APPENDIX A – SECTION 7

MOBILITY

A. APPROACH

This analysis explores historical data relating to three mobility topics as they relate to Seattle-Tacoma International Airport for the study period between 1997 and 2019:

- Traffic congestion (travel delay times).
- Parking in residential areas.
- Pedestrian access to and around Seattle-Tacoma International Airport.

Mobility changes attributable to aviation activity were reviewed in the six study area cities. Readily available mobility data (between 1997 and 2019) was reviewed to generate an analysis of existing airport conditions and potential effects in the study area cities. This data included information from the Port of Seattle, the Washington Department of Transportation (WsDOT), Sound Transit, King County Metro, and the six study area cities. Historic and current aerial photographs from Google Earth were also used to notate infrastructure changes within the study timeline.

For this analysis, "readily available" means data sources received from government agencies, information posted on agency websites, interviews from government representatives, and aerial photography; news articles and other non-governmental reports were not included.

It is important to note that no new or special transportation studies originated from this analysis (e.g., traffic counts, traffic/parking studies, field surveys, or the like). The "2015 Inventory of Existing Conditions" by Leigh | Fisher provided baseline conditions at Seattle-Tacoma International Airport. In some situations, comparative and analytical data were unavailable for the study time period; these situations suggest that future studies may be needed. The overall approach of the mobility analysis of the study involved the following steps:

- **Step 1 – Data Collection**
  Collected qualitative and quantitative data ranging from 1997-2019 related to study area infrastructure, transit, traffic, roadway reconstruction, regional parking facilities and trends, and pedestrian access and accommodations.
- **Step 2 – System and Service Changes**
  Identified the changes in mobility infrastructure and services from 1997 to 2019 in and around the airport (e.g., roadways and transit services).
- **Step 3 – Study Area Traffic Effects**
  Identified potential regional and airport-related traffic effects on the transportation networks, specific to the study area cities.
- **Step 4 – Study Area Transit and Parking Effects**
  Identified potential regional and airport-related effects of transit and parking on the regional network.
- **Step 5 – Data Gaps**
  Identified data gaps and needs related to mobility data.
- **Step 6 – Recommendations**
  Identified future actions to better track, determine, and mitigate airport mobility effects on the study area cities.

B. AIRPORT MOBILITY INFRASTRUCTURE

The infrastructural changes to Seattle-Tacoma International Airport from 1997 to 2019 that affect the regional transportation network and surrounding communities were noted. This included existing conditions and significant infrastructure changes related to roadway access, passenger and employee parking, and rental car facilities, as well as off-airport parking facilities and passenger volume trends. This information will help establish a baseline for potential effects on other mobility issues in the vicinity.

Rental Car Facility

In 2010, the airport broke ground on a new consolidated rental car facility that merged airport rental car services to a new facility approximately 1½ miles north of the main terminal along U.S. Highway 99 at South 160th Street. The new 2.1 million-square-foot facility operates 24 hours a day and supports all 14 current rental car companies. Figure 7.1 lists the vehicle rental vendors located at the consolidated rental car facility.

Figure 7.1
Car Rental Companies at the Consolidated Car Rental Facility

Rental Car Companies	
Alamo	Fox Rent A Car
Avis	Hertz
Budget	National
Dollar Car Rental	Payless
Enterprise	Rent-A-Wreck
E-Z Rent-A-Car	Sixt Rent A Car
Firefly Car Rental	Thrifty Rental Cars

When the rental car operation relocated to the new consolidated facility, approximately 3,000 parking spaces (up to two floors) relocated from the main parking garage (adjacent to the terminal) to this new off-site facility. The vacated spaces in the main garage are now open to public use. On average, passenger shuttle services between the main terminal and car facility serve around 1,500 passengers during peak periods. In review of readily available studies and reports, the consultant team was unable to identify customer demand and rental vehicle use.

Prior to the construction of the consolidated rental car facility, rental agencies and the associated vehicles were housed in the main parking garage; customers could lease and pick up their rental vehicles across from the terminal. Now, customers must access the facility via a shuttle service from the main terminal to the remote location. Currently, the Port of Seattle operates two routes using 29 dedicated shuttle buses that bring passengers to and from the terminal to the consolidated rental car facility. All shuttles drop off and pick up passengers at the arrivals and departures curb. A dedicated, 24-hour shuttle bus service operates 365 days a year, and passengers experience a headway of up to five minutes during peak periods.

The consolidated rental car facility changed traffic patterns and accessibility. Prior to the construction of the consolidated rental car facility, rental car movements originated from the airport's main parking garage with direct access to the Airport Expressway and U.S. Highway 99. From there, vehicles could access State Route 518, Interstate 405, and Interstate Highway (IH) 5. Now, rental car movements originate further north along U.S. Highway 99 and South 160th Street, with more direct access to the regional and local roadway networks. A new northbound on-ramp from South 160th Street allows rental vehicles to access the northbound lanes on the Airport Expressway to connect to State Route 518.

The consolidated rental car facility resulted in the following notable changes/additions:

- Rental car operations were relocated from the main parking garage adjacent to the terminal to a remote location 1½ miles to the north.

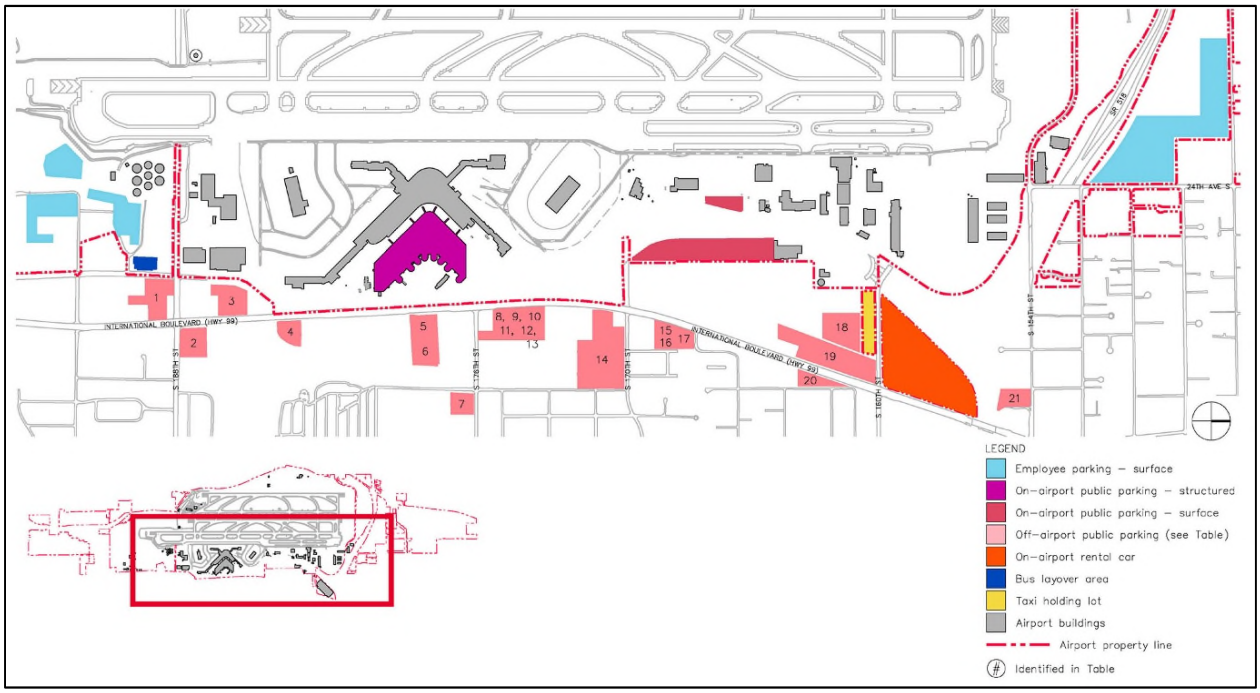
- The new facility requires customers to take a shuttle bus to the new facility. Before, customers could walk from the terminal to the rental agencies in the adjacent garage.
- Rental cars exit and arrive at the new remote facility and use U.S. Highway 99/South 160th Street. Before, rental cars used the main parking garage entrances/exits near the terminal (U.S. Highway 99 at South 182nd Street or the southern terminus of the Airport Expressway).

Airport Passenger Parking Lots

Airport passengers and patrons (non-employees) have multiple vehicle parking options to access the terminal, including the airport's main garage and various off-site private parking lots.

Each of these options varies in parking rate and convenience, depending on length of stays. The associated fees for these options change depending on the duration of the vehicle's stay. The following subsections summarize the availability and changes to the airport-related parking facilities. In review of readily available studies and reports, the consultant team was unable to identify the airport's historic parking demand or use rates.

Figure 7.2
Existing Airport-Related Parking Facilities as of 2015



Seattle-Tacoma International Airport Main Garage

In 2000, the Port of Seattle expanded airport passenger parking facilities from 10,000 to 13,000 parking spaces by rehabilitating the main parking garage (located adjacent to the main terminal).

By 2012, passenger parking capacity increased by an additional 3,000 stalls when all rental car operations were shifted to the consolidated rental car facility. As of 2019, the garage provides approximately 11,000 parking spaces for public parking, with an additional 2,000 spaces reserved for handicap accessible (ADA) stalls, electric vehicle charging stations, employee parking, maintenance vehicles, and out-of-service parking spaces. Of the 2,000 spaces, 766 are dedicated to airport employee parking. The Port of Seattle also provides 95 parking spaces for over-height vehicles located east of the main garage exit plaza.

The Port of Seattle charges fees to park at the main garage – $5 per hour, $32 per day, and $149 per week. Monthly parking is $375, with an optional discounted corporate daily rate of $22. (All rates are inclusive of taxes. The most recent rate increases occurred in July 2019).

In review of readily available studies and reports, the consultant team was unable to identify the airport's historic parking demand or use rates or the historical parking fee rates. The modified main parking garage resulted in the following notable changes/additions.

- The garage expansion added 3,000 parking spaces in 2000.
- The new consolidated rental car facility reallocated approximately 3,000 in the airport's main garage spaces from rental car companies to other airport users (e.g., passengers, employees, and maintenance).
- The Port of Seattle increased the parking fees in July 2019.

Private Airport Parking Lots

The vicinity also has multiple vendors that provide private, off-site parking for airport patrons. Most of these vendor lots provide shuttle service to the terminal. Based on a 2014 inventory, there are approximately 19,069 off-airport parking spaces available in nearby communities of SeaTac, Burien, and Tukwila. Approximately 14,345 of the spaces are open for airport specific parking, and the remaining 4,769 spaces are available for hotel patrons but are periodically available to airport passengers for a fee. Based on a desktop review of vendor websites, private vendor lots charge fees ranging from $11 to well above $16 per day to park; most vendor parking fees are also subject to state and local sales tax. The nearby off-airport private parking lot facilities are detailed in Figure 7.3, based on the 2014 inventory.

Based on readily available document reviews, the consultant team could neither identify historical changes in private parking lot availability nor determine the customer demand and use rates over the duration of the study time period.

Airport Cell Phone Lot

A new cell phone lot is located south of South 170th Street between the Airport Expressway's north and southbound lanes (constructed in 2014). This lot is an alternate option for people waiting to pick up arriving passengers rather than circulating around the terminal. The lot has 250 spaces, is free to use, and permits vehicles to idle in the lot for up to 20 minutes. There is a southbound on-ramp to the Airport Expressway near the west end of South 170th Street via Air Cargo Road, whereas there is no direct northbound on-ramp to the Airport Expressway from South 170th Street.

Prior to 2014, the previous cell phone lot had approximately 100 spaces and was located west of Air Cargo Road and to the north of South 170th Street. Based on review of readily available studies and reports, the consultant team was unable to determine the parking use rates at the cell phone lot.

The new cell phone lot resulted in the following notable changes/additions:

- The new relocated lot was relocated from Air Cargo Road to South 170th Street between the north and southbound lanes of the Airport Expressway.
- It provided 250 parking spaces, up from 100 spaces at the previous lot.
- The new lot is accessible via South 170th Street and a direct off-ramp from the Airport Expressway.

Figure 7.3
Private Off-Airport Parking Lot Inventory (2014)

Vendor	Surface Lot or Garage	Estimated Capacity	Estimated Capacity for Airport	Shuttle Provided?
MVP Airport Parking	Lot	362	362	Y
Doubletree Inn Seattle Airport	Lot	852	2170	Y
WallyPark, Premier Garage	Garage	1,600	1,600	Y
MasterPark, Lot A	Lot	441	441	Y
WallyPark, Self-Park Lot 2	Lot	319	314	Y
WallyPark, Valet-Only	Lot	806	806	Y
Marriott Hotel Seattle Airport	Garage	529	na	Y
Clarion Hotel Seattle Airport	Lot	253	51	Y
Park N Fly Seattle	Lot	293	293	Y
Holiday Inn Seattle Airport	Garage	219	44	Y
Rodeway Inn	Lot	75	15	Y
Jet Motel	Lot	313	63	Y
Sea-Tac Inn & Airport Parking	Lot	116	23	Y
MasterPark, Lot B	Lot	2,237	2,237	Y
Red Roof Inn Seattle	Lot	52	10	Y
MasterPark, Valet Garage	Garage	1,000	1,000	Y
Ramada Inn & Suites SeaTac	Lot	132	26	Y
MPark	Lot	660	na	Y
MasterPark, Lot C	Lot	1,337	1,337	Y
Extra Car Airport Parking	Lot	359	359	Y
Ajax Parking, Lot 1	Lot	185	185	Y
Americas Best Value Inn	Lot	216	43	Y
Skyway Inn Airport Parking	Lot	295	59	Y
SeaTac Park.com	Lot	1,162	1,162	Y
Sandstone Inn Airport Parking	Lot	379	76	N
Super 8 Motel	Lot	295	59	Y
Thrifty Car Rental	Lot	924	924	Y
Sea-Tac Crest Motor Inn	Lot	140	28	Y
Aeroparking	Lot	380	na	Y
E-Z Airport Parking	Lot	453	453	N
ShuttlePark2	Lot	1,051	1,034	Y
Knights Inn SeaTac Airport	Lot	36	na	Y
Ajax Parking, Lot 2	Lot	701	733	Y
Park N Jet, Lot 2	Lot	459	na	Y
Park N Jet, Lot 1	Lot	438	438	Y
	TOTAL SPACES	**19,069**	**14,345**	

Source: Port of Seattle 2014/Inventory of Existing Conditions Seattle-Tacoma International Airport, March 2015 (Leigh Fisher)

Airport Employee Parking Lots and Permits

As of 2017, Seattle-Tacoma International Airport provided jobs to 19,100 individuals, employed by the Port of Seattle, private vendors, airlines or by various service companies. Approximately 18.1% of these individuals (3,460 persons) reside in one of the study area cities. Based on review of readily available studies and reports, the consultant team was unable to identify historic airport employment trends, employee parking demands, use, and changing fees over the course of the study time period.

The Port of Seattle provides on-site parking locations for the airport's employees at five main areas:

- **North Employee Parking Lot (NEPL)**
  This is a new remote parking lot located north of the airport runways along 24th Avenue South, providing 4,777 employee parking spaces. The Port of Seattle constructed this parking facility and opened it for use around 2000.
- **South Employee Parking Lot (SEPL)**
  This is a collection of multiple surface lots that contain approximately 1,091 spaces dedicated for employee parking. This collection of lots is located south of the airport along 28th Avenue South between South 188th and 192nd Streets.
- **Main Parking Garage**
  The first floor of the main parking garage (adjacent from the terminal) provides 766 parking spaces dedicated to employee parking.
- **Main Parking Garage Toll Plaza**
  There is a small surface lot with 27 employee parking spaces adjacent to the main parking garage toll plaza.
- **Various Air Cargo Areas**
  The hangars, offices, and operation buildings along Air Cargo Road have several isolated parking lots. The Port of Seattle reports do not include the parking space quantities for these areas.

