Pedestrian and bicycle access for station areas associated with the I-5 alternatives would be limited at Kent-Des Moines Road and the S. 272nd Street interchange areas. Access to the stations from the east side of I-5 would require crossing under the freeway and involves some change in elevation that could be a challenge for some non-motorized users. These interchange areas are both shown as priority pedestrian and bicycle areas in the City of Kent's Non-Motorized Plan, but currently lack bicycle facilities, and sidewalks around the interchanges are sporadic. The combination of high volume and congestion at the intersections at Kent-Des Moines Road and S. 272nd Street interchanges combined with minimal existing bicycle and pedestrian facilities would limit bike and pedestrian accessibility to stations in these locations.

Potential Additional Stations

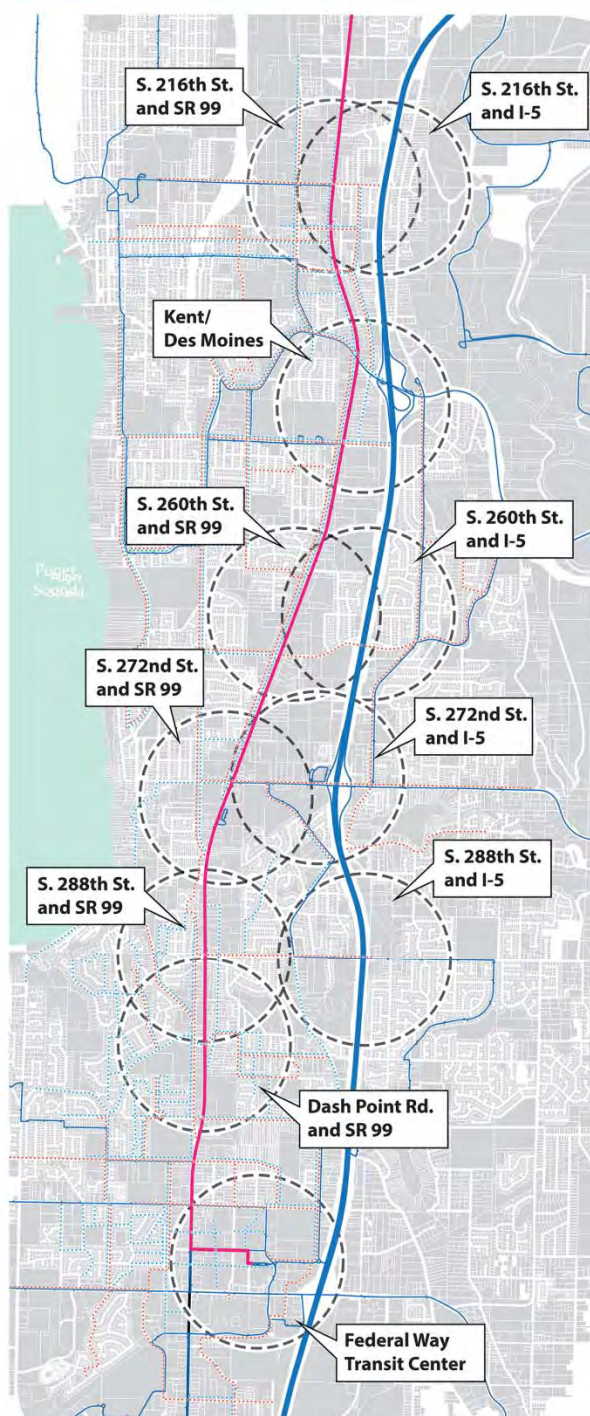
The roadway system density (measured in miles of roadway) for all station areas ranges from 7.2 to 13.3 miles within a half-mile. The greatest density of roadways (local, collector and arterial classified streets) is at the station at S. Dash Point Road on SR 99. The station area with the lowest miles of street system is SR 99 and S. 260th Street. In general, SR 99 has sidewalks on both sides of the roadway which could provide access for non-motorized users to all stations along SR 99. Most of the other streets surrounding the potential station locations do not have continuous sidewalks. There are currently limited bicycle facilities along SR 99, however all potential station areas have been indicated as locations for future investments in both bicycle and pedestrian improvements by local agencies. The City of Kent has future plans for bike lanes and sidewalk improvements on both sides of S. 260th Street where it is within their jurisdiction. The City of Des Moines has future plans for either bike lanes or bike route improvements along S. 216th Street, S. 240th Street, S. 260th Street and S. 272nd Street, the last of which would connect with the City of Federal Way's future bicycle routes along S. 272nd Street. The City of Des Moines has also identified these roadways as part of their priority pedestrian network to improve sidewalk connectivity. The City of Federal Way has identified several bicycle improvements including a bike boulevard west of SR 99 near Dash Point Road S. and bike lanes

along S. 288th Street connecting to SR 99 near the Redondo Heights Park-and-Ride. The topography in the area between 16th Avenue S. and Dash Point Road S. is higher than SR 99 to the east and lower than SR 99 to the west, which would present a challenge for some non-motorized users approaching the SR 99 corridor from these directions. They are also planning to complete a variety of sidewalk improvements in the neighborhoods west of SR 99 near all possible station areas. **Table 7-15** summarizes the opportunities for non-motorized access for each station location. Major transit, bicycle, and pedestrian corridors are shown in **Exhibit 7-7**.

Table 7-15
Non-motorized Access at Station Areas

Station	Non-motorized Access (miles of Local Streets within ½ mile of Station location)
Baseline Stations	
Kent/Des Moines	6.7
S. 272nd Street (Redondo Heights Park-and-Ride)	8.4
S. 272nd Street (Star Lake Park-and-Ride)	5.0
FWTC	4.6
Potential Additional Stations	
SR 99	
S. 216th Street	7.7
S. 260th Street	7.2
S. 288th Street	12.9
S. Dash Point Road	13.3
I-5	
S. 216th Street	8.4
S. 260th Street	8.0
S. 288th Street	9.8

Access



Legend

- Metro RapidRide Route
- Other Bus Route
- ... Significant Bicycle Corridor
- ... Significant Pedestrian Corridor

Exhibit 7-7
Non-Motorized Station Access

7.2.9 Estimated Costs

Based on the current level of conceptual design for the alternatives and stations, the estimated capital cost for the stations would be similar, at approximately \$40 million (in 2013 dollars). If additional parking were to be included at a station, the cost would be higher. The incremental Operating and Maintenance cost for each station would be the same, at approximately \$0.2 million per year.

7.3 Summary Findings by Station

The following sections summarize the strengths and weaknesses of all the stations evaluated in Level 2, and summarizes the key findings related to each of them. This includes the baseline stations and the potential additional stations.

7.3.1 Baseline Stations

Kent/Des Moines

TABLE 7-16
Strengths and Weaknesses of the Kent/Des Moines Station

Strengths	Weaknesses
<ul style="list-style-type: none"> • Authorized under ST2 • More TOD/high-density zoning (City of Kent's Midway Subarea Plan) • Moderate amount of developable parcels to support transit-oriented development • Higher existing population and employment within a half mile radius to support a transit station • Provides access to a regional activity center • Access from all directions • Reasonable amount of existing bus services, existing and planned bicycle and pedestrian network to support a transit station 	<ul style="list-style-type: none"> • Limited access to existing parking • Existing high levels of traffic on Kent-Des Moines Road

The **Kent/Des Moines** station is one of the stations identified in the ST2 plan. It would be in close proximity to HCC, which is a major activity center in the corridor and would support strong ridership at this station. The area along SR 99 includes a mix of commercial land uses near this station location, including multiple large retail establishments. The existing population within ½ mile is the highest among the baseline and potential additional stations, and it has the second highest employment (after FWTC), which is related to HCC and surrounding businesses.

The City of Kent's Midway Subarea Plan calls for a substantial amount of TOD, mixed-use and high-density residential land uses in the area between SR 99 and I-5. Existing bus services, as well as an extensive network of planned bicycle and pedestrian connections would provide

opportunities for multi-modal connections in this area. Planned open space near the station area is part of the Midway Subarea Plan.

This station would have vehicle access from SR 99 and from I-5 via the interchange at Kent-Des Moines Road. Transit access would be provided by routes along SR 99, S. 240th Street, and Kent-Des Moines Road. Connecting from the east side of I-5 to this station location (from the Kent-Des Moines Park-and-Ride) would be a challenge for non-motorized users due to long travel distance (at least ½ mile) and topography. Kent-Des Moines Road currently operates over-capacity, and motorized and non-motorized access from and to this station area from east of I-5 could be difficult during peak periods. Non-motorized crossings (bikes and pedestrians) of Kent-Des Moines Road could also present challenges due to the long crossing distance and high traffic volumes. Analysis results for this station are shown graphically in **Exhibits 7-8a** and **7-8b**.