Employees who choose to park at one of the airport's parking facilities must possess a permit and pay an associated fee. Specifically, employees who choose to park at an airport facility have three permit options:

- Standard Monthly Parking Pass ($76 per month) – Gives employees unlimited access to the employee parking lot and shuttle bus service.
- Carpool Value Pass ($30 per month) – Provides limited access to the NEPL and shuttle buses, and allows permit holders to park only in the NEPL up to eight days a month. This permit applies to employees who hold a One Regional Card for All (ORCA) transit card purchased by their employer.
- Employee Rider Pass ("R-Pass", $19 per month) – Does not allow employees to park in the NEPL but provides access to the employee parking shuttle buses.

Employees can deposit their monthly parking permit payments through an online payment portal, mail, or drop boxes distributed across the airport property.

To access the remote parking lots, the Port of Seattle maintains a fleet of 16 buses dedicated to shuttling employees from on-and off-site offices/work zones to parking facilities. The shuttles operate 24 hours a day, every day, including holidays. Northbound stops are located at the south tunnel and at the north tunnel. Employees waiting at each stop experience an average headway of 10 minutes. R-Pass Permit holders using the shuttle service must request a stop along Air Cargo Road. At the time of this analysis there was no information available for previous employee parking rates and pass options.

Airport Expressway

In 2007, the Port of Seattle began construction on the Airport Expressway to enhance circulation between terminal, parking facilities, and major roadways. The Airport Expressway is classified as a port arterial (otherwise classified as a limited access freeway) and is the primary roadway access to the terminal from State Route 518. Airport Expressway provides access to Air Cargo Road via South 170th Street, whereas there is no northbound on-ramp from South 170th Street.

Airport Expressway included the following changes/additions:

- The northbound lanes just north of the main parking garage in the vicinity of South 170th Street were realigned approximately 450 feet to the east, creating a new location for the cell phone parking lot. This alignment coincided with Sound Transit's light rail extension to the airport.
- Airport Expressway added a new flyover ramp for northbound vehicles to return south to the main terminal and parking garage. This flyover ramp is just south of South 160th Street.
- Airport Expressway enhancements also reconfigured ramps to South 170th Street and added a northbound ramp from South 160th Street, which services exiting vehicles from the consolidated rental car facility.

Before the improvements to the Airport Expressway, those traveling along Air Cargo Road could not directly access State Route 518 via South 160th Street. Furthermore, there was not a continuous roadway option for northbound travelers to return to the terminal or parking garage.

Passenger Volumes and Trends

Since 1997, Seattle-Tacoma International Airport has doubled its total passenger volumes. In 1997, it averaged around 25 million passengers a year, and saw around 3.4 million through passengers (airline passengers who arrive at the airport and connect to another flight). By 2007, the passenger volumes increased by 21%, and through passengers increased by around only 300,000. By 2019, total annual passengers were 49.8 million passengers, with roughly 5 million through passengers.

In 2017, the Port of Seattle conducted a passenger survey to assess transportation mode trends. The results stated that up to 23% of survey participants visiting the airport take single occupancy vehicles, and 31% take rideshare or a private car service. However, only 10% of survey participants indicated that they take light rail or bus services to the airport.

Effects on Mobility

The consultant team identified the following potential effects the changes to the airport infrastructure may have contributed to the study area cities and the airport itself. These potential effects were identified based on the analysis and findings in the preceding subsections. (The existence of inconclusive findings is also acknowledged based on the lack of readily available information through the study process.)

- **Consolidated Rental Car Facility**
  The consolidated rental car facility changed rental car traffic from the terminal vicinity to South 160th Street and the northern segments of U.S. Highway 99 near State Route 518. This shifted rental vehicle movements to this northern location. The consolidated rental car facility requires customers to access rental agencies via shuttle bus service that uses Air Cargo Road and South 160th Street, adding frequent shuttle bus movements to these roadways. No information could be found to determine the number of vehicle movements in and out of the consolidated rental car facility or pertaining to the annual volumes of rental car customers at this location. However, the remote rental location does require the continuous operation of a shuttle service between the terminal and the facility, which adds distance and travel time to potential customers arriving at the airport.

- **Main Garage Expansion**

  The parking garage expansion increased parking capacity at the terminal by 3,000 spaces. Furthermore, the consolidated rental car facility freed up an additional 3,000 spaces at the garage. The increased parking capacity at the terminal accommodates more vehicles, and thus promotes additional vehicle traffic on surrounding roadways. Additional study is necessary to determine historical and current parking occupancy and demand for the main parking garage. And additional study is necessary to determine whether parking rates affect airport patrons' mobility choices and behavior (e.g., transit, rideshare or other modes). The parking garage does generate income from parking fees and additional parking capacity, and availability may encourage additional vehicle traffic on internal roadways, thus contributing to traffic congestion at the airport.

- **Private Airport Parking Lots**

  The privately operated airport parking lots provide alternative parking choices. These lots reduce the number of personal vehicles entering the airport; however, they create additional traffic patterns on roadways in the vicinity. Additional study is necessary to determine the vehicle movement patterns around the private airport parking lots, as well as occupancy and demand for each private airport parking lot. However, private parking lots do provide an alternative to the main garage at the airport and could free up capacity. Concurrently, these facilities capture parking revenues that may otherwise go to the Port of Seattle.

- **Cell Phone Lot**

  The new cell phone lot added capacity by 150 spaces from the previous lot and has a direct off-ramp for southbound traffic to access the lot before reaching the terminal. However, there is not a direct northbound on-ramp from the cell phone lot onto Airport Expressway, which requires northbound vehicles to use U.S. Highway 99. The added capacity allows additional vehicles to wait at a central location to pick up airport passengers rather than circulating on area roadways. Additional study would be necessary to determine the number of vehicle movements in and out of the cell phone lot, as well as the daily use, duration, and availability of parking spaces.

- **Employee Parking**

  The Port of Seattle constructed and opened the NEPL in 2000. This added parking capacity for airport employees and added vehicle movements to 24th Avenue South and the adjacent roadways. Furthermore, a shuttle service provided continuous trips between the new employee lot and various drop-off locations in and around the airport. Additional study is necessary to determine the number of vehicle movements in and out of the employee parking lots, the historical and current parking occupancy and demand for the employee parking lots; parking capacity pertaining to future airport employee projections, or employee parking locations prior to the NEPL's opening in 2000. However, the NEPL and SEPL require operation of a shuttle bus service, not only contributing to an employee's commute time but also requiring an ongoing capital expense to maintain the service. The Port must also manage its existing own parking permit program.

- **Airport Expressway**

  The roadway modifications to the Airport Expressway included additional ramps on the South 160th and South 170th Street, which added additional routes for area vehicles. At the same time, the new ramp on South 160th Street allows vehicles exiting the consolidated rental car facility to have direct access to the expressway and regional highway connections. The airport also doubled its passenger volumes since 1997, increasing mobility demands on the regional transportation networks including roadways and transit services. Additional study would be necessary to accurately determine the passenger transportation modes to and from the airport since 1997.

C. GROUND TRANSPORTATION INFRASTRUCTURE

The roadway network infrastructure changes from 1997 to the present were researched to determine what effect airport-related traffic may have on the local network. Historic vehicle count data at key intersections and roadways in the study area cities was reviewed, including infrastructure changes to roadways and intersections, and an assessment of the effects of these changes on the local and regional roadway network. This helps to understand and evaluate vehicle flow, congestion, and segments in proximity to the Seattle-Tacoma International Airport and regional network. The same roadway intersections were also included from the 1997 study. This section provides high-level recommendations based on the data collected and observed effects.

Trendline Analysis

Major roadways evaluated in this analysis are included in Figure 7.4. The consultant team focused on improvements to major thoroughfares that affect regional mobility and connections to/from the airport; smaller local street improvements were not examined.

Overall, roadway improvements along major arterials appear to have been focused on lane expansion and accommodations for various modes of transit including light rail, bus services, and bus rapid transit, as well as pedestrian accommodations. Among these transit-related improvements are the implementation of more high-occupancy vehicle (HOV) lanes dedicated for transit and personal vehicles with at least two passengers, which can create a more reliable transit service and better connect roadways to transit centers. Other transit improvements included the light rail expansion, which helped to connect the airport to the cities of SeaTac, Tukwila, and Seattle.

Roadways have also been constructed/expanded on the airport property to accommodate new facilities, such as the expanded main parking garage, cell phone parking lot, transit stations, and the consolidated rental car facility. By reconstructing and realigning roadways on the airport property, the airport is better connected to the regional transportation network and surrounding communities.

Improvements constructed between 1997 and 2007 primarily focused on major roadway widening, adding local roads adjacent to the airport, and adding HOV facilities on major arterials to accommodate transit services.

Improvements between 2008 and 2019 focused on adding more on-and off ramps to state routes, adding connections to critical arterials in the local roadway network, and implementing streetscape improvements to accommodate transit, bicycle, and pedestrian modes. A list of all major roadway improvements is detailed in Figure 7.5.

Most changes occurred on the eastern side of Seattle-Tacoma International Airport, including Military Road South, 28th Avenue South and 24th Avenue South. Another important infrastructure change included the addition of on-and off-ramps around State Route 518 and Des Moines Memorial Drive, creating direct access from a state route to local roads surrounding the airport.

Figure 7.4
Key Roadways in the Study Area

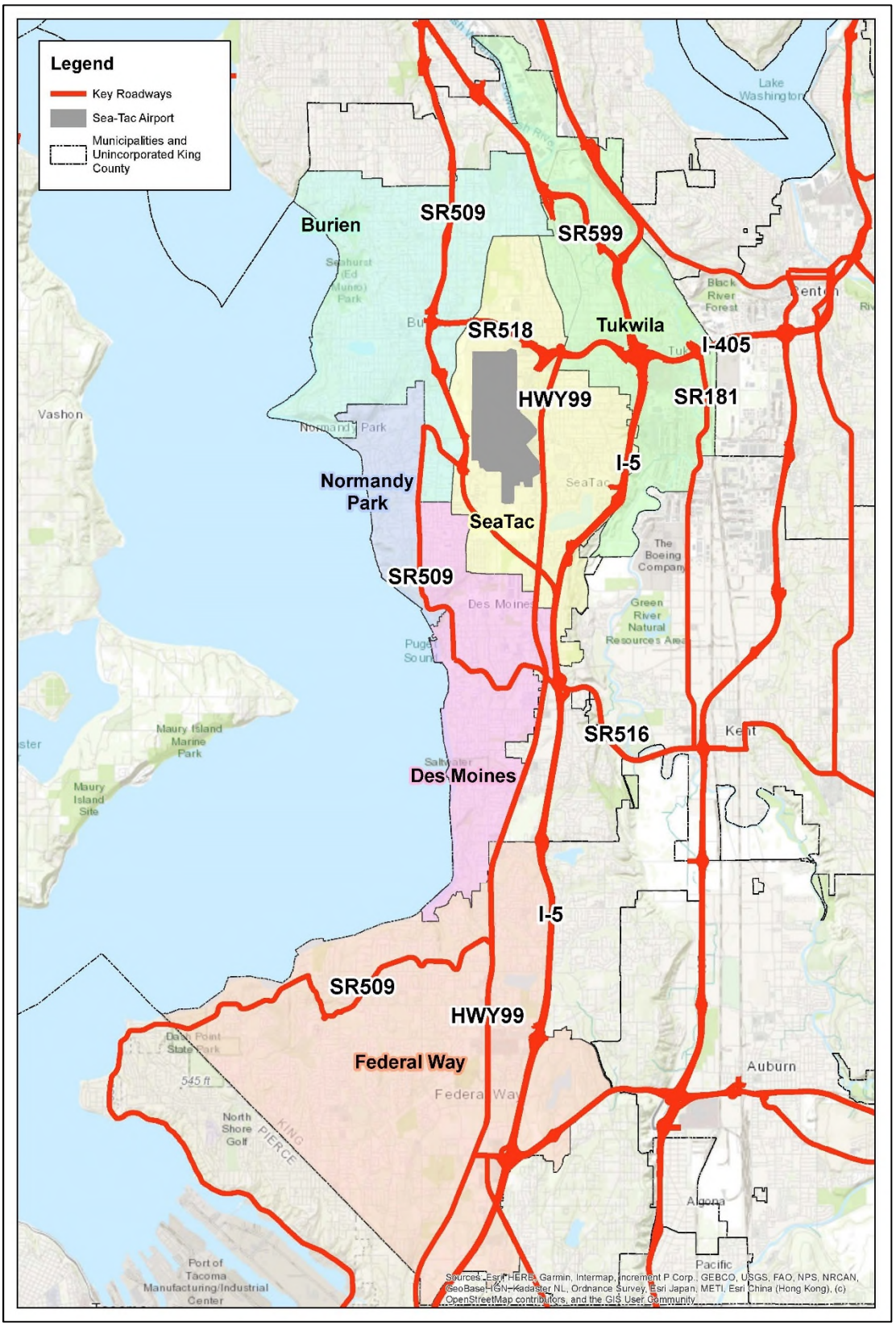


Figure 7.5
Major Roadway Improvements Surrounding Seattle-Tacoma International Airport: 1997-2019

Roadway Project	Details
28th Avenue South	▪ Widened lanes at South 200th Street and 28th Avenue South. ▪ Completed in early 2000s.
U.S. Highway 99	▪ Added HOV lanes in mid-1990s. ▪ Widened roadway between 2005 and 2006 to accommodate sidewalks, landscaping, and pedestrian facilities. Added southbound HOV lanes. ▪ Completed in early 2000s.
IH-5/405 Transit/HOV Bypass	▪ Added an HOV bypass lane at the IH-5 and IH-405 interchange in both the southbound and northbound directions. ▪ Provides by-pass lanes for transit and HOVs through the interchange.
Airport Expressway	▪ Added a new regional expressway reconfiguration, 3 to 5 travel lanes, and northbound on-ramp near the terminal. ▪ Completed around 2007.
Federal Way Transit/ HOV direct on-ramp	▪ Added on-ramp, highway overpass/bridge, and roundabout at 28th Avenue South and South 317th Street. ▪ Provides direct access to IH-5 from the transit center via a HOV lane/ on-ramp.
Des Moines Memorial Drive Ramps	▪ Added a new two-lane off-ramp from eastbound State Route 518 to Des Moines Memorial Drive (improved both freight and vehicle access). ▪ Relocated southbound ramp to create a connection to eastbound State Route 518. ▪ Removed left turn lane and relocated northbound ramp to more easily connect to eastbound State Route 518. ▪ Completed in 2017.
Military Road South Improvements	▪ Improved Military Road South between South 176th Street to South 166th Street. ▪ Reconstructed roadway to accommodate continuous center-turn lane, curb, gutter, drainage, lighting, signal timing, underground utilities, and landscaping improvements. ▪ Completed in 2015.
South 154th Street Improvements	▪ Constructed eastbound and westbound sidewalks and bicycle facilities. ▪ Reconstructed travel lanes and added new turning lanes. ▪ Completed in 2014.
28th Avenue South to South 24th Avenue South Connection	▪ Connect 28th Avenue to 24th Avenue South. ▪ Add roadway between South 200th Street to South 208th Street. Consisted of landscaped median, 2 northbound lane, and 2 southbound lanes. ▪ Add northbound and southbound elevated shared pathway. ▪ Completed in 2018.
24th Avenue South	▪ Widened lanes on 24th Avenue South from South 208th Street to South 216th Street. ▪ Provided additional travel lanes, bicycle lanes, curb, gutter, and sidewalks. ▪ Completed in 2014.
South 216th Street	▪ Added a continuous center-turn lane, bicycle lanes, transit stops, curb, gutter, and landscaping improvements, and sidewalks. ▪ Completed in 2014.

Traffic Data History 1997 to 2019

Traffic data was reviewed for 1997 to 2019 as available. Data included annual average daily traffic (AADT) trends on key regional roadways, vehicles per day (vpd) data, level of service (LOS), and vehicle delay at critical intersections and segments around the airport. Data and highlighted intersections detailed in the Table 3.1.3.c. are pulled from the 1997 study and were used as a baseline for comparing traffic changes.