Key Findings

- 1) High concentration of existing and planned TOD and high-density development, as well as a large activity center (HCC) increases the potential for development in this station area.
- 2) This station would support the vision of City of Kent's Midway Subarea Plan.
- 3) This location is accessible from SR 99 and I-5, although Kent-Des Moines Road is currently over capacity.
- 4) Accessing the Kent/Des Moines Park-and-Ride from this station location would be challenging for non-motorized users due to the long distance and topographical changes.
- 5) Crossing Kent-Des Moines Road could be challenging for non-motorized users going to and from the north.

Kent/Des Moines

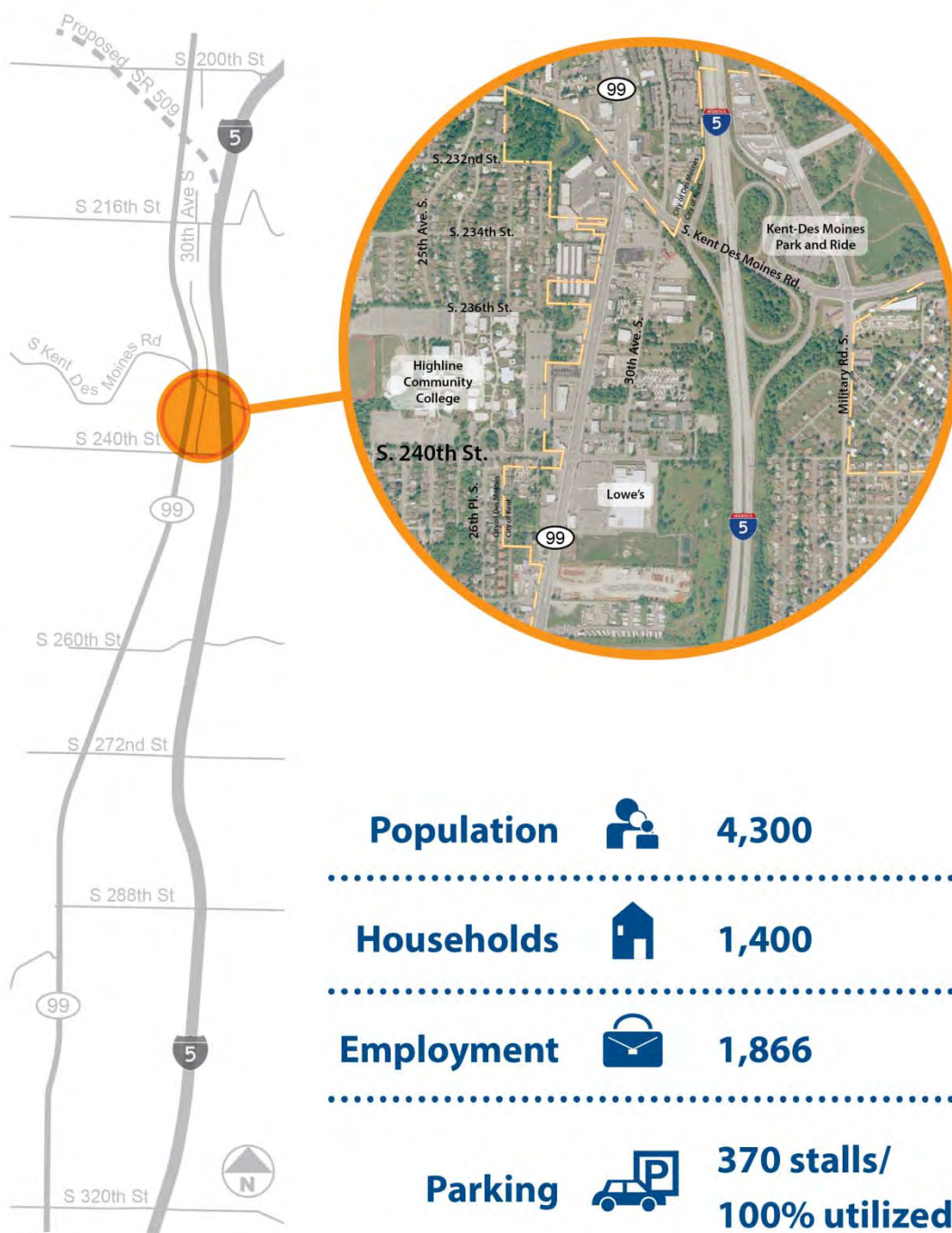


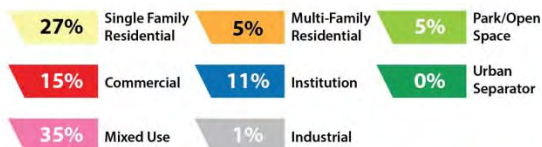
Exhibit 7-8a
Station at Kent/Des Moines: Location, Demographics, and Parking

Kent/Des Moines

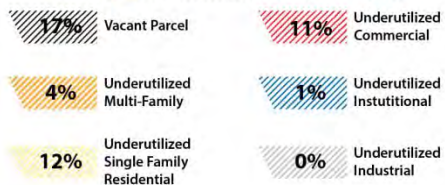
Existing Land Use



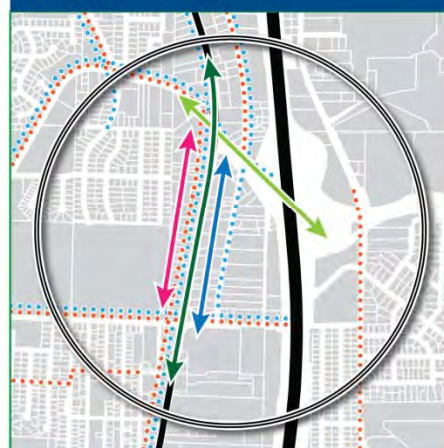
Planned Land Use



Vacant and Underutilized Parcels



Access



Note: Land use data excludes public and private rights-of-way and therefore percentages do not total 100.

Exhibit 7-8b
Station at Kent/Des Moines: Land Use and Demographics

S. 272nd Street and SR 99 (Redondo Heights Park-and-Ride)

TABLE 7-17
Strengths and Weaknesses of S. 272nd Street and SR 99 Station

Strengths	Weaknesses
<ul style="list-style-type: none"> • Authorized under ST2 Plan • Moderate concentration of planned commercial/mixed-use/medium to high density residential • Existing Redondo Heights Park-and-Ride could be utilized for this station • Access from all directions • Reasonable amount of existing bus services, planned and existing bicycle and pedestrian network to support a transit station. 	<ul style="list-style-type: none"> • Developable area near McSorley Creek wetland may be limited

The **S. 272nd Street and SR 99 Station** location would be located at the Redondo Heights Park-and-Ride in the City of Federal Way. The area within ½ mile would include parts of the cities of Des Moines and Kent as well. Commercial land uses along SR 99 in this area include Redondo Square complex and LA Fitness, as well as many small businesses. The majority of the residential land use is single family, with a high concentration of multi-family residential located south of S. 272nd Street. The large McSorley Creek wetland complex, much of which has been purchased by the City of Kent for preservation, is located within ½ mile of the station area.

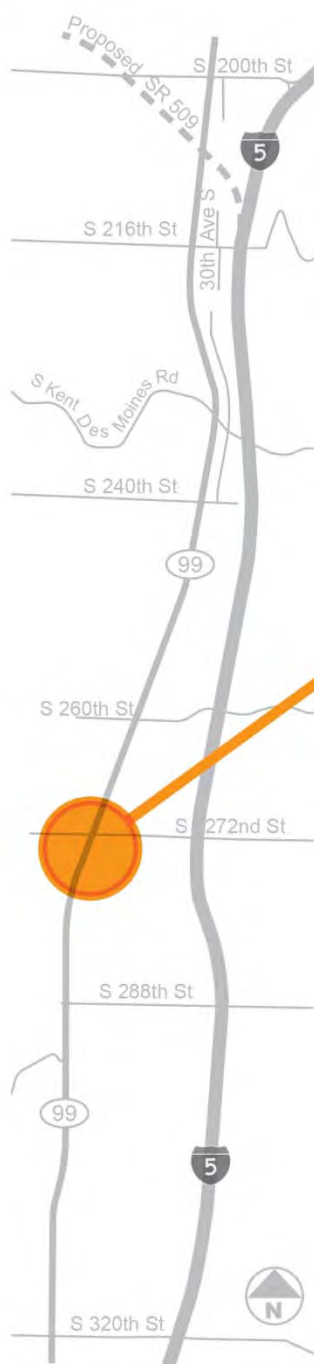
Medium to high density residential and commercial uses are planned around S. 272nd Street and SR 99 and the City of Kent has specifically designated the area north of S. 272nd Street for a Transit-Oriented Community. Although there is a high amount of vacant and underutilized land that could support transit-oriented development, land uses around the wetland area should be examined in more detail to understand actual development/redevelopment potential. Redondo Heights Park-and-Ride is currently shown as underutilized, and could accommodate future parking for the station. The existing crossing under I-5 of S. 272nd Street would provide access to this station location from east of I-5. The Star Lake Park-and-Ride is located just over ½ mile from the station location. Besides the RapidRide A Line that runs on SR 99, there is limited other local transit service that connects to this station location. Major bicycle and pedestrian corridors are planned and are intended to connect to major activities. Analysis results for this station are shown graphically in **Exhibits 7-9a** and **7-9b**.

Key Findings

- 1) High concentration of planned commercial and mixed-use land uses along SR 99 increases the potential for development in this station area.
- 2) The Redondo Heights Park-and-Ride could accommodate additional station parking.
- 3) Land uses around the McSorley Creek wetland need further analysis to understand development potential.

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S. 272nd St. and SR 99



Population



3,000

Households



1,700

Employment



580

Parking



**697 stalls/
8% utilized**

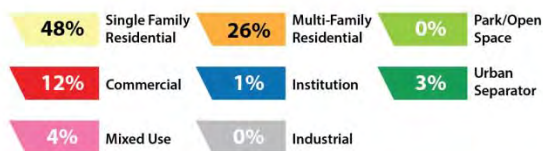
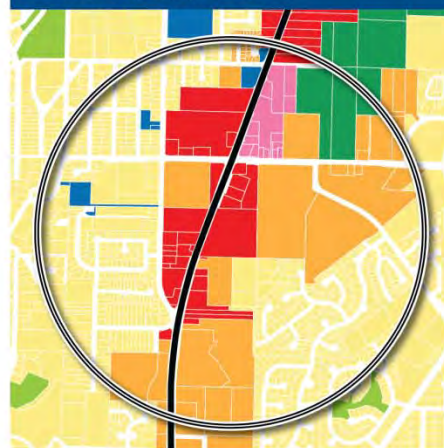
Exhibit 7-9a
Station at S. 272nd Street and SR 99: Location, Demographics, and Parking

S. 272nd St. and SR 99

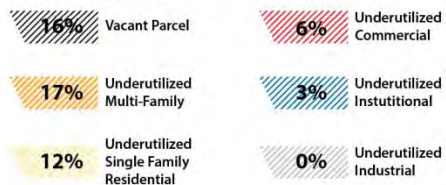
Existing Land Use



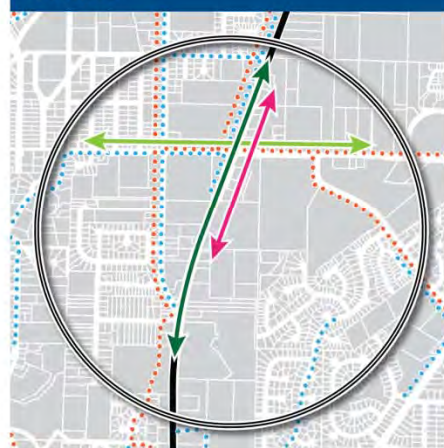
Planned Land Use



Vacant and Underutilized Parcels



Access



Note: Land use data excludes public and private rights-of-way and therefore percentages do not total 100.

Exhibit 7-9b

Station at S. 272nd Street and SR 99: Land Use and Demographics

S. 272nd Street and I-5 (Star Lake Park-and-Ride)

TABLE 7-18
Strengths and Weaknesses of S. 272nd Street and I-5 Station

Strengths	Weaknesses
<ul style="list-style-type: none"> • Authorized under ST2 Plan • Existing Star Lake Park-and-Ride can be utilized for this station • Access from all directions • Reasonable amount of existing bus service, planned and existing bicycle and pedestrian network to support a transit station 	<ul style="list-style-type: none"> • Less area of transit-supportive land uses • Low quality non-motorized connections • Developable area near McSorley Creek wetland may be limited

The **S. 272nd Street and I-5 Station** location is in the City of Kent, with the area within ½ mile including parts of the cities of Kent and Federal Way. The primary land uses in this area are single family residential and vacant property. A cluster of multi-family is located south of S. 272nd Street in between SR 99 and I-5. The station would be located at the existing Star Lake Park-and-Ride facility, which is served by bus routes on I-5 as well as a local bus route that operates east-west on S. 272nd Street. An elementary school is located south of S. 272nd Street.

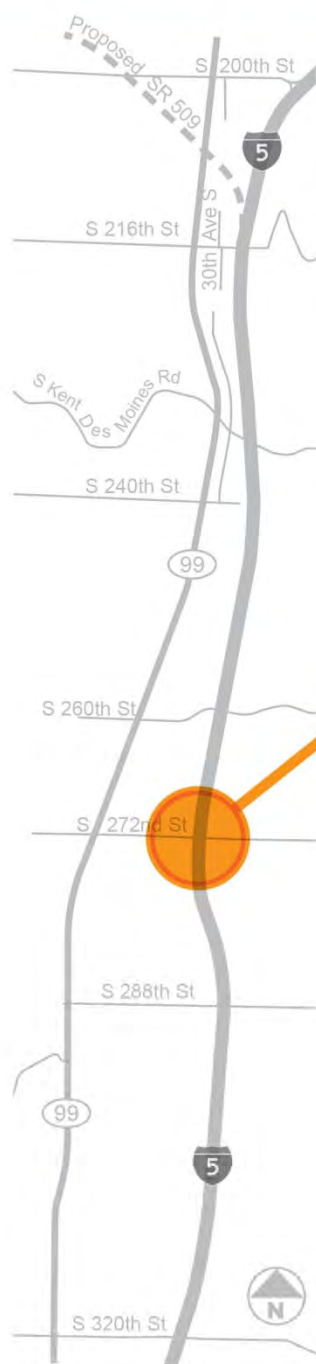
This station location is on the western edge of I-5, and much of the ½ mile station area is composed of land used for I-5. Planned land use in this area would double the amount of single-family residential lands and would have a slight increase in multi-family residential. Commercial uses are only present on the western edge of the half mile radius along SR 99. The large McSorley Creek wetland complex, much of which has been purchased by the City of Kent for preservation, is located within ½ mile of the station area. Although there is a high amount of vacant and underutilized parcels in this station area, land uses around the wetland area should be further investigated to understand actual development/redevelopment potential. A station in this location therefore may have limited opportunity for transit-oriented development. Bicycle connections are planned on S. 272nd Street, but the crossing under I-5 may require improvements for non-motorized users. Analysis results for this station are shown graphically in **Exhibits 7-10a and 7-10b**.

Key Findings

- 1) Existing and planned land uses are lower density and not likely to increase in density.
- 2) The Star Lake Park-and-Ride could accommodate future parking need if expanded.
- 3) Land uses around the wetland area need further analysis to determine potential for development.

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S. 272nd St. and I-5



Population  **2,400**

Households  **1,400**

Employment  **274**

Parking  **630 stalls/
59% utilized**

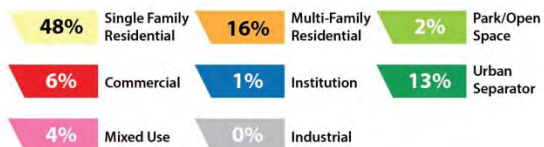
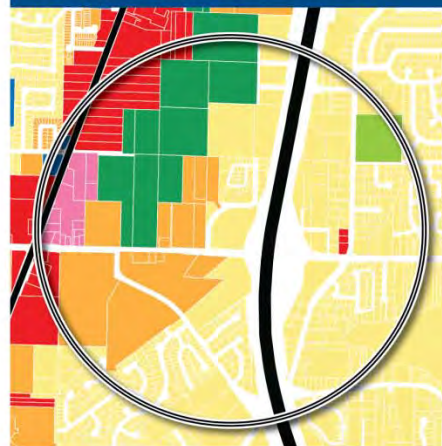
Exhibit 7-10a
Station at S. 272nd Street and I-5: Location, Demographics, and Parking

S. 272nd St. and I-5

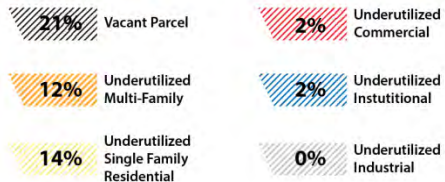
Existing Land Use



Planned Land Use



Vacant and Underutilized Parcels



Access



Note: Land use data excludes public and private rights-of-way and therefore percentages do not total 100.

Exhibit 7-10b
Station at S. 272nd Street and I-5: Land Use and Demographics

FWTC

TABLE 7-19
Strengths and Weaknesses of FWTC Station

Strengths	Weaknesses
<ul style="list-style-type: none"> • More TOD/high-density zoning • High employment rate within a half mile radius to support a transit station • Provides access to a regional activity center • High volume of existing bus service, planned and existing bicycle and pedestrian network to support a transit station 	<ul style="list-style-type: none"> • Not authorized under ST2

The **FWTC Station** would be located in the center of the Federal Way City Center. Commercial land uses dominate the area, with ‘The Commons’ shopping center as the focal point. Some single family and multi-family residential is located at the northern edge of the station area, within the half mile radius. The existing employment for the station area is the highest of all station locations. The existing Transit Center is well utilized and its parking structure is over capacity with demand exceeding supply. More than a dozen bus routes serve the transit center. Harry S. Truman High School and the 52-acre Steel Lake Park are located nearby.