The consultant team reviewed publicly available data from the WsDOT and the 2015 City of SeaTac Transportation Master Plan; whereas, the SeaTac Transportation Master Plan had data that better aligned with the intersections from the 1997 study. Moreover, the WsDOT data showed traffic volume changes in the region but focused less on the airport. This was important to acknowledge that traffic has been increasing around the region and potentially independent of the airport growth and expansion.

After reviewing publicly available WsDOT AADT traffic count data from 2005 to 2018, the consultant team discovered that the locations of traffic count meters during this timeframe for intersections, approaches, and ramps were in scattered locations and inconsistent. Historic and current WsDOT AADT traffic section data (as opposed to the traffic count data) were also reviewed to better understand traffic trends on major roadways in the region. WsDOT collects traffic section data using traffic counts located at different "mileposts." Sections along roadways are then created between various mileposts. WsDOT traffic count data includes historic and current traffic data located at specific points along roadways. Roadways containing WsDOT traffic section data reviewed in this section include U.S. Highway 99, State Route 509, State Route 599, State Route 518, State Route 516, State Route 181, IH-5, and IH-405.

- **2005 Baseline**

  The consultant team used readily available WsDOT AADT from 2005 as a baseline to compare traffic volume increases on the state roadways around the airport. As seen in Figure 7.7, most major roadways experienced an AADT of 25,000 to 50,000. Following are observations for notable highways near Seattle-Tacoma International Airport in 2005.

  State Route 509 functioned well, as it saw AADT volumes of around 10,000. IH-5 experienced volumes of approximately 150,000 to 250,000. Roadways containing volumes like these are categorized as "high volume routes." The IH-5/IH-405 Interchange and approaches experienced AADT volumes between 75,000 and 150,000.

- **2018 Comparison**

  In 2018, AADT on major roadways slightly increased. As seen in Figure 7.8, most roadways saw a maximum of 75,000 AADT, with a few exceptions:

  - U.S. Highway 99 and State Route 509 experienced AADT volumes between 25,000 and 50,000.
  - State Route 518 experienced between 50,000 and 75000 AADT.
  - AADT at the exits at State Route 518, and U.S. Highway 99 and State Route 518 approaches to U.S. Highway 99 increased to 50,000 to 75,000.
  - Most of IH-5 in the study area experienced 200,000 to 260,000 AADT.
  - IH-405/State Route 518 around the IH-5 and IH-405 interchange saw between 100,000-150,000 AADT, which is also considered as a "high volume route."

Figure 7.6
2009 Average Annual Daily Traffic

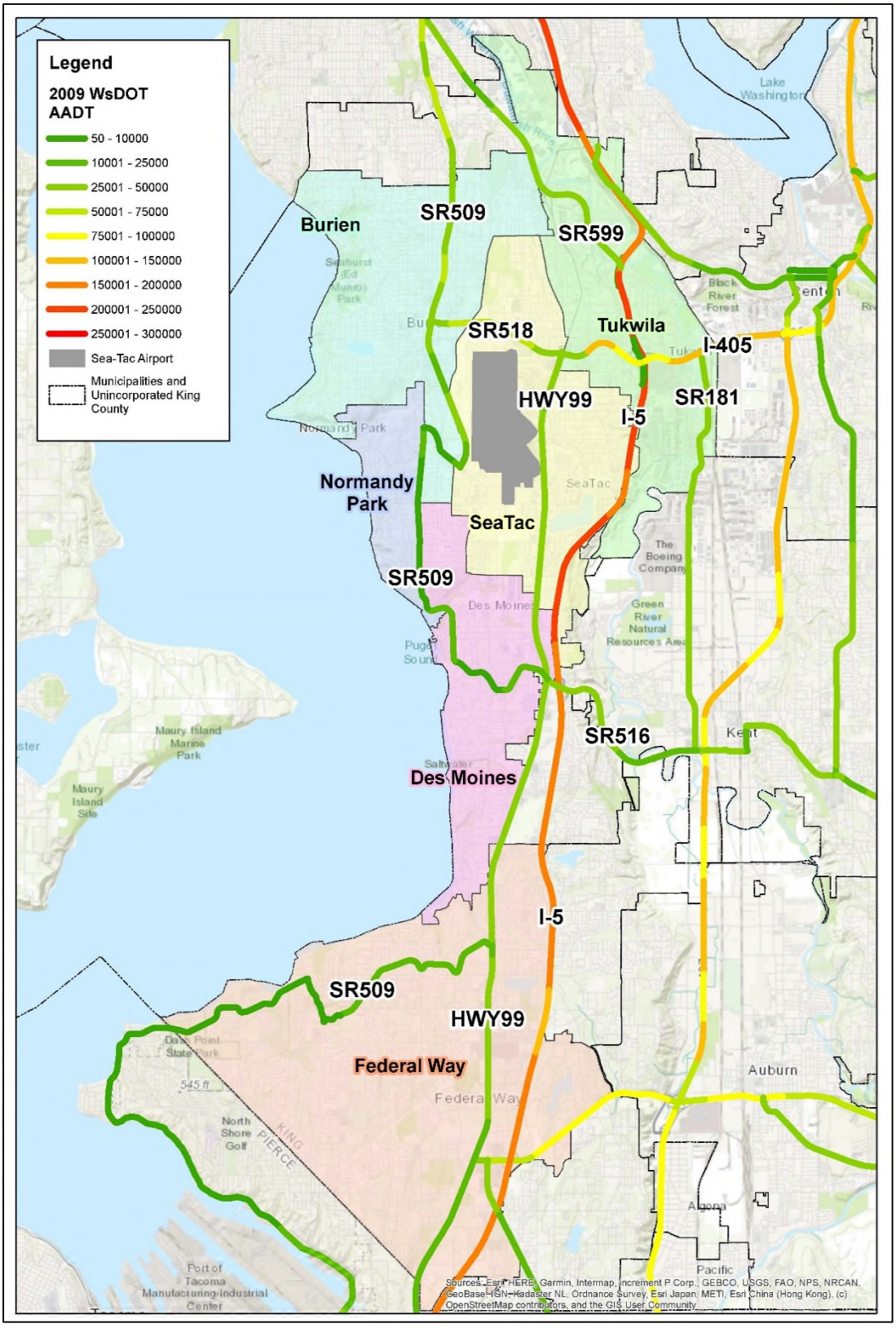
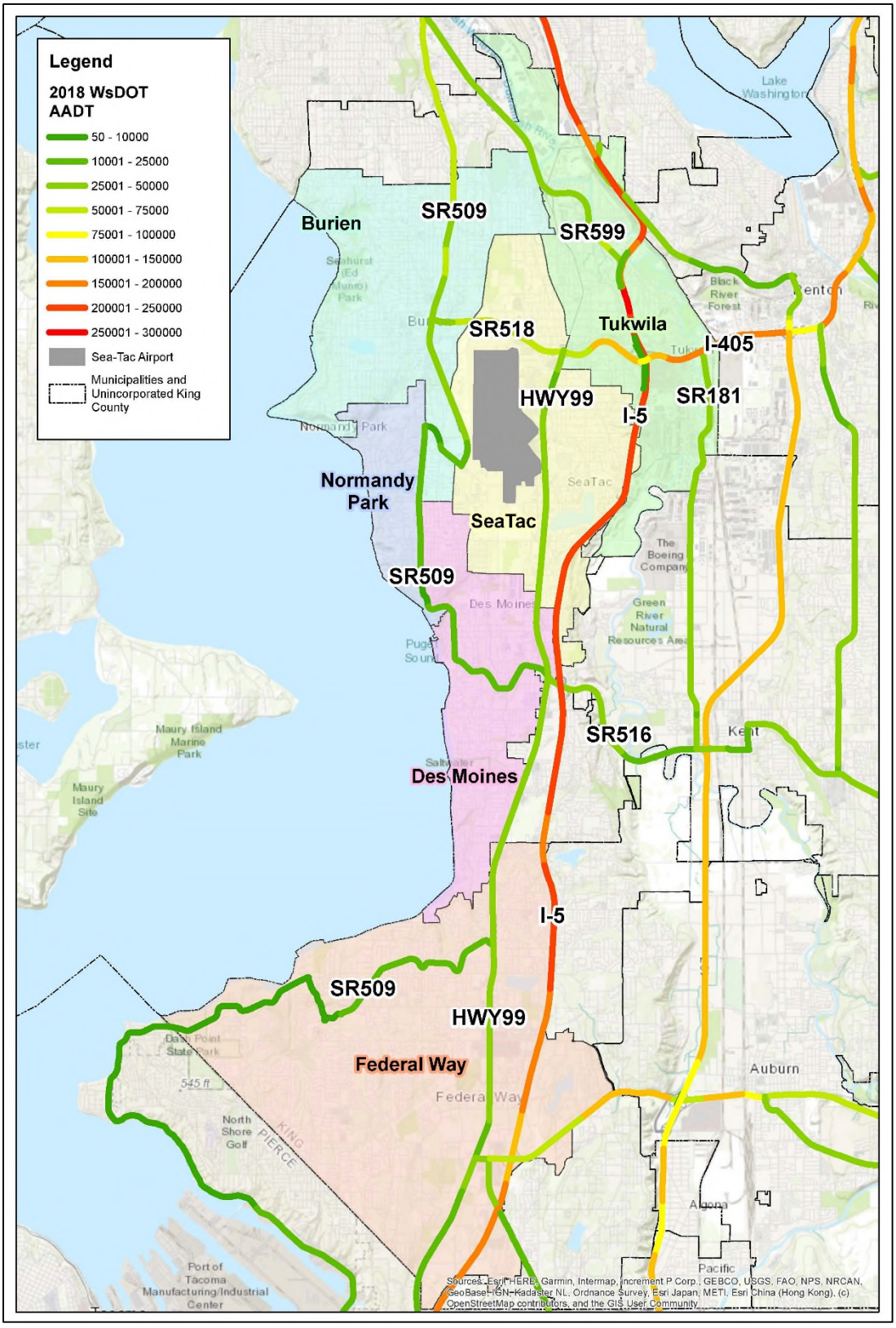


Figure 7.7
2018 Average Annual Daily Traffic



The city of SeaTac Transportation Master Plan also provides observations on traffic congestion data on key arterials in and around the airport. This master plan data focused on the 2011-2013 timeline. The following lists notable observations:

- Between 2011 and 2013, U.S. Highway 99 between South 150th Street and South 216th Street saw approximately 25,600 vpd.
- Volumes increased to around 30,000 to 35,000 vpd between State Route 518 and South 200th Street.
- U.S. Highway 99 south of South 200th Street experienced lower volumes of around 28,300 vpd.
- On the west side of the airport, the northern portion of Des Moines Memorial Drive South experienced lower volumes than U.S. Highway 99 during 2011-2013, seeing around 7,000 vpd. The southern section of Des Moines Memorial Drive South (south of State Route 518) saw increased volumes of almost 9,000 vpd, as it is a primary connection to State Route 518 and the city of Burien.
- The northern segment of the Airport Expressway (below State Route 518) saw more than double the amount of traffic volumes of U.S. Highway 99, with about 58,000 vpd. These are like the volumes collected in 2011-2013 on State Route 509 and State Route 518.
- Larger roadways such as IH-5 (south of IH-405 to Military Road) displayed consistent traffic volumes of around 202,000 to 204,000 vpd during 2011-2013. This is more than 50% above the projected AADT seen in the 1997 study, which projected that the airport would experience 130,000 AADT by the year 2020. However, the projection stated in the 1997 study does not specify what roadways were considered within the "airport" traffic analysis.

In the above analysis, the most recent traffic data pulls from publicly available local transportation mitigation plans.

Vehicle Delay and Level of Service

Vehicle delay and level of service data provide insight on traffic congestion issues at key locations and roadway segments in a transportation network, as well as highlight areas that experience high or low traffic. A level of service (LOS) category is a measurement of speed, travel time, comfort, and delay that helps understand traffic flow and operations within a transportation network. Figure 7.8 provides an overview of the Highway Capacity Manual Level of Service categorization used for the current data. Signalized intersections use average delay per vehicle, whereas unsignalized intersections use average delay per vehicle of the worst approach in an intersection during the peak hour of traffic to determine the Level of Service category.

Figure 7.8
Level of Service Methodology and Description

Level of Service	Control Delay (per vehicle)	Description
Level of Service "A"	10	Free Flow
Level of Service "B"	>10-20	Stable flow (slight delays)
Level of Service "C"	>20-25	Stable flow (acceptable delays)
Level of Service "D"	>35-55	Approaching unstable flow (tolerable delay, occasional wait through more than one signal)
Level of Service "E"	>55-80	Unstable flow (intolerable delays)
Level of Service "F"	>80	Forced flow (jammed)

Figure 7.9
Study Area Adopted Level of Service Standards

Jurisdiction	Level of Service Standards by Facility or Area
WsDOT	▪ Highway of Statewide Significance (HSS) Facilities – LOS "D" or better in urban areas ▪ HSS Facilities in rural areas – LOS "C" or better
City of Burien	▪ Roadways within Urban Center – LOS "E" ▪ Roadways designated as auto/truck priority routes – LOS "D" ▪ All other roadways – LOS "D"
City of Des Moines	▪ All roadways – LOS "D" or better (based on the AM or PM peak hour) ▪ Selected intersections along major arterials and in the marina District – LOS ""E" or "F"
City of SeaTac	▪ Principal or minor arterials – LOS "E" or better ▪ Collector arterials and lower classification streets – LOS "D" or better
City of Tukwila	▪ Non-residential arterial intersection – LOS "E" ▪ Minor and collector streets in residential areas – LOS "D" ▪ Corridors in the Southcenter area – LOS "E"

The level of service analysis completed in the transportation chapter of the 1997 study were pulled from the 1994 Airport Environmental Impact Statement (EIS). Findings from the 1994 EIS state that entry points surrounding the airport functioned at a Level of Service "F," which signifies poor traffic conditions. Most of the intersections that displayed poor level of service are located on the eastern side of the airport. Other intersections located on the western side of the airport experienced acceptable levels of service (LOS "A" to "B"). The current (2014) level of service and delay data used in Figure 7.9 use the methodologies and ranking system from the Highway Capacity Manual from the Transportation Research Board. It reflects afternoon peak hour data for both signalized and unsignalized intersections. WsDOT, and the cities of Burien, Des Moines, SeaTac, and Tukwila have adopted LOS standards for key arterials in the region and in their communities. The adopted LOS standards for each municipality and WsDOT are listed in Figure 7.8 (above). Setting LOS standards promote roadways that encourage the use of alternative transportation modes, as well as consider the limitations of redesigning and reconstructing roadways.

Figure 7.10 provides a comparison of operating level of service and average delay per vehicle at key intersections and along roadway segments surrounding Seattle-Tacoma International Airport, which also provides an analysis of the change in these traffic measurements since 1997. (The 1997 traffic data pulls from the 1997 study and the 2014 data is pulled from the city of SeaTac's 2015 Transportation Master Plan.) LOS categorizations represent the existing operations (as of 2014) as defined by the Highway Capacity Manual; they do not represent municipal and state agency adopted level of service standards.

Key intersections and roadways such as IH-5, U.S. Highway 99, State Route 518 and State Route 509 experienced an increase in the traffic data reviewed by the consultant team. Des Moines Memorial Drive, Military Road, and 28th Avenue South saw notable increases in average delay between 1997 and 2014. AADT data reviewed from 2009 and 2018 convey that IH-5 and major interchanges in the study area experienced high AADT volumes.