Economic growth and high capacity transit are key focuses of Federal Way City Center. The existing commercial core and future planned development would strongly support transit-oriented development in this area. An emphasis on bicycle and pedestrian improvements would also promote safe and walkable connections to the station. Analysis results for this station are shown graphically in **Exhibits 7-11a** and **7-11b**.

Key Findings

- 1) High concentration of existing and planned commercial and mixed-use land uses increases the potential for development in this station area.
- 2) Existing FWTC is well used and contributes to a transit focused identity in the area.
- 3) Existing bus service at the FWTC would provide good transfer opportunities and would be a strong contributor to ridership at this station.

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Federal Way Transit Center



Population  **3,900**

Households  **1,200**

Employment  **4,670**

Parking  **2,067 stalls/
76% utilized**

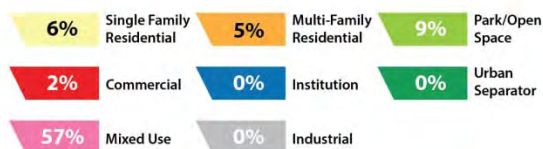
Exhibit 7-11a
Station at FWTC: Location, Demographics, and Parking

Federal Way Transit Center

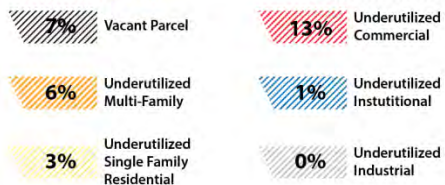
Existing Land Use



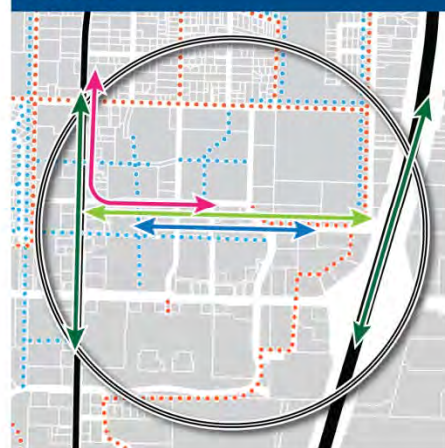
Planned Land Use



Vacant and Underutilized Parcels



Access



Note: Land use data excludes public and private rights-of-way and therefore percentages do not total 100.

Exhibit 7-11b
Station at FWTC: Land Use and Demographics

7.3.2 Potential Additional SR 99 Stations

S. 216th Street (SR 99)

TABLE 7-20

Strengths and Weaknesses of S.216th Street and SR 99 Station

Strengths	Weaknesses
<ul style="list-style-type: none"> • More TOD/high-density zoning (City of Des Moines Pacific Ridge Plan) • Moderate amount of underutilized parcels that may support transit oriented development • Moderate size of existing population and employment within a half mile radius to support a transit station • Sufficient amount of existing bus services, existing and planned bicycle and pedestrian network to support a transit station • Access from all directions 	<ul style="list-style-type: none"> • Not authorized under ST2 • No existing park-and-ride

The **S. 216th Street and SR 99** station would be located in the City of Des Moines, but the ½ mile station area would include land in the City of SeaTac. A variety of commercial uses are present along SR 99 in the area, from a large grocery store to smaller businesses such as restaurants and auto repair shops. Residential uses such as apartments and mobile homes are adjacent to SR 99 in this area, while the rest of the area is predominantly single family houses. The existing RapidRide A Line provides transit service on SR 99, with another local route that runs a portion on S. 216th Street. Steven J Underwood Memorial Park is a 20.5-acre public park within a half mile radius.

Mixed use and medium to high density residential uses are planned in the City of Des Moines Pacific Ridge Plan, which includes the area west of SR 99 and south of S. 216th Street on the east side of SR 99. The major concentration of vacant parcels in this study area is located north of S. 216th Street, west of SR 99. These parcels are planned for the future Des Moines Creek Business Park. There are plans for the bicycle and pedestrian network to be improved in this area to support planned land uses. Particularly, S. 216th Street has been identified as a significant corridor for both bicycle and pedestrian by the City of Des Moines. Analysis results for this station are shown graphically in **Exhibits 7-12a** and **7-12b**.

Key Findings

- 1) The planned land uses and the amount of developable parcels increases the potential for development in this station area.
- 2) Existing and planned motorized and non-motorized access would support a station at this location.
- 3) Not an authorized station location under ST2.

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S. 216th St. and SR 99



Population



3,300

Households



1,300

Employment



1,052

Parking

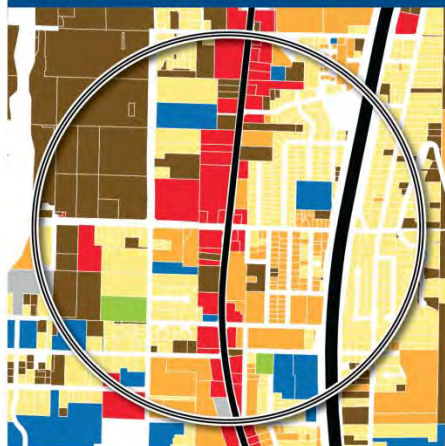


N/A

Exhibit 7-12a
Station at S. 216th Street and SR 99: Location, Demographics, and Parking

S. 216th St. and SR 99

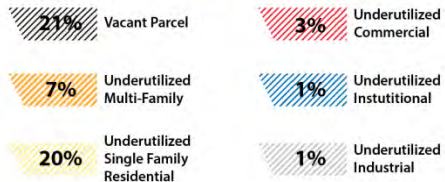
Existing Land Use



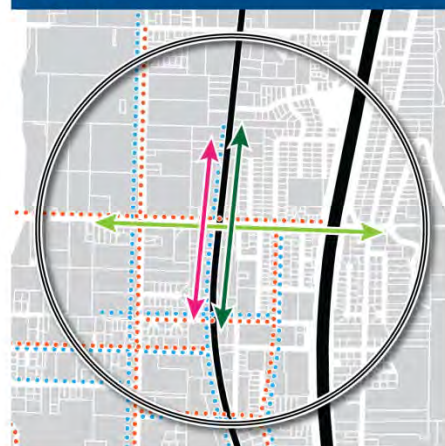
Planned Land Use



Vacant and Underutilized Parcels



Access



Note: Land use data excludes public and private rights-of-way and therefore percentages do not total 100.

Exhibit 7-12b
Station at S. 216th Street and SR 99: Land Use and Demographics

S. 260th Street (SR 99)

TABLE 7-21

Strengths and Weaknesses of S.260th Street and SR 99 Station

Strengths	Weaknesses
<ul style="list-style-type: none"> Moderate amount of planned commercial/mixed-use/medium to high density residential High amount of underutilized parcels that may support transit oriented development Access from all directions Existing transit service provided by RapidRide A Line Planned bicycle and pedestrian network to the west and east 	<ul style="list-style-type: none"> Not authorized under ST2 plan Developable area near McSorley Creek wetland may be limited No existing park-and-ride

The **S. 260th Street and SR 99 Station** would be either in the City of Des Moines or the City of Kent, and the area within ½ mile of the station would include areas of both cities. The area is primarily commercial adjacent to SR 99, including a Fred Meyer store and Mack Truck dealership, and many smaller businesses. The majority of the residential use is single family, with some multi-family residential located along S. 260th/S. 259th Pl. There is also a mobile home park land use designated near S.260th Street and SR 99 which is not expected to redevelop. The large McSorley Creek wetland complex, much of which has been purchased by the City of Kent for preservation, is located within ½ mile of the station area.

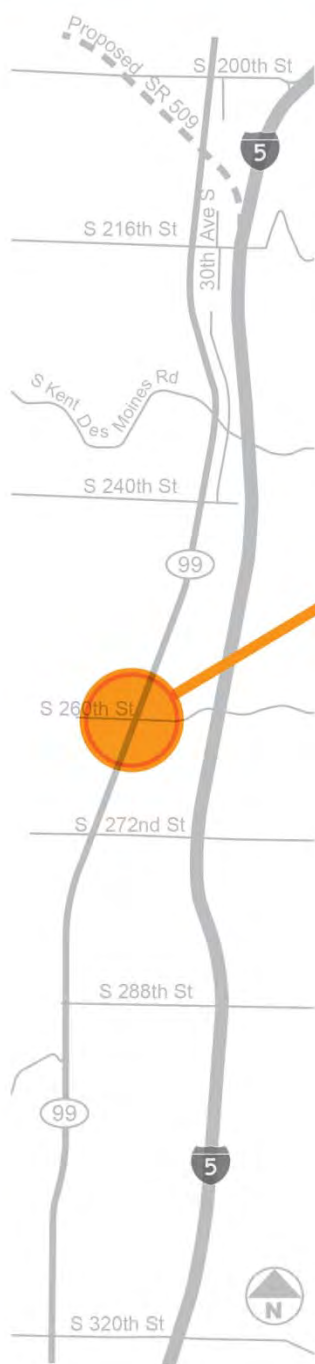
Both the City of Des Moines and City of Kent envision SR 99 in this area as a commercial corridor. Although there are high amount of vacant and underutilized parcels that could support transit-oriented development, land uses around the wetland area should be further investigated to understand actual development/redevelopment potential. Bus service includes the RapidRide A Line that operates on SR 99. An existing crossing under I-5 on S. 260th Street provides access from east of I-5 to this station area. Analysis results for this station are shown graphically in **Exhibits 7-13a** and **7-13b**.