Figure 7.10
Level of Service and Vehicle Delay at Critical Traffic Segments

Intersection Number and Name	1997 Average Delay (sec./veh.)	1997 Operating LOS	2014 Average Delay (sec./veh.)	2014 Operating LOS	Average Delay Change	LOS Change
SB State Route 509 ramps at State Route 518	10.7	B	- - -	- - -	- - -	na
NB State Route 509 ramps at State Route 518	1.8	A	- - -	- - -	- - -	na
US Highway 99 and South 154th	34.8	D	46	D	32%	Neutral
US Highway 99 and South 160th	21.1	C	28	C	33%	Neutral
US Highway 99 and South 170th	60.8	F	43	D	-29%	Improved
US Highway 99 and South 176th	18.8	C	28	C	49%	Neutral
US Highway 99 and South 180th	15.9	C	- - -	- - -	- - -	na
US Highway 99 and South 188th	247.4	F	68	E	-73%	Improved
US Highway 99 and South 192nd	- - -	F	10	A	- - -	na
US Highway 99 and South 200th	37.7	D	58	E	54%	Worsened
US Highway 99 and State Route 518	49.4	E	11	B	-78%	Improved
24th Avenue South and South 154th/156th	8.1	B	9	A	11%	Improved
Des Moines Memorial Drive South and South 15Sth Street * (2011)	**7.6**	**B**	**33**	**C**	**334%**	**Worsened**
Des Moines Memorial Drive South and South 160th Street	6.8	B	8	A	18%	Improved
NB State Route 509 ramps at South 160th St.	- - -	C	- - -	E	- - -	Worsened
SB SR 509 ramps at South 160th St.	- - -	E	- - -	E	- - -	Neutral
Air Cargo Rd. and South 160th Street	5.1	B	- - -	- - -	- - -	Neutral
Air Cargo Road at SB Airport Expressway Ramps	- - -	D	- - -	- - -	- - -	Neutral
Air Cargo Rd. and South 170th Street	15.8	C	- - -	- - -	- - -	Neutral
NB Airport Exp. and South 170th St.	- - -	C	- - -	- - -	- - -	Neutral
SB SR 509 and South 188th St. (2018)	- - -	A	- - -	E	- - -	Worsened
Des Moines Memorial Drive and South 188th Street (2013)	12.6	B	27	C	114%	Worsened
28th Avenue South and South 188th St.	**12.6**	**B**	**30**	**C**	**138%**	**Worsened**
Military Road and South 188th St. (2013)	27.9	D	30	C	8%	Worsened
SB IH-5 ramps and South 188th St. (2018)	15.0	C	34	C	127%	Neutral
NB IH-5 ramps and South 188th St. (2018)	28.1	D	35	C	25%	Improved
Des Moines Memorial Drive South and South 200th Street (2013)	**9.1**	**B**	**18**	**B**	**98%**	**Neutral**
Des Moines Memorial Drive South and Marine View	8.3	B	- - -	C	- - -	Worsened
28th Avenue South and South 200th	- - -	C	- - -	- - -	- - -	na
Military Road and South 200th Street (2013)	**8.2**	**B**	**56**	**E**	**583%**	**Worsened**
Military Road and NB IH-5 ramps (2013)	- - -	C	18	B	- - -	Improved
28th Avenue South and South 192nd Street (2011)	3.6	A	- - -	- - -	- - -	na
SB IH-5 ramps and State Route 516	27.6	D	- - -	- - -	- - -	na

Effects on Ground Transportation

The consultant team identified the following potential effects the changes to roadway infrastructure and traffic congestion may have contributed to the study area cities (regional) and to Seattle-Tacoma International Airport itself. These potential effects were identified based on the analysis and findings of the data available from 1997 to 2019, but it is also acknowledged that there are some inconclusive findings due to the lack of readily available information through the study process.

- **General Roadway Infrastructural Changes**
  Since the early 2000s, state agencies and communities within the study area have invested in prioritizing infrastructure projects that accommodate bus services and multimodal elements such as sidewalks and bicycle lanes. By investing in transit and multimodal infrastructure, transit becomes a more viable option for passengers and commuters especially for those who live in the study area communities. Providing dedicated lanes for transit creates a more reliable service that can more easily access the region, including significant destinations such as the airport and downtown Seattle. Moreover, the increase in HOV lanes creates less congestion for bus transit services.

  However, the study's findings are inconclusive due to the following data gaps:

  - No consolidated database exists containing information on historical and current capital improvements in the airport area. AADT and LOS data are located at multiple sources.
  - No consolidated report or online portal exists that documents completed projects since 1997 related to roadway infrastructure in the study area. Data is located at multiple sources.

- **General Traffic Congestion Changes**
  There is a general regional perception that traffic is congested during peak hours along major roadways. Roadways in the cities of Des Moines and SeaTac adjacent to Seattle-Tacoma International Airport – such as U.S. Highway 99 – experienced high volumes of vehicles per day from 2011 to 2013. From 2009 to 2018, AADT increased on IH-5 south of the IH-5/IH-405 interchange, as well as along the segment of State Route 509 that parallels Seattle-Tacoma International Airport. Traffic volumes also increased on U.S. Highway 99 between State Route 518 and South 170th Street; this occurred around the time of the completion of the consolidated rental car facility. From 2009 to 2018, traffic volumes north of State Route 518 in Burien and SeaTac along State Route 509 and State Route 599 increased, whereas volumes around southern Des Moines and Federal Way remained consistent.

  However, the study's findings are inconclusive due to the following data gaps:

  - No information could be found on LOS and delay data for key study area intersections.
  - No information could be found containing traffic information and/or reporting mechanism for key intersections in the vicinity of Seattle-Tacoma International Airport.
  - Historical and current AADT data is inconsistent. Traffic count meters have been placed in different locations from the baseline year to present day, which reflects inaccurate counts.

- **Average Vehicle Delay and Level of Service Changes**
  Overall, average vehicle delay and LOS have increased since 1997. The most significant locations have exhibited an average of an 85% increase in average vehicle delay. However, LOS tends to increase by only one or two levels. Des Moines Memorial Drive has experienced a high increase in average vehicle delay, which could be due to the infrastructural changes to on-and off-ramps on State Route 518 at State Route 509 and Des Moines Memorial Drive. Vehicles now have easier access to local roads, therefore creating a local cut-through route that can affect Burien and other surrounding neighborhoods. However, the study's findings are inconclusive because no information could be found on LOS and delay data for specific, key intersections in the study area for both mid-term and current timeframes.

- **Vehicle Circulation**

  Improvements to on-and off-ramps and physical connections to local minor roads can create less circuitous routes for those traveling by high-occupancy vehicles and transit. Instead of using standard on-and off-ramps at major roadway interchanges, transit and carpool vehicles now have the option to use new and/or improved on-and off-ramps that prioritize HOVs. This allows local HOVs and transit to use more local roads to access housing areas, attractions, and/or places of employment.

- **Continuous Center Turn Lanes**

  WsDOT and other communities have been implementing continuous center lanes on major roadways. Adding continuous center lanes along roadways such as at Military Road South can improve congestion as left-turning vehicles do not block traffic in through lanes. Also, adding continuous center lanes promotes slower vehicle speeds as vehicles in opposite lanes usually decelerate for turning vehicles. This could also affect crash rates, as continuous center turn lanes can reduce head-on collisions and act as a temporary dedicated lane for emergency vehicles.

- **Airport Expressway and Air Cargo Road**

  Changes to both the Airport Expressway and Air Cargo Road have generated effects on vehicle circulation in the micro-roadway network at the Seattle-Tacoma Airport. Those traveling along Air Cargo Road now have direct access to the cell phone parking lot, 24th Avenue South, Departures Drive, and the consolidated rental car facility as opposed to using U.S. Highway 99. It also provides shuttles and vehicles with a less circuitous route to access the main parking garage. Employees parking in both the Northern Employee Lot and southern lots have the Airport Expressway as a local road to easily travel between airport facilities.

  However, the study's findings are inconclusive because no current information could be found on vehicle delay, level of service or AADT for these roadways.

- **Consolidated Rental Car Facility**

  The relocation of the consolidated rental car facility has an effect on both traffic generation, distribution, and circulation. The relocation of the facility has generated a passenger shuttle that now connects passengers from the rental car facility to the terminal. Although increased congestion could occur at exit points around the facility, traffic is now diverted from the main airport garage to a more northern location. The proximity of the facility to State Route 509, U.S. Highway 99, and State Route 518 connect vehicles to the regional network more easily than before the relocation from the main airport parking garage.

  However, the study's findings are inconclusive due to the following data gaps:

  - No information could be found on passenger shuttle circulation routes.
  - No information could be found on the rental car vehicle use per day, especially during morning and afternoon peak hour times at Seattle-Tacoma International Airport.

- **Link Light Rail Airport Station**

  The implementation of the Link Light Rail to the Airport/SeaTac, Tukwila, and Angle Lake Stations in 2009 and 2016 provided transit riders with direct, quick access to Seattle-Tacoma International Airport and downtown Seattle. As opposed to Bus Rapid Transit or other bus services, passengers now have the opportunity to use light rail to travel to and from Seattle-Tacoma International Airport. Although trip generation data is not publicly available, it is important to note that the implementation of these stations most likely provided benefits for traffic congestion in local communities.

  However, the study's findings are inconclusive because no information could be found on direct trip generation from the construction of both stations.

- **Rideshare and Shuttle Services**
  With the increase of rideshare services (e.g., Lyft and Uber) and shuttle services at both a local, regional, and national scale, single-occupant vehicles are becoming more prominent at popular pick-up and drop-off points. If rideshare/shuttles do not have a streamlined pick-up and drop-off and wayfinding system, rideshare vehicles can be diverted onto local roads and create congestion at major bottleneck locations along roadways such as Arrivals and Departures Drive.

  However, the study's findings are inconclusive due to the following data gaps:

  - No information could be found on traffic congestion and/or crash data related to rideshare services.
  - No information could be found on circulation routes and morning and afternoon peak hour traffic counts for rideshare services and shuttle buses/airporters.

D. TRANSIT INFRASTRUCTURE

The consultant team reviewed transit service and infrastructure changes in and around Seattle-Tacoma International Airport from 1997 to 2019. This has increased substantially since 1997, which included light rail, express bus, bus rapid transit, and local bus services.

Service and infrastructure changes related to Sound Transit, King County Metro Bus Rapid Transit (RapidRide) and their associated facilities were noted. Additionally, private transport service to Seattle-Tacoma International Airport was also reviewed.

Current Transit Service

There are multiple public transit options to access Seattle-Tacoma International Airport. Figure 7.11 shows the public transit routes serving the area:

- **King County Metro**
  King County Metro Routes 124, 156, 180, and RapidRide Line A provide transit service directly to or near Seattle-Tacoma International Airport. Routes 156, 180, and RapidRide Line A have stops on U.S. Highway 99 near the airport entrance; whereas, 180 and RapidRide provide the most frequent bus service, each providing over 110 combined inbound and outbound daily trips. Route 124 provides service directly to the terminal during late night periods (after 1 a.m.). In addition, Route 128 and RapidRide F connect to the Tukwila (light rail) Station, and passengers can transfer to light rail or RapidRide Line A to reach the terminal.

- **Sound Transit**
  Sound Transit provides transit service to Seattle-Tacoma International Airport via the Link Light Rail and express bus Routes 560 and 574. The express buses load/unload near the south end of the terminal. Route 574 services Lakewood, Tacoma, Federal Way, and Sea-Tac and Route 560 serves Burien, Renton, and Bellevue. The Link Light Rail has three stations in the service area – the Tukwila Station (1.3 miles north of the airport), the Airport/SeaTac Station (east of the main parking garage), and Angle Lake (1.2 miles south of the Airport). The Link provides six-minute headways during peak, weekday commuting hours and 12-minute headways on the weekends. Sound Transit service routes average 72 combined inbound and outbound daily trips.