Key Findings

- 4) High concentration of planned commercial and mixed-use land uses increases potential for development in this station area.
- 5) Land uses around the wetland area need further analysis to understand the development potential for TOD.
- 6) Not an authorized station location under ST2.

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S. 260th St. and SR 99



Population



3,000

Households



1,200

Employment



587

Parking



N/A

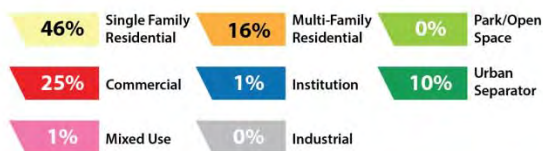
Exhibit 7-13a
Station at S. 260th Street and SR 99: Location, Demographics, and Parking

S. 260th St. and SR 99

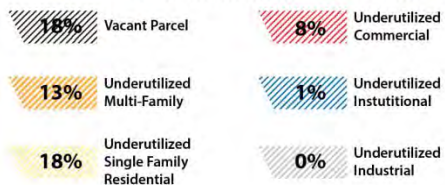
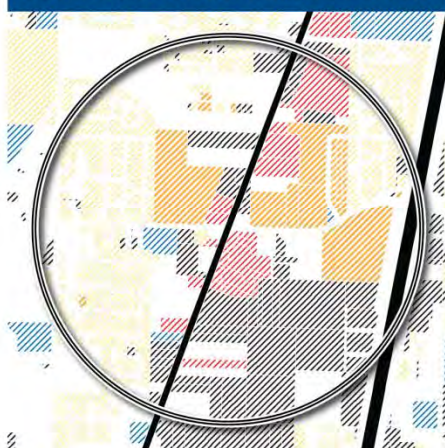
Existing Land Use



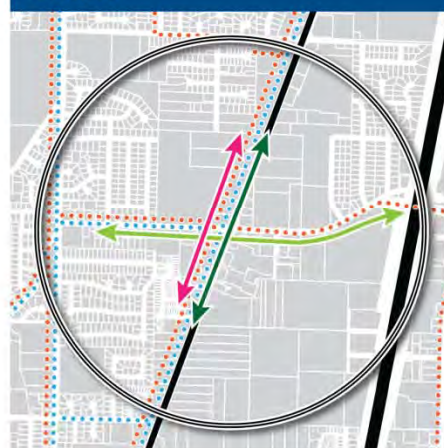
Planned Land Use



Vacant and Underutilized Parcels



Access



Note: Land use data excludes public and private rights-of-way and therefore percentages do not total 100.

Exhibit 7-13b
Station at S. 260th Street and SR 99: Land Use and Demographics

S. 288th Street (SR 99)

TABLE 7-22

Strengths and Weaknesses of S. 288th Street and SR 99 Station

Strengths	Weaknesses
<ul style="list-style-type: none"> Existing transit service provided by RapidRide A Line Planned bicycle and pedestrian network to the east 	<ul style="list-style-type: none"> Not authorized under ST2 Plan High concentration of existing and planned single family residential land use in surrounding area Limited developable area due to topography No existing park-and-ride Access from north, south and east only Non-motorized access to station location is challenging due to topography

The **S. 288th Street** station would be located in the City of Federal Way. The primary land use in the surrounding area is single family residential. SR 99 has a small amount of commercial uses with ½ mile of the station location as well as some multi-family residential. The topography changes from higher elevations to the east of SR 99 to lower elevations to the west, which limits development potential and access to this station location, particularly along the west of SR 99.

Plans for this area indicate an increase in single family residential land use. Although there is also a small planned increase in commercial and mixed-use, the limited number of developable parcels and topography do not favor any substantial transit-oriented development. There are planned enhancements to bicycle and pedestrian connections in this area. However, steep slopes on the west side of SR 99 present difficulty connecting non-motorized routes to the station location. Bus service includes the RapidRide A Line that operates on SR 99. Analysis results for this station are shown graphically in **Exhibits 7-14a** and **7-14b**.

Key Findings

- 1) Existing and planned land uses are lower density and not likely to increase in density.
- 2) Topography presents difficulty connecting to the station location.
- 3) Not an authorized station location under ST2.

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S. 288th St. and SR 99



Population



3,200

Households



1,600

Employment



568

Parking



N/A

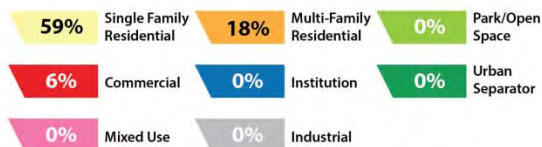
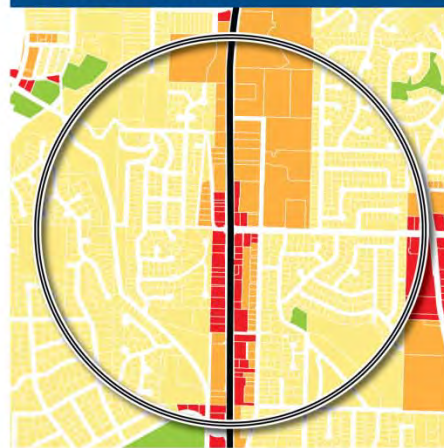
Exhibit 7-14a
Station at S. 288th Street and SR 99: Location, Demographics, and Parking

S. 288th St. and SR 99

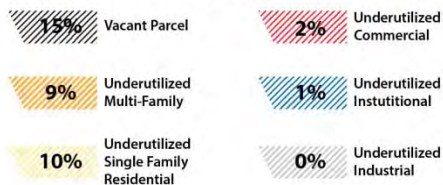
Existing Land Use



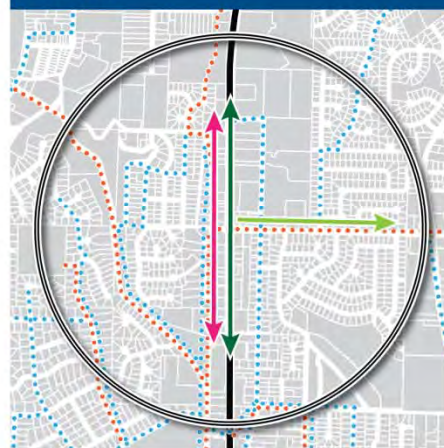
Planned Land Use



Vacant and Underutilized Parcels



Access



Note: Land use data excludes public and private rights-of-way and therefore percentages do not total 100.

Exhibit 7-14b
Station at S. 288th Street and SR 99: Land Use and Demographics

S. Dash Point Road (SR 99)

TABLE 7-23

Strengths and Weaknesses of S. Dash Point Road and SR 99 Station

Strengths	Weaknesses
<ul style="list-style-type: none"> • Could attract riders west of SR 99 via S. Dash Point Road • Existing transit service provided by RapidRide A Line • Planned bicycle and pedestrian network to the west 	<ul style="list-style-type: none"> • Not authorized under ST2 Plan • High concentration of existing and planned single family residential land use in the surrounding area • Limited developable area due to topography • Low employment base and potential for employment • No existing park-and-ride • Access from north, south and west only • Non-motorized access to station location is challenging due to topography

The **S. Dash Point Road at SR 99** station is located in City of Federal Way. The primary land use in this area is single family residential. SR 99 has some limited commercial uses with ½ mile of the station as well as some multi-family residential. The topography changes from higher elevations to the east of SR 99 to lower elevations to the west, which would limit development potential in the area and access to the station, particularly along the west of SR 99. Sacajawea Middle School and Park are located just southwest of S. Dash Point Road and SR 99.

Planned land uses in this area indicate an increase in single family residential land use, although the City of Federal Way Comprehensive Plan categorizes institutional land uses, such as Sacajawea Middle School, as single family residential. Although there is a planned increase in commercial land use, the limited number of developable parcels and topography do not favor any substantial transit-oriented development in the area. There are planned enhancements to bicycle and pedestrian connections in this area. However, steep slopes on the west side of SR 99 present difficulty connecting in non-motorized routes to the station location. Bus service includes the RapidRide A Line that operates on SR 99. Analysis results for this station are shown graphically in **Exhibits 7-15a** and **7-15b**.

Key Findings

- 1) Existing and planned land uses are lower density and not likely to increase in density.
- 2) Topography presents difficulty connecting to the station location.
- 3) Not an authorized station location under ST2.

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S. Dash Point Rd. and SR 99



Population  **3,400**

Household  **1,400**

Employment  **410**

Parking  **N/A**

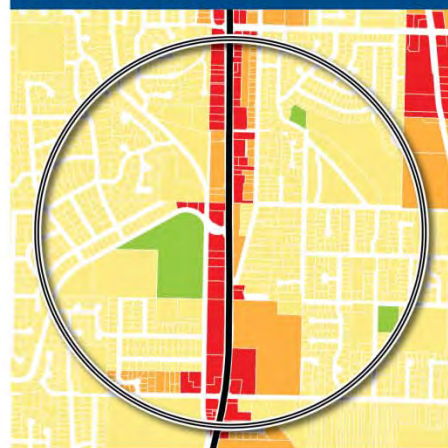
Exhibit 7-15a
S. Dash Point Rd. and SR 99: Location, Demographics, and Parking

S. Dash Point Rd. and SR 99

Existing Land Use



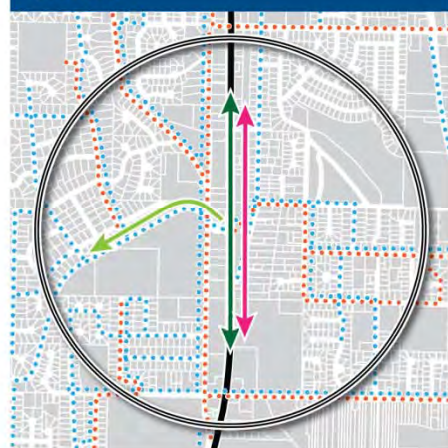
Planned Land Use



Vacant and Underutilized Parcels



Access



Note: Land use data excludes public and private rights-of-way and therefore percentages do not total 100.

Exhibit 7-15b
S. Dash Point Rd. and SR 99: Land Use and Demographics

7.3.3 Potential Additional I-5 Stations

S. 216th Street (I-5)

TABLE 7-24
Strengths and Weaknesses of S.216th Street and I-5 Station

Strengths	Weaknesses
<ul style="list-style-type: none"> Moderate amount of underutilized parcels that may support transit oriented development Existing and planned bicycle and pedestrian network to the west 	<ul style="list-style-type: none"> Not authorized under ST2 Planned land use near in surrounding area is primarily lower density single family residential No north/south access to I-5, only access from east and west No existing park-and-ride No direct bus service

The **S. 216th Street and I-5** station would be located in the City of Des Moines, but the area within a ½ mile of the station includes land in the City of SeaTac. This station would be approximately ¼ mile from SR 99, where commercial land uses range from a large grocery store to smaller businesses such as restaurants and auto repair shops. To the north of S. 216th Street existing uses are primarily single family residential on both sides of I-5, while south of S. 216th Street land use is primarily multi-family residential on the west side of I-5 and single family residential on the east side. There is no transit service on S. 216th Street east of 24th Avenue S, which is approximately 0.5 miles to the west, and there is no direct connection to I-5. The nearest transit service is the existing RapidRide A Line, approximately ¼ mile west on SR 99.

The City of Des Moines Pacific Ridge Plan designates the majority of the area as single family residential, with mixed use and medium to high density residential uses for the area west of I-5 and south of S. 216th Street, as well as areas west of SR 99. There is a small concentration of vacant parcels in this area located north of S. 216th Street and west of SR 99. These parcels are planned for the future Des Moines Creek Business Park. A station in this area would be located on the fringe of this planned development, and would therefore be marginally supportive. There are plans for bicycle and pedestrian network improvements in this area. Specifically, S. 216th Street has been identified as a significant corridor for both bicycle and pedestrian by the City of Des Moines. Analysis results for this station are shown graphically in **Exhibits 7-16a** and **7-16b**.

Key Findings

- 1) Existing and planned land uses are lower density and not likely to increase in density.
- 2) Access to this station area is limited because there is no access to I-5 and there is no park-and-ride or bus service along S. 216th Street.
- 3) Not an authorized station location under ST2.

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S. 216th St. and I-5



Population  **3,100**

Households  **1,200**

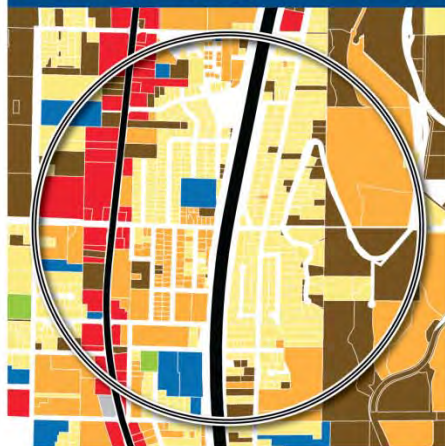
Employment  **856**

Parking  **N/A**

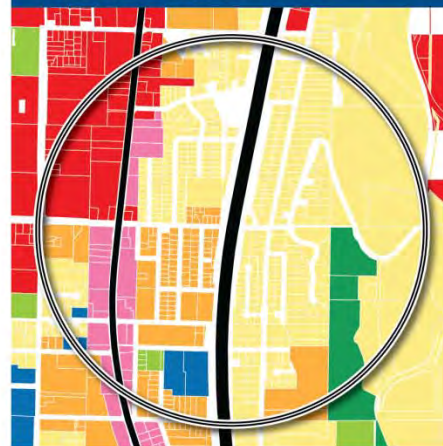
Exhibit 7-16a
Station at S. 216th Street and I-5: Location, Demographics, and Parking

S. 216th St. and I-5

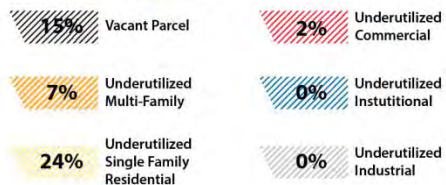
Existing Land Use



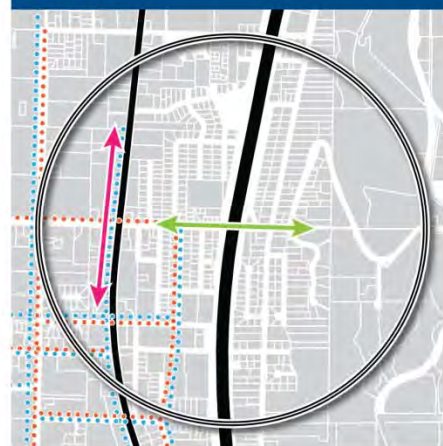
Planned Land Use



Vacant and Underutilized Parcels



Access



Note: Land use data excludes public and private rights-of-way and therefore percentages do not total 100.

Exhibit 7-16b
Station at S. 216th Street and I-5: Land Use and Demographics

S. 260th Station (I-5)

TABLE 7-25

Strengths and Weaknesses of S.260th Street and I-5 Station

Strengths	Weaknesses
<ul style="list-style-type: none"> High amount of underutilized parcels to support transit development 	<ul style="list-style-type: none"> Not authorized under ST2 plan Planned land use near in surrounding area is primarily lower density single family residential Developable area near McSorley Creek wetland may be limited No north/south access to I-5, only access from east and west No existing park-and-ride No direct bus service

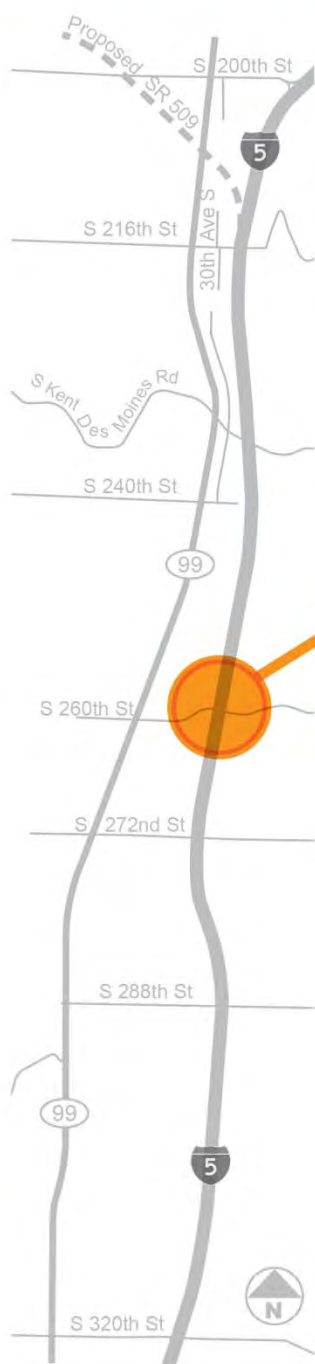
The **S. 260th Street and I-5 Station** would be located in the City of Kent, although areas within a ½ mile would be within the City of Des Moines. The area within ½ mile of the station would include land in both cities. The area along I-5 is primarily single family residential, with commercial adjacent to SR 99 (the outer edge of the station area), including a Fred Meyer store and Mack Truck dealership, and many smaller businesses. Multi-family residential is located along S. 260th Street and off of SR 99. There is also a mobile home park land use designated near S.260th Street and SR 99 which is not expected to redevelop. The large McSorley Creek wetland complex, much of which has been purchased by the City of Kent for preservation, is located within ½ mile of the station area. Although there is a high amount of vacant and underutilized parcels in this station area, land uses around the wetland area should be further investigated to understand actual development/redevelopment potential. S. 260th Street crosses under I-5 and provides access from east of I-5 to this station area, but there is no north/south access to I-5. The nearest bus service is on SR 99 (0.5 miles to the west) or on Military Road S. (0.4 miles to the east). Pedestrian amenities are present on S. 260th Street on the north side of the road only. Analysis results for this station are shown graphically in **Exhibits 7-17a** and **7-17b**.