Figure 7.11
Public Transit Routes

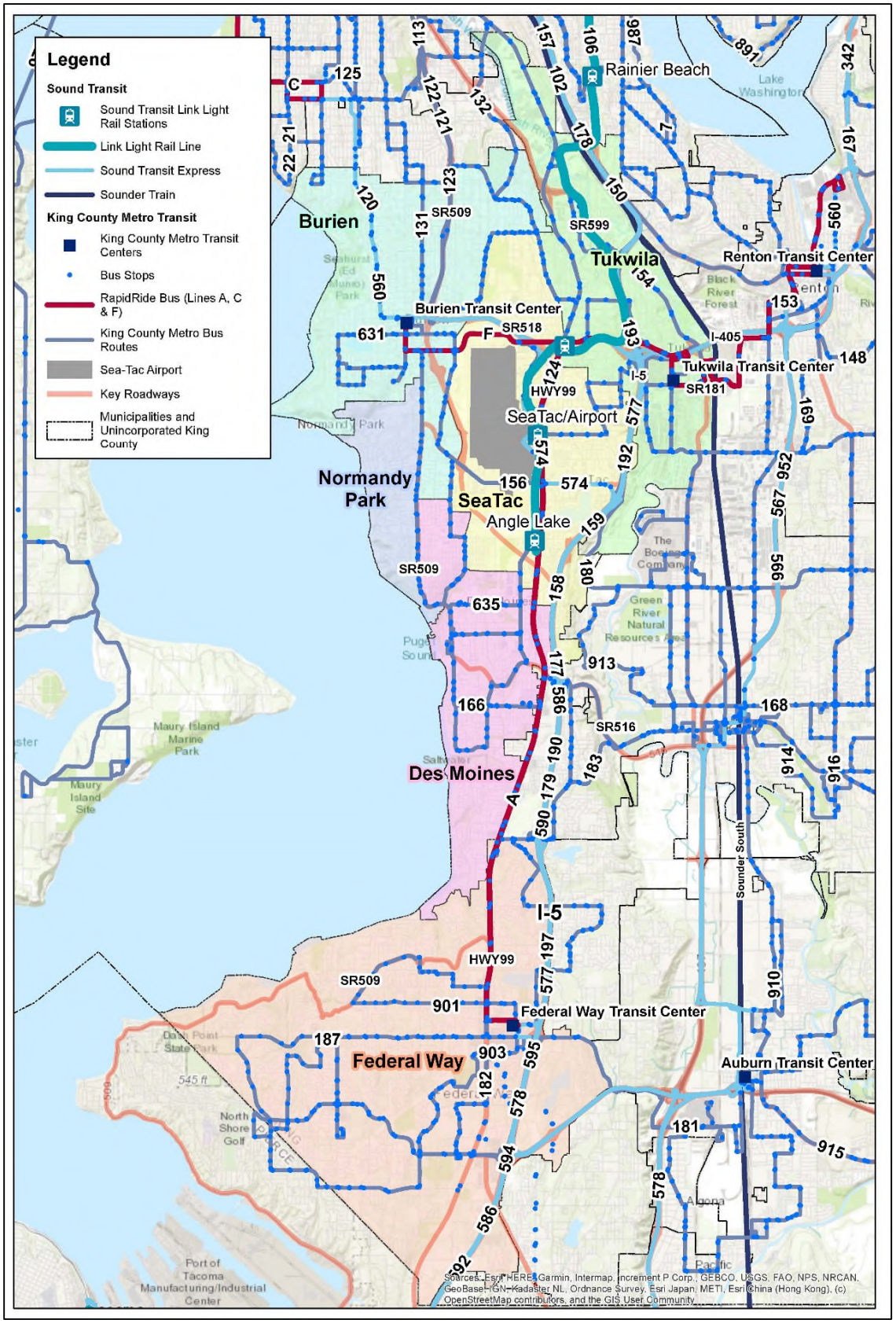


Figure 7.12
King County Metro Routes

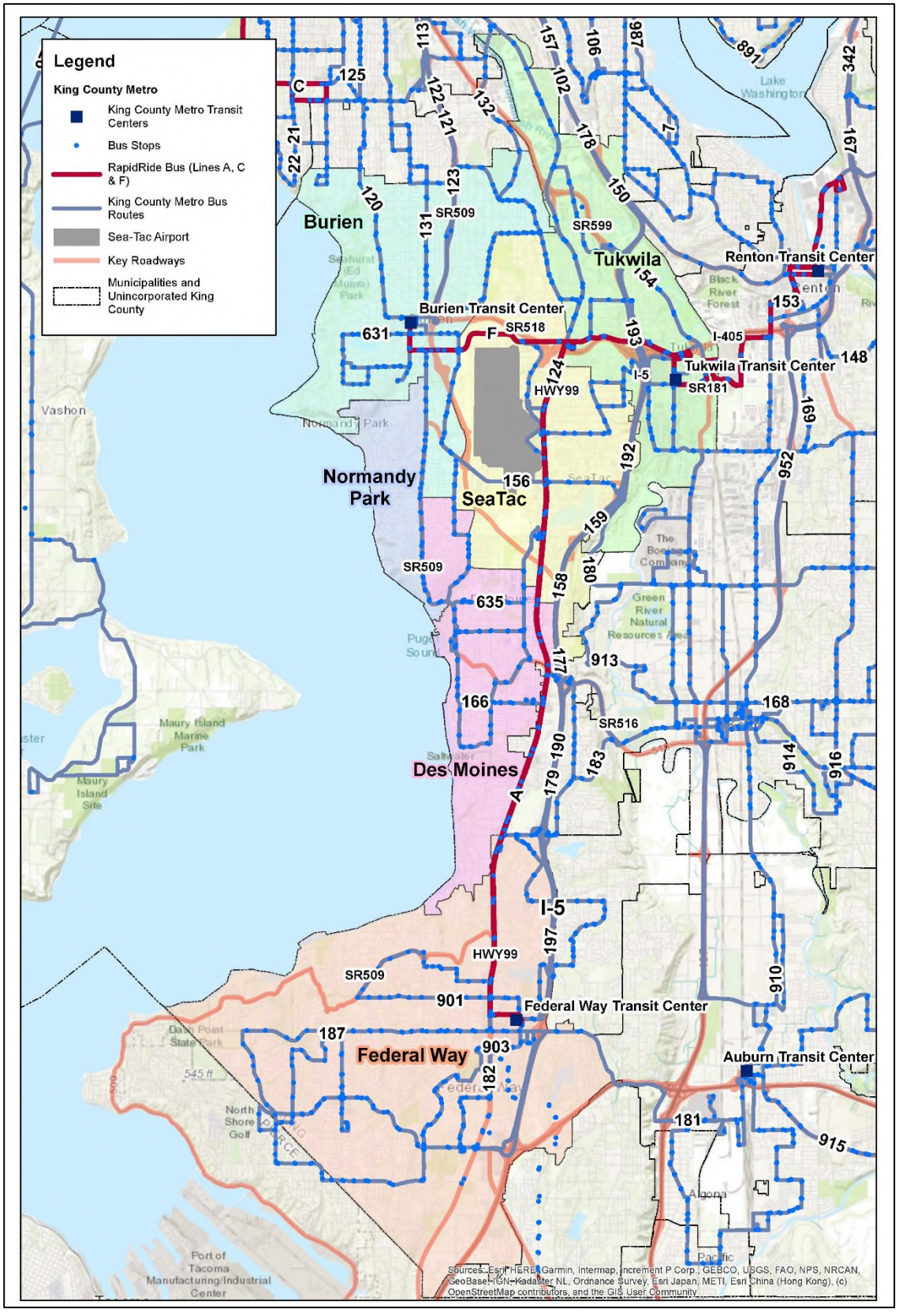
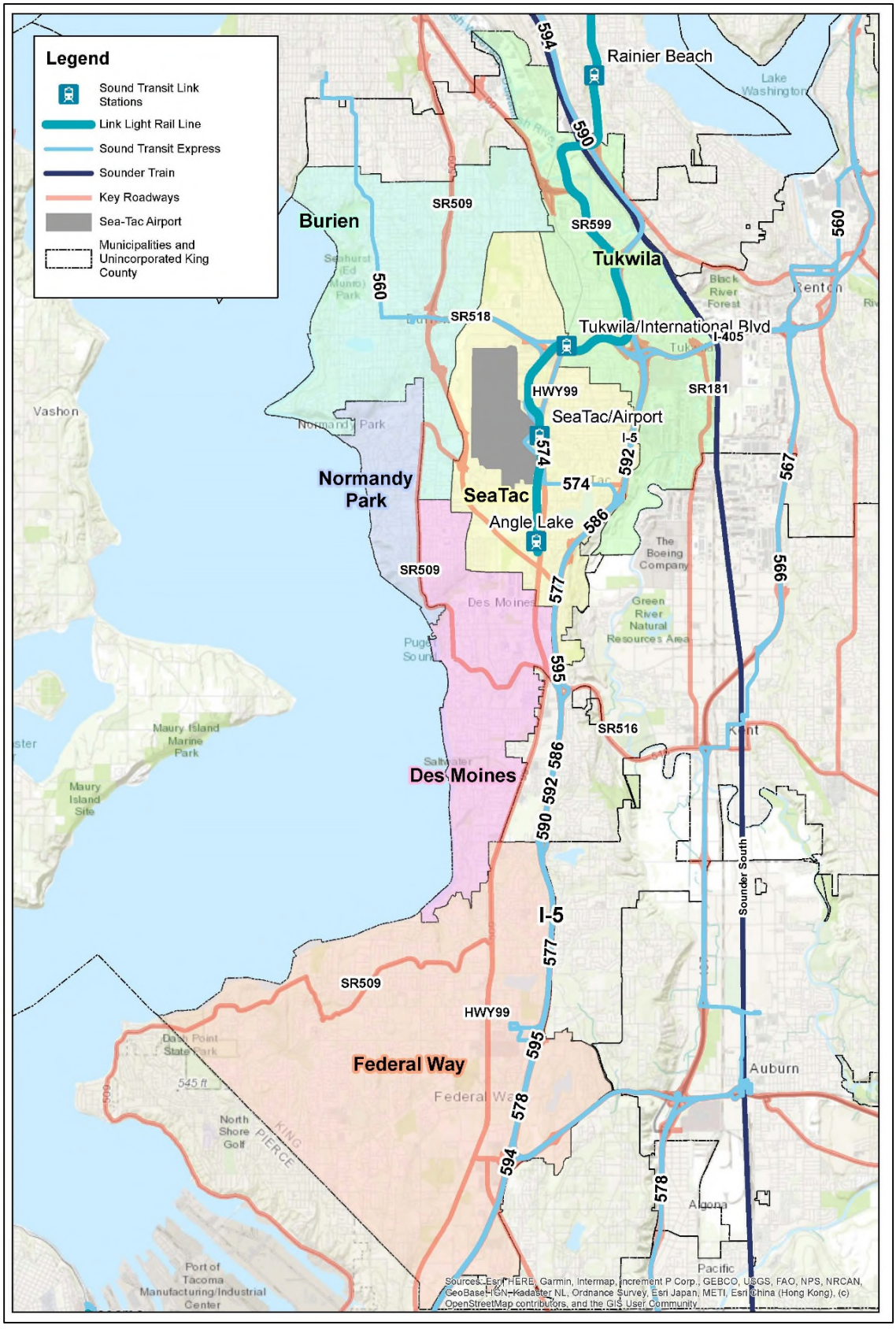


Figure 7.13
Sound Transit Routes



- **Private Transport Services**

  As of 2014, 10 regularly scheduled private transport services provided transportation to the airport from outline regional designations including communities in Washington and British Columbia. These private transport services use vans and buses to transport passengers for a fee and use designated loading/uploading locations at the airport. The Port of Seattle documents and reports did not provide detail pertaining to schedule times, frequency, or user fees. Figure 7.14 summarizes the operator names, destinations, and service commencement. Based on review of readily available studies and reports, the consultant team was unable to identify passenger demand and use for the private transport service operators during the study time period.

Figure 7.14
Private Transport Service Operators

Operator	Destination	Year Started
Bellair Airport Shuttle	Bellair Airport Shuttle Alaska Ferry Terminal, Anacortes, Bellingham. Blaine, Cle Elum, Ellensburg, Ferndale, La Conner, Marysville, Mt. Vernon, Stanwood, Yakima	1985
Bremerton-Kitsap	Bangor, Bremerton, Gig Harbor, Gorst, Port Orchard, Poulsbo, Purdy, Silverdale, NW Tacoma	1979
Capital Aeroporter	Auburn, Bonney Lake, Centralia, Chehalis, Federal Way, Fife, Kent, Lacey, Lakewood, Olympia, Parkland, Puyallup, Shelton, Steilacom, Tacoma, Tumwater, Union	1972
Ft. Lewis-McChord (services provided by Bremerton-Kitsap & Capital Aeroporter)	Joint Base Lewis McChord	1972/1979
Island Airporter	San Juan Island	2003
Olympic Bus Line (operated by Greyhound Lines)	Port Angeles, Sequim, Port Townsend, Discovery Bay, Kingston	~2010
Quick Shuttle	Vancouver, B.C., Canada	1987
Vashon	Vashon Island	1996
Wenatchee Valley	Wenatchee	2012
Whidbey-Sea-Tac	Whidbey Island	2003

Changes to the Transit Service Network

- **Changes from 1997 to 2007**

  The creation of Sound Transit and its associated services were the most significant public transit changes in the study area between 1997 and 2007. In 1996, Sound Transit began implementation of the voter-approved transit initiative Sound Move. This transit initiative created a new financing source (taxes) and was the first of a multi-phased plan to expand regional transit service across the Puget Sound urban area and to lessen the dependence on automobile travel.

  Highlights of the first phase included: the design and construction of light rail service from Seattle to Seattle-Tacoma International Airport; the beginning of peak period Sounder commuter rail service and Express Bus Routes; and the design and creation of additional high-occupancy vehicle (HOV) lanes and ramps on major roadway corridors.

  Additionally, King County voters approved the Transit Now initiative in 2006 to fund and expand transit service across the urban county. The initiative funded the planning and implementation of King County Metro's bus rapid service RapidRide, though the service became active later in 2010. Based on review of readily available studies and reports, the consultant team was unable to identify changes or additions to the King County Metro bus routes serving Seattle-Tacoma International Airport during this time period.

In 1999, Sound Transit implemented 18 Sound Transit Express Bus routes (ST Express) through the Sound Move initiatives. The ST Express provides service to large population and employment centers throughout the Puget Sound urban region. Express bus routes have limited stops between origins and destinations. Figure 7.15 describes the express bus services that directly serve Seattle-Tacoma International Airport.

Figure 7.15
Sound Transit Express Routes Serving Seattle-Tacoma International Airport

Route Number	Description	Year Started
Route 574	Express access from Lakewood to the airport. Operates all day, Monday through Sunday with stops in Lakewood, Tacoma, Federal Way, and SeaTac.	1999
Route 560	Express access to the airport from White Center and Bellevue. Operates all day, Monday through Sunday with stops in White Center, Burien, and SeaTac.	Late 1990's
Sound Commuter Rail	Provides rail service between Tacoma and Seattle with a station in Tukwila. Passengers can transfer to other local bus routes at each station. Operates Monday through Friday.	1999

State and local transportation agencies have also performed various HOV enhancements on area highways and arterial streets to improve access to buses and vehicles with at least two passengers. Notable HOV enhancements included:

- The HOV bypass lanes at the IH-5/IH-405 interchange.
- Direct access ramps from the Federal Way Transit Center to IH-5.
- HOV lanes on IH-5/IH-405, and State Route 518 ramps.
- HOV lanes on U.S. Highway 99.

- **Changes from 2008 to 2019**

In 2008, voters approved the Sound Transit 2 initiative to further fund and expand transit service in the region. Also, by 2008, the vicinity started to realize King Metro Transit service improvements from the 2006 Transit Now initiative that included RapidRide service. Based on review of readily available studies and reports, the consultant team was unable to identify changes or additions to other King County Metro bus routes serving the airport during this time period.

Sound Transit extended light rail service to the airport and its vicinity. The study area includes three stations, Tukwila, Airport/SeaTac, and Angle Lake. Trains run at 6 to 24 minute headways, with higher frequencies occurring at weekday morning and afternoon peak periods.

The Tukwila Station located at State Route 518 and U.S. Highway 99 (1.5 miles from the airport terminal) opened in 2009. The elevated station includes a surface Park and Ride lot and local bus connections.

The Airport/SeaTac Station opened in 2009 and is located on the east side of the main parking garage and along U.S. Highway 99. This is an elevated station with a pedestrian concourse through the main garage and a pedestrian bridge over U.S. Highway 99. There are no Park and Ride facilities at this station. The station provides for local bus connections on U.S. Highway 99.

Angle Lake Station opened in 2016 at U.S. Highway 99 and South 200th Street (1.15 miles from the airport terminal). The elevated station includes a structured Park and Ride garage. The station provides for local bus connections on U.S. Highway 99.

Sound Transit increased airport express bus frequency on Route 574 to 30-minute headways and Route 560 to one-hour headways. Sound Transit expanded their bus fleet and included bus frequency on other express bus routes throughout the urban service area.

King County Metro RapidRide is local bus rapid transit (BRT) modes that provide frequent, fixed-route service along major highways and arterials. The stops are designed as stations and spaced further apart to reduce travel delay. The RapidRide service includes level-boarding platforms, off-board fare collection, and transit signal priority signals. In many locations, RapidRide buses use HOV lanes to bypass other vehicle traffic. Two RapidRide routes were added to the study.

- Line A was added to U.S. Highway 99 in 2010 and provides frequent service between the Tukwila (light rail) Station to Federal Way; there are stops near the airport's U.S. Highway 99 entrance (near South 182nd Street).
- Line F was added in 2014 to provide frequent service between Burien and Renton with a stop at the Tukwila (light rail) Station. Transit passengers can transfer to Line A, the light rail, or other local transit routes to access the airport at the Tukwila Station.

Major changes were also made to the private transport services in and around Seattle-Tacoma International Airport between 1997 and 2019.

- In 2014, the airport added 22 bus parking positions at the north end of the terminal to accommodate the private transport service vehicles. Prior to this, transport services used the North Charter Lot adjacent to Concourse D; this facility had only seven parking positions.
- The Whidbey-Sea-Tac service was added in 2003 to provide service to Whidbey Island, Wash. Wenatchee Valley service was added in 2014 to provide service to Wenatchee, Wash.

Park and Ride Lots

In the study area, there is a total of 18 Park and Ride facilities, accommodating approximately 7,085 parking spaces. Patrons can park at these facilities to access transit to major destinations including Seattle-Tacoma International Airport. Park and Ride lots do not provide long-term parking options for passengers; patrons may not leave vehicles overnight or continuously over multiple days. Figure 7.16 shows the location of the various Park and Ride lots in the study area.

Most of the study area transit Park and Ride lots were added within the study time period (1997 to the present) and constructed concurrent with major transit projects (e.g., light rail and express bus service). The consultant team reviewed aerial photography to determine the approximate year each Park and Ride lot was established. Jurisdiction and ownership over the Park and Ride lines vary between the transit agencies; some lots are leased from private entities (e.g., places of worship and retail centers).

In July 2019, the King County Council approved a monthly permit options at the 10 busiest Park and Ride lots in the region. Those who choose to participate in the permit program will now pay $60 to $120 per month for guaranteed access to parking from 4 -10 a.m. Monday through Friday and specific facilities. Carpool monthly permits will still be free. The only Park and Ride lot in the study area that will be affected by the new permit program is the Tukwila Park and Ride located at IH-5 and Interurban Avenue South, which will see a permit price of $90 per month for those who choose to use the program.

Based on review of readily available studies and reports, the consultant team was unable to identify the number or frequency of airport passengers and employees who use Park and Ride facilities. Furthermore, the C consultant team could neither identify capacity changes at each Park and Ride lot since its establishment year nor identify whether any previous lot was closed or discontinued.