Key Findings

- Existing and planned land uses are lower density and not likely to increase in density.
- Land uses around the McSorley Creek wetland complex need further analysis to understand the development/redevelopment potential.
- Access to this station area is limited because there is no access to I-5 and there is no park-and-ride or bus service along S. 260th Street.
- Not an authorized station location under ST2.

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S. 260th St. and I-5



Population



3,200

Households



1,100

Employment



599

Parking



N/A

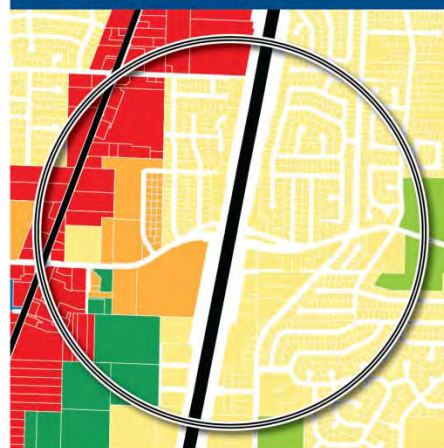
Exhibit 7-17a
S. 260th Street and I-5: Location, Demographics, and Parking

S. 260th St. and I-5

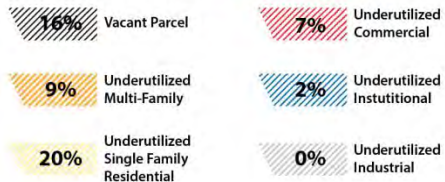
Existing Land Use



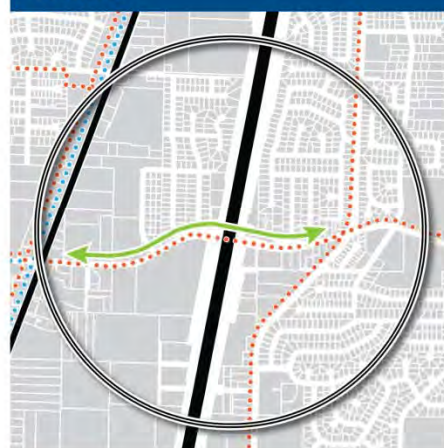
Planned Land Use



Vacant and Underutilized Parcels



Access



Note: Land use data excludes public and private rights-of-way and therefore percentages do not total 100.

Exhibit 7-17b
S. 260th Street and I-5: Land Use and Demographics

S. 288th Station (I-5)

TABLE 7-26

Strengths and Weaknesses of S. 288th Street and I-5 Station

Strengths	Weaknesses
<ul style="list-style-type: none"> Existing transit access 	<ul style="list-style-type: none"> Not authorized under ST2 Plan High concentration of existing and planned single family residential land use Planned land use near in surrounding area is primarily lower density single family residential Low employment base and potential for employment No north/south access to I-5, access only from east and west No existing park-and-ride

The **S. 288th Street and I-5** station would be located in the City of Federal Way. The land use within a ½ mile is 61 percent residential, with single-family residential accounting for 39 percent of the area. Commercial land uses account for only 2 percent of the existing land use, with some commercial development along Military Road S., approximately 0.4 miles to the west. Single-family residential land use is planned for over 50 percent of the area, and only a two percent increase in commercial land use is planned. There are no plans for high-density zoning or TOD in this area.

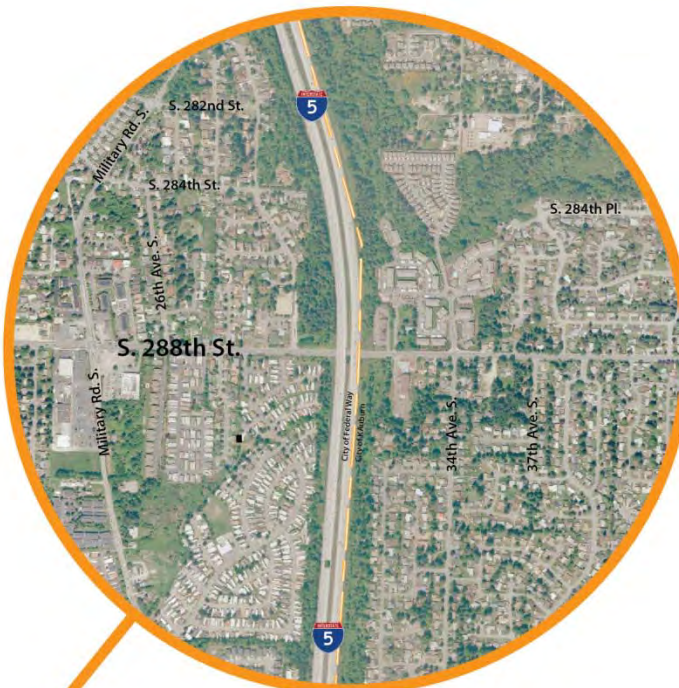
SR 99 and Military Road S. are the major north-south arterials in this area, and no direct access to I-5 is available. There are planned enhancements to bicycle and pedestrian connections in this area. Analysis results for this station are shown graphically in **Exhibits 7-18a** and **7-18b**.

Key Findings

- Existing and planned land uses are lower density and not likely to increase in density.
- Access to this station area is limited because there is no access to I-5 and there is no park-and-ride. There is a local circulator bus service on S. 288th Street.
- Not an authorized station location under ST2.

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S. 288th St. and I-5



Population



3,100

Households



1,600

Employment



249

Parking



N/A

Exhibit 7-18a
S. 288th Street and I-5: Location, Demographics, and Parking

S. 288th St. and I-5

Existing Land Use



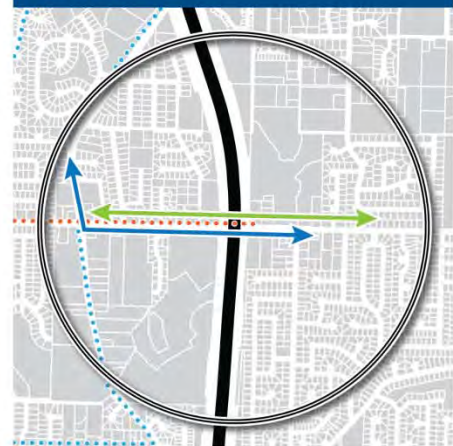
Planned Land Use



Vacant and Underutilized Parcels



Access



Note: Land use data excludes public and private rights-of-way and therefore percentages do not total 100.

Exhibit 7-18b
S. 288th Street and I-5: Land Use and Demographics

7.4 Summary of Station Evaluations and Conclusions

The previous sections of this chapter have documented the Level 2 analysis related to the station location evaluation, including:

- how the list of possible station locations was developed and narrowed,
- the evaluation methods used to examine the station locations,
- the data that has been developed to understand and evaluate the station locations, and
- the strengths and weaknesses and key findings related to each individual station location.