Figure 7.16
Study Area Park and Ride Facilities

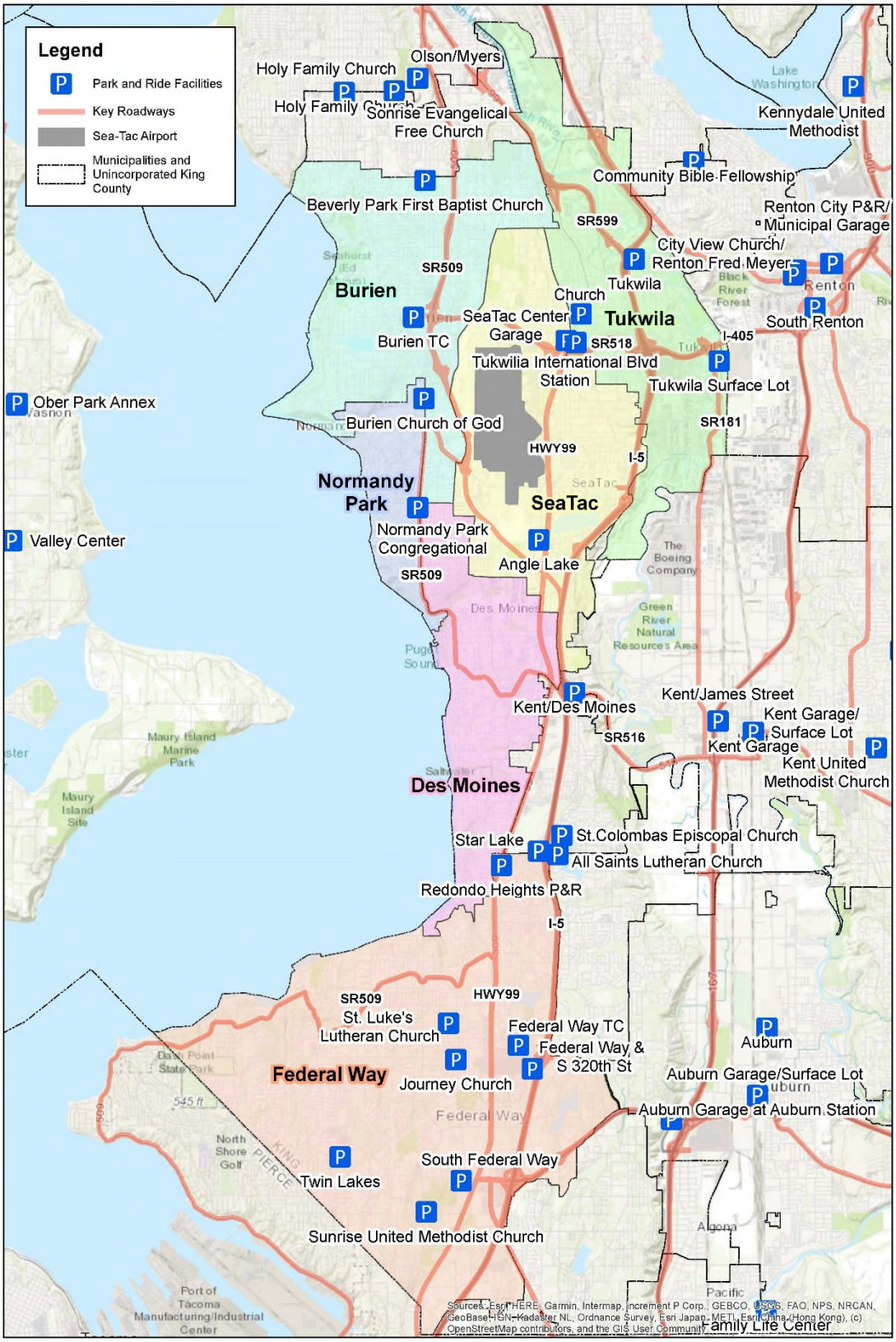


Figure 7.17
Summary of Study Area Park and Ride Facilities

Park & Ride Lot	Parking Space Quantity [4]	Year Established [3]	Use, 2009 [5]	Use, 2012 [5]	Use, 2015 [5]	Use, 2017 [5]
Pre 1990						
Federal Way/South 320th St	877	Pre 1990	47%	45%	37%	33%
South Federal Way	515	Pre 1990	61%	40%	30%	23%
Tukwila @ Interurban Ave.	255	Pre 1990	99%	98%	100%	100%
1997-2006						
Twin Lakes	600	~2000	14%	16%	19%	16%
Redondo Heights P&R	697	2005	7%	6%	9%	11%
Federal Way Transit Center	877	2006	84%	99%	99%	99%
2007-2016						
Tukwila Transit Center	600	2009	83%	99%	99%	100%
Burien Transit Center	488	2009	81%	59%	72%	65%
Sea-Tac Center Garage	62	2013			95%	89%
Tukwila Surface Lot	390	2014			100%	90%
Angle Lake Station	1090	2016				98%

1) Source: King County Metro and Sound Transit.
2) This table does not include private leased Park and Ride lots within the study area as site data was not readily available.
3) A review of aerial photographs determined the approximate year the Park and Ride lots were established.
4) This table lists the parking quantity as of 2019; this table does not notate changes and additions to parking quantity since the year established.
5) King County Metro Park & Ride use reports determined the Park and Ride lot usage rates over the years.

The Park and Ride lots in the study area exhibited the following notable changes/additions:

- The region's transit agencies developed eight new Park and Ride lots in the study area since 1997.
- King County started a paid parking permit option to reserve parking spaces at the Tukwila at Interstate-5 and Interurban Avenue South.
- Five of the Park and Ride lots experienced a decrease in use since 2009; three showed consistent increases.
- Public input revealed concerns about employees at Seattle-Tacoma International Airport using Park and Ride facilities for *de facto* remote employee parking. This was specifically noted at the garage for the light rail station at South 200th Street. There is no current measurement of how many public spaces may be occupied by airport employees at nearby Park and Ride facilities. This issue requires further study.

Ridership Trends

The Puget Sound urban region has experienced an increase in transit ridership during the study period as population increased and the various transit agencies added more lines and service options.

- **King County Metro**
  From 2008-2018, King County Metro transit ridership has remained consistent at around 115 million riders per year. Ridership levels decreased in 2010 of around 109.6 million riders annually. The most recent ridership analysis conducted in 2018 states that the King County Metro System has around 122.5 million riders, which is an 11% increase from 2010.

King County RapidRide services have seen an 87% increase in ridership from 2011 to 2018, ranging from 106,000 to 786,000 riders. Since September 2019, RapidRide lines have already seen approximately 518,000 riders, which is a 42% increase from the previous King County Route 140 that the new RapidRide lines have replaced. Figure 7.18 summarizes the average annual boarding statistics for each of King County Metro routes that provide service to or near the airport. Most airport area routes have seen an increase in average daily boardings since 2015; Route 128 has experienced decline.

Figure 7.18
King County Airport Area Route Ridership Statistics

Metro Route	Average Daily Boardings			
	2015	2016	2017	% Change 2015-2019
124 (Night owl times only)	3,100	4,000	4,000	29.0%
128	3,800	3,500	3,500	-7.9%
156	1,100	1,100	1,100	0.0%
180	4,300	4,600	4,400	2.3%
Line A	9,400	9,700	10,200	8.5%
Line F	5,400	5,500	5,600	3.7%

1) Sources: King County Metro System Evaluation Reports 2018, 2017, and 2016.
2) King County ridership reports completed prior to 2016 used different metrics other than average daily boardings.

Based on review of readily available studies and reports, the consultant team was unable to obtain King County Metro average daily boarding statistics by route for the years before 2015; the previous years used different metrics and were not easily comparable. Second, the consultant team was unable to identify the boarding/unloading statistics for the stops at the airport. Furthermore, the consultant team was unable to determine which transit users were airport passengers, employees, or visitors.

- **Sound Transit**
  The Sound Transit network has seen a 0.4% decrease in weekday boardings from 2018 to 2019. Certain routes/services that have seen an increase in ridership include Link Light Rail and Paratransit services. From 2009-2018, Link Light rail has seen a 90% increase in total ridership, from 2.5 million to 24.5 million riders. Ridership tends to peak during weekends and summer months, reflecting average daily boardings above 80,000 riders. Figure 7.19 summarizes the average annual boarding statistics for each of Sound Transit's routes providing service to or near the airport. Most airport area routes have seen an increase in average daily boardings since 2016; express bus Route 574 has seen a slight decline.

Based on review of readily available studies and reports, the consultant team was unable to obtain Sound Transit average daily boarding statistics by route/light-rail station for the years before 2016. The airport terminal boarding/unloading statistics for the two express bus routes were also unavailable. Furthermore, the consultant team was unable to determine which transit users were airport passengers, employees, or visitors.

The transit ridership statistics in the study area exhibited the following notable changes/additions:

- **King County Metro**
  Four routes (124, 180, and RapidRide Lines A & F) experienced daily boarding increases since 2015; Route 128 experienced a decline, and Route 156 remained unchanged.

- **Sound Transit**
  Each of the three area light rail stations experienced continual ridership increases since 2016. Express Bus Route 560 experienced a minor ridership increase, and Route 574 experienced a minor decline since 2016.

Figure 7.19
Sound Transit Airport Area Route Ridership Statistics

Sound Transit Route	Average Daily Boardings				
	2016 (Q4)	2017 (Q4)	2018 (Q3)	2019 (Q3)	% Change 2016-2019
Sound Transit Express Bus Routes (ridership based on the entire route)					
560	1,687	1,725	1,847	1,928	14.3%
574	2,319	2,270	2,308	2,311	-0.3%
Sound Transit Link Light Rail Stations (ridership based on boardings at the following stations not entire route)					
Tukwila	2,688	2,818	2,964	3,380	25.7%
Airport	5,138	5,072	6,374	6,872	33.7%
Angle Lake	2,810	3,506	3,899	4,339	54.4%

1) Sources: Sound Transit Service Delivery Quarterly Performance Reports 2018 and 2017.
2) Sound Transit ridership reports completed prior to 2017 do not include ridership statistic for each light rail station.

Effects on the Transit Infrastructure

The consultant team identified the following potential effects of changes to transit service and infrastructure that may have affected the airport and the six surrounding communities. The analysis and findings in the preceding subsections guided this list of potential effects. The consultant team also acknowledged inconclusive findings based on the lack of readily available information.

- **General Transit and Light Rail Service**
  The transit agencies provide multiple routes to and around the airport. This reduces traffic congestion to and from the airport and parking demand at the main garage.

  Sound Transit light rail has three stations in the study area that provides frequent connections to the airport, Seattle and other regional destinations. The Airport/SeaTac station provides direct transit rider connections to the terminal through the main garage. The station also provides pedestrian connections to U.S. Highway 99. All three stations have experienced annual increases in daily boardings.

  The addition of light rail, express bus, and RapidRide service provides faster modes when compared to standard local bus service. These services exhibit more consistent, and higher levels of passenger boardings. However, the following data gaps were noted:

  - No information could be found to determine how many riders at the Airport/SeaTac station access Seattle-Tacoma International Airport verse other nearby destinations.
  - No information could be found to determine how many light rail riders are sirport passengers versus employees.
  - No information could be found to whether the service changes reduced the vehicle trips to the Seattle-Tacoma International Airport.

- **Regional Transit Service Funding**
  Sound Transit and King County Metro both secured voter-approved initiatives that fund transit service expansions across the region. This includes additional bus, light rail, and commuter rail service and associated infrastructure (e.g., stations and Park and Ride lots).

- **RapidRide and Route 180**

  King County Metro commenced bus rapid transit with its RapidRide service. The agency added Line A that runs along U.S. Highway 99 with stops near the airport entrance and Line F with connections through the Tukwila (light rail) Station). Both lines have experienced an increase in daily boardings. However, the following data gaps were noted:

  - No information could be found on the passenger boardings for the RapidRide Line A stops along U.S. Highway 99 near the terminal.
  - No information could be found to determine how many RapidRide riders are airport passengers/employees versus through passengers to other destinations.
  - No information could be found to whether the service changes reduced the vehicle trips to Seattle-Tacoma International Airport.

- **Sound Transit Express Bus Service**

  Sound Transit operates two express bus routes with stops at the terminal. Route 574 provides service to Lakewood with stops in SeaTac and Federal Way. Route 560 provides service between Burien and Renton. The express bus routes allow for connections to/from the Airport / SeaTac station but do not connect to the other light rail stations. Route 560 experienced increase daily boardings; Route 574 has seen a slight decline. However, the following data gaps were noted:

  - No information could be found on the passenger boardings for the stops at the terminal.
  - No information could be found to determine how many express bus riders are airport passengers/employees versus through passengers to other destinations.
  - No information could be found to whether the service changes reduced the vehicle trips to the airport.

- **Private Transport Services**

  The private transport services provide additional customers to the airport from outlying communities. These private transport service providers also reduce traffic congestion and the need for long-term parking on the airport property. However, no information could be found on the number of airport employees that use each Park and Ride lot to access the airport.

- **HOV Enhancement**

  State and local transportation agencies have installed HOV lanes and direct on-ramps for transit service and carpool vehicles. These HOV facilities allow transit and carpool vehicles to bypass other traffic on highways and arterials.

- **Park and Ride Lots**

  The addition and expansion of Park and Ride lots allows more rider access to transit services verse limited routes near low density residential areas. The introduction of the parking permit program for the Tukwila Lot (at IH-5 and Interurban Avenue) created reliable parking for those who chose to participate in the program but could be a negative for occasional transit users and non-permit holders as spaces may become unavailable during peak commuting times.

  They also provide airport employees additional access to transit service to the airport. At the same time, airport employees using the Park and Ride lots may reduce parking availability to other transit riders. However, no information could be found on the number of airport employees who use each Park and Ride lot to access the airport.

E. PEDESTRIAN INFRASTRUCTURE

The section below provides an overview of changes to the pedestrian network from 1997 to present day that have affected access to Seattle-Tacoma International Airport. It notes infrastructural changes related to pedestrian routes near the terminal and to U.S. Highway 99.

Pedestrian Infrastructure

The Port of Seattle has maintained sidewalks from U.S. Highway 99 to the Terminal via Arrivals Drive since before 1997. The intersection at International Drive has a traffic signal, crosswalks, and sidewalks. A sidewalk continues on the south side of Arrivals Drive from U.S. Highway 99 and all along the entrances to the terminal.

The two principal changes for pedestrians have been the new light rail station (which also includes a new pedestrian bridge over U.S. Highway 99) and the new remote consolidated rental car facility (which now requires access via shuttle bus).

The Airport Station of Sound Transit's Link Light Rail system provides additional pedestrian access to the terminal. These facilities provide pedestrian access for both transit users and pedestrians in the vicinity. There is a pedestrian route from the main terminal, through the main parking garage and connecting to the elevated light rail station platform. There is a pedestrian bridge over U.S. Highway 99 from the elevated light rail station platform to the eastside of the roadway, linking parking facilities, the light rail station, and immediately surrounding land uses to the terminal. The pedestrian bridge was constructed in 2009.

To access the consolidated rental car facility, passengers need to use the dedicated shuttle service. Prior to the construction of the facility, passengers walked from the terminal to the connected rental car facility in the main parking garage. With the new remote rental car facility, passengers must use the shuttle service, which drops off at the north and south terminals and picks up at the consolidated rental car facility arrivals and departures curb. During peak hours, a wait time of five minutes for passengers is average. However, longer wait times have also been experienced. The shuttle bus operates 24 hours a day, every day of the year.

No studies and reports were readily available to determine the number of pedestrians using the public sidewalks or the light rail station to access the terminal. Furthermore, the consultant team was unable to determine changes in wayfinding and signage that occurred in and around the terminal to assist with pedestrian access between 1997 and the present.

Effects on the Pedestrian Infrastructure

- **Pedestrian Access to Transit Routes**
  The existing sidewalk along the terminal to the U.S. Highway 99 and the addition of the Link Light Rail Airport/SeaTac station with pedestrian bridge provide pedestrian access to transit routes on U.S. Highway 99 including King Metro Transit routes 180 and RapidRide Line A. However, no information could be found to determine the number of daily pedestrians using the sidewalks for the terminal and Link Light Rail Airport/SeaTac station and pedestrian bridge to access U.S. Highway 99.

- **Consolidated Rental Car Facility**
  The consolidated rental car facility's remote location requires the airport to operate a continuous shuttle service between facility and the terminal. The remote location adds distance and travel time for potential customers arriving at the airport. No information could be found to determine the peak demand times for the shuttle buses to the consolidated rental car facility and how well the existing shuttle vehicles are accommodating this demand. Further, no information could be found to determine if the shuttle travel times from the terminal to the remote rental car facility have affected customer demand, or if other factors (such as on-demand rideshare apps like Uber and Lyft, or the option of light rail) are influencing rental car choices.

F. PARKING INFRASTRUCTURE

Early in the project scoping phases there were community concerns that airport passengers and employees may use neighborhood streets for daily and/or long-term parking in lieu of using more formal airport parking facilities. The consultant team examined local parking conditions, local parking requirements and restrictions on public rights-of-way to help determine potential airport effects to residential areas.

In 2018, the city of SeaTac completed a Permit Parking Program study that examined on-street parking conditions in three notable neighborhoods near the airport. The 2018 City of SeaTac Study identified three neighborhoods in walking proximity to the airport/SeaTac, Tukwila or Angle Lake light rail stations. The study indicated street parking conditions close to January 2018 (a study day and time was not indicated); no historical data was included to compare changes in street parking availability and use. The following summarizes the area conditions and parking use for these three areas based on the 2018 SeaTac Permit Parking Program study:

- **McMicken Heights Neighborhood (City of SeaTac)**
  The SeaTac study focused on the residential neighborhood near the airport/SeaTac station in the general vicinity from U.S. Highway 99 to 35th Avenue South between South 170th Street to South 176th Street. The study area included approximately 600 on-street parking spaces and nine block faces that do not allow on-street parking. The study found that 78% of the vehicles parked on the street were attributed to residents. The streets closest to the light rail station showed higher occupancy rates, whereas the outlying streets exhibited 0% to 50% use. The neighborhood did not exhibit consistent street parking durations; the parking duration times on each street differed by block (>one hour to over nine hours).

- **Tukwila Station Area (City of Tukwila)**
  The SeaTac study focused on the residential area northwest of the Tukwila station with a particular focus on South 152nd Street and 30th Avenue South. The study area included approximately 95 on-street parking spaces and two block faces do not allow on-street parking. The study found that, like McMicken Heights, 78% of the vehicles parked on the street were attributed to residents. A segment along South 152nd Street had the highest parking use of 50% to 70%; the other street segments have 0% to 50% use. Overall all, this area exhibited high parking duration (four to over six hours); a small segment of South 152nd Street showed no use.

- **Angle Lake Station Area (City of SeaTac)**
  The SeaTac study focused on the residential neighborhood near the Angle Lake station in the general vicinity from U.S. Highway 99 to 32nd Avenue South and between South 200th Street and South 204th Street. The area has 280 on-street parking spaces and two block faces that do not permit on-street parking. The study found that 75% of the vehicles parked on the street were attributed to residents. All the streets exhibited 0% to 50% street parking use. The neighborhood blocks exhibit different parking durations, with the longest parking times on the streets furthest from U.S. Highway 99.

For the other portions of the study area, the consultant team used professional judgment to identify which of the local six communities were most prone to Seattle-Tacoma International Airport passengers and employees parking in residential neighborhoods. The consultant team was unable to identify a consolidated, multi-jurisdictional street parking use study for the total study area. The cities of Burien, SeaTac, and Tukwila were identified to focus the analysis for the following reasons:

- Adjacency to Seattle-Tacoma International Airport.
- Areas where there are residential street parking locations within a reasonable walking distance (0.5 miles or less) to Seattle-Tacoma International Airport, a light rail station, or RapidRide Lines A or F.
- Areas where there are residential street parking locations that could be perceived as faster or more cost effective compared to other transportation-related options (e.g., paid parking garages, taxis).

For areas in neighboring cities that are experiencing frequently high demand for on-street parking, the consultant team was not able to identify the true causes based on review of readily available information. However, based on the parking demand/requirement comparison, projects constructed pursuant to current city standards should not require on-street parking use as a means to support their occupants. Further studies are warranted to understand why street parking use may be higher in certain areas.

Local Parking Requirements

The consultant team reviewed industry parking quantity standards and local development requirements to draw conclusions about whether newer development projects in proximity to the airport possess adequate parking space quantities to serve their occupants. Specifically, the consultant team wanted to identify whether local development requirements created on-site parking scarcities that may influence occupants to use neighborhood streets to meet their parking needs. This would help determine whether street parking activity would be caused by adjacent uses versus other outlying uses, including the airport.

- **Industry Parking Demand Standards**
  The consultant team reviewed the Institute of Transportation Engineers (ITE) Parking Generation Manual (Manual) to identify industry standards for parking demand. The manual is a national standard for evaluating parking demand for specific uses based on case studies and generally applied to suburban settings such as the communities that surround the airport. The manual collects data from parking studies nationwide completed by consultants, public agencies, and developers. The manual provides a benchmark for understanding of "real-life" parking demand.

  This analysis acknowledges that the manual is merely an indicator of potential parking demand for specific land uses; the manual does not reflect local communities' policy decisions to reduce parking capacity to influence alternate modes of transportation (e.g., urban areas, transit-oriented development, etc.).

- **Local Parking Ratio Requirements**
  Local development standards contain minimum required parking ratios for individual land uses (e.g., residential, retail, office, industrial, etc.). Parking requirements are normally imposed as part of a new development project or as part of a change of use in an existing building. Additionally, the cities of Burien, Tukwila, and SeaTac also allow for shared parking arrangements between neighboring properties to address minimum parking requirements. Where local parking requirements exceed ratios listed in the ITE Parking Generation Manual (discussed above), the consultant team concluded there would be enough parking on each development site and would lessen the need for occupants to use adjacent streets for parking. In contrast, where the local jurisdiction requires less parking than the ITE Parking Generation Manual, there is potential for properties to not have enough parking on site to meet occupants' parking demands, thus creating a need to use nearby street parking or use other transportation options. Based on review of readily available information, the consultant team was unable to determine whether each city's minimum parking ratios changed over time since 1997.

- **Parking Demand/Requirement Comparison**

  Figure 7.20 compares local jurisdictions' minimum parking ratio requirements for new development/land uses with the demand ratios listed in the ITE Parking Generation Manual. For the purposes of this analysis, the consultant team focused on residential, retail, restaurant, and office as they are the most prevalent land uses in the study area; hotels were not examined due to the complexity of the parking requirements. The cities of Burien, SeaTac, and Tukwila impose parking ratios that exceed the ITE Parking Generation Manual. This suggests that newly built projects contain more parking quantity than the typical parking demands, thus, occupants have enough on-site parking and do not need to park on adjacent streets.

Figure 7.20
Minimum Parking Standards

Land Use	Minimum Parking Ratio Requirements by Jurisdictions (1) (2) [parking space per unit or 1,000 square feet (sf) of building area]			
	City of Burien	City of SeaTac	City of Tukwila	ITE Parking Generation Manual
Single-Family	2.0 per unit	2.0 per units	1 to 1.5 per unit	1.33 to 2.17 per unit
Multi-Family	1.8 per unit	1 to 2 per unit (based on unit size)	1 to 1.5 per unit	1.2 per unit (low-rise/suburban setting)
General Retail	3.0 per 1,000 sf	4 per 1,000 sf	3.33 to 5 per 1,000 sf	2.55 per 1,000 sf
Restaurant	7.0 to 13.0 per 1,000 sf	6.66 per 1,000 sf	6.0 per 1,000 sf	9.44 per 1,000 sf
Office	3.0 per 1,000 sf	3.33 per 1,000 sf	3 per 1,000 sf	2.47 per 1,000 sf

1) Sources: City of Burien, SeaTac and Tukwila Municipal Codes (zoning sections) and the ITE Parking Generation Manual.
2) Certain land uses require a range of minimum parking ratios based on structure site or bedroom quantities; see the local zoning code for additional information.
3) Based on readily available information, the consultant team was unable to determine changes in the city's parking requirements over the study time period; the parking ratios in this table represent current requirements.

Local Parking Permit Programs

Cities often regulate on-street parking use through local laws and enforcement. Some communities limit the times and durations vehicles can park on public streets. Other communities choose to adopt local parking permit programs to prioritize street parking use to people living or working in particular neighborhoods or districts. These local policies influence whether individuals will choose to use on-street parking in certain areas of the city. The following summarizes the parking policies for each city.

- **City of Burien Parking Regulations**

  Burien relies on the following policies and regulations to manage off-street and on-street parking:

  - Street Parking Laws – The city of Burien prohibits parking on any street or public right-of-way for more than 24 hours. Violators are subject to a $50 fine and may be subject to vehicle impoundment. The city has the authority to prescribe additional time limits for street parking. Blocks in the downtown area and near the transit center have typical parking time limits; two-hour parking or 30-minute parking. The city of Burien also uses signs to regulate parking on city streets. Burien uses the following parking limitation signage along various blocks across the city (some areas do not have signage).
  - No Parking at Any Time – This means that street parking is not permitted under any circumstances, at any time in this designated area.
  - No Parking on Certain Days – This restriction may require that on certain days of the month, parking in this zone is not allowed. Temporary no parking zones may be created by the city of Burien for activities such as the Farmer's Market, 4th of July Parade, or construction projects.

- Loading Zones – This parking zone is restricted for the loading and unloading of products associated with local commercial businesses. However, it is permissible to park briefly to pick up or drop off passengers, but the vehicle must then be parked elsewhere.
- Parking Permit Program – While the city of Burien does not have a permit parking system for resident and local businesses in place, the city's code does allow the city manager to implement such a program.

- **City of SeaTac Parking Regulations**
  The city of SeaTac relies on the following policies and regulations to manage off-street and on-street parking:
  - Street Parking Laws – The city of SeaTac limits parking duration in certain areas of the city, most notably the McMicken Heights neighborhoods. Violators are subject to a $50 fine. In other parts of the community, the city imposes parking time limitations or prohibits street-parking altogether.
  - Parking Permit Program/Policies – The SeaTac parking permit program, which was implemented in 2018, not only prioritizes parking for residents and local businesses, but better spreads parking demand in congested areas specifically in the McMicken Heights neighborhood. In this program vehicles' registration addresses must be the same as the applicant's residence or business. The first permit is free, while additional permits cost $65 to purchase. It costs $25 to reissue a permit. This permit system, along with the city's requirement that vehicles must be moved every 24 hours, discourages long-term airport passenger parking. Currently, the McMicken neighborhood is the only portion of SeaTac subject to parking permits.

- **City of Tukwila Parking Regulations**
  Tukwila relies on the following policies and regulations to manage off-street and on-street parking:
  - Street Parking Laws – The city of Tukwila imposes a city-wide policy that limits on-street parking use to 72 hours; vehicles must be moved after this time. Violators are subject to a $50 fine. In other parts of the community, the city may import on-street parking time limitations or prohibit street-parking altogether.
  - Parking Permit Program/Policies – The city of Tukwila does not have an active residential parking permit program.
  - Transportation Demand Management Policies – In addition, the city of Tukwila has a Transportation Demand Management program that gives residents and commuters resources and incentives to use other, more sustainable modes of transportation. The program provides incentives such as reduced ORCA cards, regional reduced fare permits for seniors and riders with disabilities, carpool and vanpool services, and service areas for microtransit. In addition, with the increase of transit centers in the city, a policy was enacted in the 2015-2019 update requiring all parking facilities located near transit facilities to accommodate parking demand and prevent spillover parking onto private properties and public streets.

Effects on the Parking Infrastructure

The following effects are noted on the various parking facilities and any related parking issues in the study area:

- **Local Parking Requirements Exceed ITE Parking Generation Demands**
  The cities of Burien, SeaTac, and Tukwila impose minimum parking requirements that generally meet or exceed industry standards. This generally suggests that newer development projects have enough parking capacity to address the parking demand for their occupants. The 2018 SeaTac Permit Parking Program study identified specific streets near the Airport/SeaTac and Tukwila light rail stations but also

found that most of the vehicles parked on streets were associated with residents. However, no information could be found for on-street parking conditions in other parts of Burien, Tukwila, or SeaTac.

- **Notable SeaTac Neighborhoods**
  Pursuant to the 2018 SeaTac Permit Parking Program study, SeaTac's McMicken Heights neighborhood and the areas near the Angle Lake Transit Station experienced consistent on-street parking use. These neighborhoods reflected parking use rates of 0 to 50%, with observed peak parking demands of 70% to over 85% use along popular on-street segments. In McMicken, 78% of the parked cars were attributed to residents, and near the Angle Lake Station, 75% of parked cars were attributed to residents. In Tukwila, the residential areas northwest of the light rail station also had high on-street parking use; 78% of the vehicles were attributed to residents. However, no data was available to determine the specific origins of non-residentially associated on-street parking.

- **Shared Parking Allowances**
  The cities of Burien, SeaTac, and Tukwila allow shared parking arrangements among neighboring properties to satisfy minimum parking requirements. This allows for on-site parking capacity for private developments (and lessens the need for occupants to use on-street parking).

- **Municipal On-Street Parking Restrictions**
  The cities of Burien, SeaTac, and Tukwila impose use restrictions for on-street parking in various areas. These restrictions either prohibit on-street parking or impose limits on parking duration. The cities of SeaTac and Burien have a permit program to allow additional on-street parking use for local residents/employees. These restrictions preclude long-term on-street parking use but also grant exceptions to permit holders.

- **Parking Enforcement**
  The cities of Burien, SeaTac, and Tukwila use parking enforcement for on-street parking. However, no information could be found to determine the number of annual parking violations, the methods/frequency of enforcement activities, or the long-term effectiveness of these practices.

- **Transit Park and Ride Facilities**
  The implementation of new transit centers, stations and Park and Ride lots has an effect on parking demand in the study area. In suburban communities, the increase in ridership for alternative modes can generate an increase in demand for parking adjacent to transit facilities, which can create spillover parking into on-street parking and other off-street parking lots in the surrounding communities. Park and Ride facilities provide an alternative option to parking at on-site airport parking facilities. However, Park and Ride facilities do not allow for overnight parking; thus is not a viable option for Seattle-Tacoma International Airport passengers with overnight travel itineraries. In contrast, Park and Ride facilities are a viable option for airport employees, although there is some degree of negative reaction on the part of the public when these facilities are used by airport employees. However, more information is needed in order to determine the extent that Park and Ride facilities effect on-street parking use in the cities of Burien, Tukwila, or SeaTac.

G. MOBILITY EFFECTS ATTRIBUTABLE TO AVIATION ACTIVITY

Positive Effects on Mobility

The following are the positive effects on the mobility network in the study area:

- **Ground Transportation Network**
  The 2007 addition of Airport Expressway is the main positive effect on the ground transportation network in the study area. (Airport Expressway generally provides direct and free-flowing access to Seattle-Tacoma International Airport, but there are instances when traffic becomes congested due to a variety of factors.) The remainder of the study area's ground transportation network has tended to focus improvements for transit access rather than car and trucks.

- **Transit Network**
  The study area mobility improvements since 1997 have favored transit modes. There is now direct airport transit access via light rail. Other study area network transit-related improvements include park and ride lots and garages, bus pull-offs (such as those along U.S. Highway 99), transit and HOV lanes, and preferred ramp entry lanes (such as those on IH-5), among others. Transit-related improvements have exceeded those for cars and trucks, with fewer roadway expansions and/or lane-miles dedicated to non-transit use.

- **Parking Network**
  Parking capacity at Seattle-Tacoma International Airport has expanded through the relocation of the rental car outlets to an off-site consolidated car rental facility (2010) that freed up around 3,000 parking spaces in the main parking garage. Additionally, airport employees are provided dedicated parking at the North Employee Parking Lot (4,777 parking spaces), the South Employee Parking Lot (1,091 parking spaces), and 766 employee dedicated spaces in the main parking garage. There are also other on-airport lots for cell phone waiting, employee/vendor parking areas for various freight forwarders and other aviation-related businesses. This is supplemented by an off-airport collection of private lots that provide parking in the immediate vicinity of Seattle-Tacoma International Airport.

- **Bicycle Network**
  There are racks for locked bicycle parking in and around Seattle-Tacoma International Airport, but bicycle access remains a small percentage of how people access the airport.

- **Pedestrian Network**
  Pedestrian facilities are generally limited to sidewalks and signalized crosswalks (principally along U.S. Highway 99), and a skybridge that connects directly to the airport light rail station. As with bicycles, pedestrian access is a small percentage of how people access the airport.

Neutral Effects on Mobility

The following are the neutral effects on the mobility network in the study area:

- **Ground Transportation Network**
  There are no known neutral effects on the ground transportation network. Additional data is required to determine the full extent of effects due to airport-related traffic versus other regional traffic which has also grown since 1997, especially regarding origins/destinations of drivers.