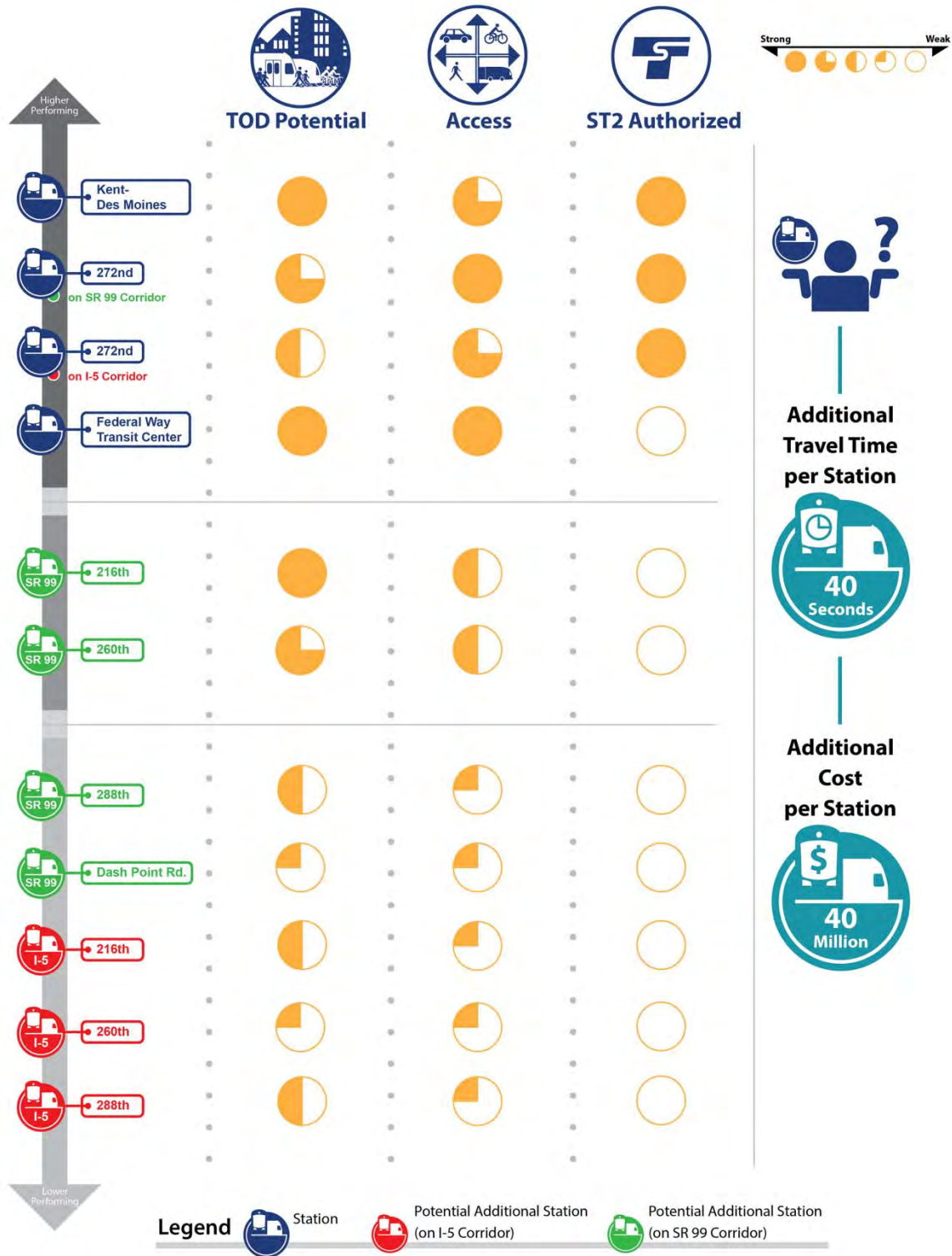
The purpose of this final section is to summarize the station evaluation findings and conclusions in a more comparative way to understand and document which station locations could be expected to be stronger performing stations and which would be weaker performing stations. The data compiled for the station location evaluation has been grouped into some general categories that put related characteristics together, as follows.

1. **Transit characteristics:** Includes ridership, increase in travel time, capital costs, and operations costs.
2. **Existing conditions:** Includes existing land use, proximity to activity centers, existing population and employment.
3. **Potential for TOD:** Includes planned land uses, TOD and high-density zoning and vacant and underutilized parcels.
4. **Access:** Includes motorized and non-motorized access such as roadway access, park-and-ride access, bus access, pedestrian and bike access.
5. **Included and authorized in the ST2 Plan** or not.

Table 7-27 summarizes the evaluation of each station by these generalized categories, with the exception of transit characteristics, which were found to be similar for all alternatives. It includes a generalized brief discussion about each of the above categories for each of the station locations. The results are also shown on **Exhibit 7-19**, with baseline stations at the top of the page, and the potential additional stations shown below them with those with higher potential as a station at the top of the page and the locations with less potential lower on the page. The results of the station evaluation indicate that all baseline stations would be expected to perform strongly because they have transit supportive existing and planned land use and multi-modal access. In addition, two of the potential additional station locations, S. 216th Street and S. 260th Street at SR 99, show promise as potential future light rail stations. The remaining five potential station locations do not appear to be as strong candidates for future light rail stations because they do not have supportive existing or planned land use or good multimodal access.

TABLE 7-27
Summary of Station Findings

Station	Existing Conditions	Potential for TOD	Access	ST2 Authorized
Baseline				
Kent Des/Moines	High diversity, includes single-family, multi-family, commercial and institutional; highest population and HCC as employment base	Higher, mix of commercial, mixed use, and residential planned	Good vehicle and transit access, improvements planned for bikes and pedestrians	Yes
S. 272 nd Street (Redondo Heights Park-and-Ride)	Moderate diversity, includes single-family, multi-family, and commercial; moderate population and employment base	Higher, mix of commercial, mixed use, and residential	Good vehicle and transit access, improvements planned for bikes and pedestrians	Yes
S. 272 nd Street (Star Lake Park-and-Ride)	Primarily single family and multi-family residential; moderate population and low employment base	Lower, primarily residential	Good vehicle and transit access, improvements planned for bikes and pedestrians	Yes
FWTC	Primarily commercial with some residential and park; high population and highest employment base	Higher, over 50% mixed use	Good vehicle and transit access, improvements planned for bikes and pedestrians	No
SR 99				
S. 216 th Street	High diversity, includes single-family, multi-family, commercial and institutional; moderate population and high employment base	Planned mixed use and commercial in Pacific Ridge area	Good vehicle and transit access, bike lanes and sidewalks present on S. 216 th	No
S. 260 th Street	Mix of single family residential, multi-family residential and commercial; moderate population and employment base	Moderate, planned increase in single family residential, multi-family residential and commercial; highest amount of underutilized parcels	Good vehicle and transit access, improvements planned for bikes and pedestrians	No
S. 288 th Street	Primarily single family and multi-family residential; moderate population and employment base	Lower, predominantly single family residential	Moderate vehicle and good transit access, improvements planned for bikes and pedestrians	No
S. Dash Point Road	Primarily single family residential; moderate population and lower employment base	Lower, predominantly single family residential	Moderate vehicle and good transit access, improvements planned for bikes and pedestrians	No
I-5				
S. 216 th Street	High diversity, includes single-family, multi-family, commercial and institutional; moderate population and high employment base	Planned mixed use in Pacific Ridge area	No north/south access or transit service, bike lanes and sidewalks on S. 216 th Street west of I-5	No
S. 260 th Street	Mix of single family residential, multi-family residential and commercial; moderate population and employment base	Lower, predominantly single family residential	No north/south access or transit service, improvements planned for bikes and pedestrians	No
S. 288 th Street	Primarily single family and multi-family residential; moderate population and low employment base	Lower, predominantly single family residential	No north/south access, one transit route, improvements planned for bikes and pedestrians	No
Note: Ridership, increase in travel time, capital costs and operations costs would be similar for all station locations.				



Additional stations were evaluated as part of the alternatives analysis process; these stations were not included in the voter-approved ST2 Plan and, if approved, would require additional taxing authority and funding.

P.10

Exhibit 7-19
Level 2 Station Results

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8.0 Next Steps

Based on the results of the Federal Way Transit Extension (FWTE) Project Alternatives Analysis (AA), Sound Transit plans to move forward with developing a major transit capital investment in the corridor between the Angle Lake Station at S. 200th Street and the Federal Way Transit Center. Following the completion of the AA technical analysis, the next step is to share the findings of the AA with the public and agencies to elicit feedback through the environmental scoping process. Following scoping, the Sound Transit Board will decide which alternatives to carry forward for further development, analysis, and environmental review under the National Environmental Policy Act (NEPA) and the State Environmental Policy Act (SEPA). Sound Transit plans to make this decision late this year after consideration of public and agency scoping comments. The public will have the opportunity to learn more about the project and provide comments throughout the duration of the NEPA/SEPA process.

The potential effects of the FWTE Project would be such that a NEPA/SEPA Environmental Impact Statement (EIS) is expected to be prepared to document the impacts of the project alternatives, and inform the decision making process. Work on the Draft EIS will start at the end of 2013 and take approximately 12 to 18 months to complete. A No Build Alternative will be identified to provide the basis for comparison of the impacts and benefits of the build alternatives.

Multiple build alternatives are expected to be studied in the Draft EIS. Following public review and comment on the Draft EIS, the Sound Transit Board of Directors is expected to identify a preferred alternative for study in the Final EIS. Once a preferred alternative has been identified, Sound Transit will begin preliminary engineering on the preferred alternative and develop a Final EIS. Following publication of the Final EIS, the Sound Transit Board is expected to select the project to build and operate. Sound Transit anticipates FTA will issue a Record of Decision (ROD) in 2016 and the project will then move into final design, followed by construction, start-up and testing, and ultimately operation. Service is planned to begin in 2023.

Exhibit 8-1 illustrates the schedule and process steps for the FWTE project.



EXHIBIT 8-1
FWTE Process and Schedule