- **Transit Network**
  There are no known neutral effects on the transit network (bus and rail). Additional data is required to determine the full extent of effects due to airport-related transit traffic versus other regional transit usage since 1997.

- **Parking Network**
  There are no known neutral effects on the parking network. Additional data is required to determine the full extent of effects due to airport-related traffic versus other regional traffic which has grown since 1997, especially regarding origins/destinations of transit riders.

- **Bicycle Network**
  There are no known neutral effects on the bicycle network. Additional data is required to determine if demand is being enhanced or inhibited by current facilities.

- **Pedestrian Network**
  There are no known neutral effects on the pedestrian network. Additional data is required to determine if demand is being enhanced or inhibited by the current facilities provided.

Negative Effects on Mobility

The following are the negative effects on the mobility network in the study area:

- **Ground Transportation Network**
  As noted in the 2020 study, areas of congestion could be directly attributable to airport demand. This requires additional study, monitoring, and analysis to determine what percentage of study area traffic is attributable to the airport versus normal regional traffic demands.

- **Transit Network**
  Transit in the study area is designed to alleviate traffic congestion, although conventional bus transit is subject to the same traffic issues as other cars and trucks. A reported concern relating to transit was the use of park and ride lots and garages by airport employees, instead of using dedicated North and South Employee Parking lots. This was reported as a negative by some study area residents as it takes parking capacity from other transit users. On the other hand, if airport employees are using transit (bus or light rail) to access the airport, it would be difficult to differentiate that use from other riders commuting to other destinations. Additional study is required to determine airport-related transit use and how to best serve that demand.

- **Parking Network**
  Aside from airport employee use of park and ride transit lots, there were no additional negative effects noted. While some area residents have complained about the cost of airport parking rates, price is not considered to be a negative effect.

- **Bicycle Network**
  There are no known negative effects on the bicycle network. Additional data is required to determine if demand is being enhanced or inhibited by the current facilities provided. Data such as bicycle accidents, injuries, or deaths are also indicators of negative effects that should be addressed.

- **Pedestrian Network**
  There are no known negative effects on the pedestrian network. Additional data is required to determine if demand is being enhanced or inhibited by the current facilities provided. Data such as pedestrian accidents, injuries, or deaths are also indicators of negative effects that should be addressed.

Summary of Mobility Effects Attributable to Aviation Activity

Traffic congestion is a common complaint in numerous urban areas, and the Seattle region is no exception. Efforts to reduce traffic have included alternative modes (bus, rail, bicycle, even pedestrian), but these tend do not always attract enough users to significantly reduce congestion issues. The question the 2020 study was tasked with was – How much travel demand is attributable to Seattle-Tacoma International Airport?

The intersection and roadway segments in and around the airport appear to be the ones experiencing the greatest impacts from traffic congestion and decreasing levels of service. With the exception of Airport Expressway, many mobility improvements over the 22-year study period were for transit service rather than increasing the roadway network's capacity.

The graphs and tables in this section present various aspects of noise and vibration, including magnitude and intensity. However, Figure 7.21 presents a general assessment of mobility effects in the study area attributable to aviation activity, categorized into four effect types:

- Positive effect attributable to aviation activity.
- Negative effect attributable to aviation activity.
- Neutral or no effect attributable to aviation activity.
- Inconclusive data/needs additional study.

Figure 7.21
Summary of Mobility Effects Directly Attributable to Aviation Activity – 1997 to 2019

■ Positive effect attributable to aviation activity
■ Negative effect attributable to aviation activity
■ Neutral/no effect attributable to aviation activity
○ Inconclusive data/needs additional study

MOBILITY METRIC	STUDY AREA CITY																	
	Burien			Des Moines			Federal Way			Normandy Park			SeaTac			Tukwila		
	1997	2009	2019	1997	2009	2019	1997	2009	2019	1997	2009	2019	1997	2009	2019	1997	2009	2019
Traffic	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Transit/Rail	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Transit/Bus	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Parking	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	■	■	■
Bicycle	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Pedestrian	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

There is a need for additional study and data collection to better determine the specific mobility effects attributable to aviation activity. Updated information (such as origin/destination surveys) would help designers and engineers fine tune transit, parking, bicycle, and pedestrian needs.

H. MOBILITY RECOMMENDATIONS

The following recommendations were drafted to address the effects on the various mobility components in the study area.

Airport Mobility Infrastructure Recommendations

- **Mobility Recommendation #1: Rental Forecasts**
  The Port of Seattle should work with its staff and rental car vendors to generate annual service demands to ensure the consolidated rental car facility can accommodate future customer volumes and associated vehicle storage.

- **Mobility Recommendation #2: Parking Data**
  The Port of Seattle should conduct an annual parking demand and occupancy analysis for the main parking garage and employee parking lots to better assess parking demand and plan for supply over time in the Seattle-Tacoma International Airport parking system.

- **Mobility Recommendation #3: Cell Phone Lot Usage**
  The Port of Seattle should conduct an annual survey of the cell-phone lot usage in terms of occupancy and typical vehicle parking duration. The survey should examine whether the cell-phone lot reduces congestion at the arrivals and departures areas in front of the terminal.

- **Mobility Recommendation #4: Private Parking Lot Data**
  The Port of Seattle should create a consolidated list of private parking facilities with inventory and occupancy data to maintain a record of off-site parking accommodations and how changing supply may affect demand at the main garage. The Port should also identify private lots that may eventually be redeveloped as other non-parking uses in anticipation of a parking demand shift.

- **Mobility Recommendation #5: Airport Mobility Modes Survey**
  The Port of Seattle should analyze the historical and current passenger mode trends to assess how passengers and employees travel to and from the airport. The Port should institute annual passenger surveys to forecast and respond to mobility demands.

- **Mobility Recommendation #6: Drop-Off/Pick-Up Zone Study**
  The Port of Seattle should create a data source for drop-off and pick-up zones for airport shuttles to assess congestion and vehicle and pedestrian flow in and around the airport property.

- **Mobility Recommendation #7: Employee Forecasts**
  The Port of Seattle should work with staff, vendors, and tenants to generate annual employee forecasts to ensure adequate parking and mobility options to accommodate changing demand.

- **Mobility Recommendation #8: Parking Master Plan**
  The Port of Seattle should create a parking master plan based on anticipated passenger volumes and employment forecasts. The Port of Seattle should engage area stakeholders (e.g., airport vendors and employees, surrounding cities, King County Metro, and Sound Transit) in developing the master plan.

Ground Transportation Recommendations

- **Mobility Recommendation #9: Transportation Improvement Program Database**
  The Port of Seattle should work with WsDOT, Sound Transit, King County Metro and local planning and/or local economic and development departments to create a database of all historical and current capital improvements in the Seattle-Tacoma International Airport area to better understand how the physical network changes over time.

- **Mobility Recommendation #10: Vehicle Origin-Destination Study**
  The Port of Seattle should conduct a vehicle origin-destination study at the consolidated rental car facility to better understand vehicle patterns and movements along the transportation network around the facility, as well as to understand where vehicles are traveling from to reach the facility. This study should conduct an origin-destination analysis for SOVs, transit, shuttles, and airporters.

- **Mobility Recommendation #11: Targeted Annual Traffic Monitoring**
  The Port of Seattle should work with WsDOT and local traffic engineering departments to create an airport-specific traffic monitoring system. Critical intersections and roadway segments should be identified and monitored on an annual basis to create a consistent and reliable database that monitors congestion over time. The traffic analysis should target specific time frames to include both off-peak and peak seasons, and morning and afternoon peak time periods. Peak periods may need to be divided into two categories to create a database for passenger/airport peak hours and employee peak hours.

Future traffic monitoring should include level of service, vehicle delay, vehicle/capacity ratios, and AADT analyses. Intersections that should be included in the annual report are shown in Figure 7.22.

Figure 7.22
Intersections Recommended for Annual Monitoring

- IH-5 and IH-405 (on-ramps and off-ramps)
- State Route 509 and State Route 518 (on-ramps and off-ramps)
- Des Moines Memorial Dr S and 8th Ave South
- Des Moines Memorial Drive and 1st Avenue
- South 188th Street and Des Moines Memorial Drive
- South 150th Street and 24th Ave South
- South 152nd Street and 24th Avenue South
- Southcenter Boulevard/South 154th Street and US Highway 99/Tukwila International Boulevard
- South 160th Street and South 158th Street
- South 160th Street and Military Road South
- Military Road South and Tukwila International Boulevard
- South 160th Street and US Highway 99
- 31st Ave South and US Highway 99
- South 170th Street and US Highway 99
- South 176th Street and US Highway 99
- South 188th Street and US Highway 99
- South 200th Street and US Highway 99
- South 160th Street and Air Cargo Road
- South 160th Street and Host Road
- South 170th Street and Air Cargo Road
- South 188th Street and Air Cargo Road
- South 200th Street and Air Cargo Road
- Departures Drive, Arrivals Drive, and Airport Expressway

Transit Recommendations

- **Mobility Recommendation #12: Annual Transit Analysis**
  The Port of Seattle, King County Metro, and Sound Transit should participate in an annual transit analysis on ridership, use, perception, and demand in and around the airport. This study should result in a database of transit demand in the study area and a means to improve ridership to the airport. Figure 7.23 lists the following transit stops that should be included in the annual study.

Figure 7.23
Recommended Transit Stops for Annual Transit Analysis

- Airport Station
- Angle Lake Station
- Tukwila International Boulevard Station
- Tukwila Amtrak Station
- Southcenter Blvd & 62nd Avenue South
- South 180th Street and Southcenter Pkwy
- Southcenter Boulevard & Park Place
- South 154th Street & 32nd Avenue
- US Highway 99 & South 160th Street
- US Highway 99 & South 170th Street
- US Highway 99 & South 176th Street
- US Highway 99 & South 180th Street
- US Highway 99 & South 182nd Street
- US Highway 99 & South 188th Street
- US Highway 99 & South 195th Street
- US Highway 99 & South 200th Street

- **Mobility Recommendation #13: Airport Passenger and Employee Transit Use**
  The Port of Seattle should partner with King County Metro and Sound Transit to identify annual transit use of airport passengers and employees.

- **Mobility Recommendation #14: Park & Ride Use**
  The Port of Seattle, King County Metro, or Sound Transit should conduct a detailed analysis of the Park and Ride facilities in the study area to determine how many people use the facilities to access the airport. The analysis could employ the following methods:

- **Mobility Recommendation #15: License Plate Analysis**
  A license plate analysis should be conducted at Park and Ride lots to determine where vehicles originate. A license plate analysis uses Registry of Motor Vehicle data to determine where parked vehicles are registered and potential better understand Park and Ride patterns.

- **Mobility Recommendation #16: Origin/Destination Study**
  Similar to the aforementioned license plate analysis, an origin/destination study should be conducted for key transit centers and hubs in the region to determine which users access the Seattle-Tacoma International Airport via transit modes. An origin/destination study analyzes travel patterns and average daily traffic in a specific study area along key roadways and points to assess where vehicles are traveling to and from during specific time periods.

Pedestrian Infrastructure Recommendations

- **Mobility Recommendation #17: Annual Pedestrian Counts**
  The Port of Seattle, King County Metro, and Sound Transit should participate in an annual pedestrian access analysis to determine the number of people who use the sidewalk along the front of the terminal and the Link Light Rail Airport/SeaTac station pedestrian bridge to access the airport.

- **Mobility Recommendation #18: Mobility Barriers**
  The Port of Seattle, King County Metro, Sound Transit, and the city of SeaTac should participate in a study to identify potential mobility barriers for pedestrians traveling between the terminal and U.S. Highway 99 (e.g., lack of wayfinding/signage, crosswalk locations, crosswalk signal timing, etc.).

Parking Recommendations

- **Mobility Recommendation #19: On-Going On-Street Parking Study**
  The cities of Burien, Tukwila, and SeaTac should maintain on-going parking studies with specific emphasis on-street segments adjacent to transit centers, light rail stations, and the Seattle-Tacoma International Airport. The study should monitor supply, use, duration, and areas with excessively high use from non-residents. The on-going parking studies may incorporate the following elements.

- **Mobility Recommendation #20: Existing/Baseline Conditions**
  The initial parking studies should document existing conditions of specified off-and on-street parking facilities in the area, in communities including Burien, SeaTac, and Tukwila. Use counts should be conducted in these facilities during peak morning, afternoon, and evening peak periods during a typical weekday and weekend.

- **Mobility Recommendation #21: Parking Supply Database**
  The studies should result in a database of existing parking facilities, inventory, and use/demand. This will not only provide insight on parking demand in the area but give the participating communities a database that can be built upon in the future and monitored over time.

- **Mobility Recommendation #22: License Plate Analysis**
  In conjunction with Mobility Recommendation #15 in this section, the recommended studies should include a license plate analysis at key off-street parking facilities and neighborhoods to understand where vehicles originate from in the study area. This analysis will highlight who parks in certain on- and off-street facilities, be it residents from the local communities or commuters from surrounding municipalities who use these facilities to park closer to their destination or place of employment.

- **Mobility Recommendation #23: Parking Permit Program Expansion**
  Burien and Tukwila should adopt/expand their parking permit programs to discourage long-term airport passenger and employee parking on residential streets. The permit programs should focus on areas close to light rail and RapidRide stations (within a 10-minute walk, or roughly one-half mile).

- **Mobility Recommendation #24: Parking Limitation Education at the Airport**
  The Port of Seattle should employ an information campaign to educate airport employees and passengers on the parking restrictions in surrounding communities to discourage on-street parking on surrounding streets for airport purposes. The Port of Seattle should partner with the cities of Burien, Tukwila and SeaTac to understand local parking restrictions and areas of concern. The Port of Seattle should also post off-airport parking restrictions on the Seattle-Tacoma International Airport webpages, signs in and around the terminal, and employee information sharing.

- **Mobility Recommendation #25: Employee Parking Restrictions**
  The Port of Seattle should adopt a formal policy that prohibits airport employees from using on-street off-airport parking during working hours. In doing so, the Port of Seattle should educate employees about the policy and adopt enforcement and associated disciplinary measures for violators.

I. THE FUTURE

There is much speculation on the future of transportation. Car manufacturers – and many small start-up companies – are spending billions of dollars to reinvent how people get from Point A to Point B. The first disruptive technology appears to be the general acceptance of electrically powered vehicles – from internal combustion engines with electric assist ("light hybrids") to vehicles completely powered by rechargeable batteries. These hold the promise of lowering emissions, operating more quietly, and reducing dependence on petroleum (although electric vehicles also shift energy demand from the pump to the power grid when they require recharging).

There is no set timetable for the adoption of new technologies – from electric cars to autonomous vehicles to flying taxis to Hyperloops. And questions remain regarding federal and state regulations, insurance issues, affordability, cyber-security, market acceptance, and many others. Adoption of any new disruptive technology is not likely to happen in the near term but may one day offer alternative modes to short and medium-haul flights.

In a similar fashion, the aviation industry is looking to the future with electro-motive engines, battery-powered engines, biofuels, even technologies with no moving parts. These technologies may reduce air emissions, noise output, and lower costs, but they are certainly many more years in the future than electric vehicles.

J. SUMMARY

The Seattle region has grown since the 1997 study. But what is not clear is how much of the current traffic is attributable to natural, organic regional growth and how much is directly attributable to Seattle-Tacoma International Airport. The necessary data to track and document such attributes does not currently exist. And while drivers who may be stuck in traffic may speculate on the cause, the data does not yet support any single answer.

There are more transportation choices in 2020 than in 1997. In 2020, Seattle-Tacoma International Airport is served by not only a network of local and regional roadways, but also by light rail, regional bus, and even bicycle parking. And Seattle-Tacoma International Airport is also one of the few U.S. airports that can be accessed by pedestrians, without the need for a vehicle or parking. Rental cars have been moved off-site to a consolidated

rental car facility – while this necessitates shuttle bus access, it did move thousands of rental cars away from direct terminal roadway access.

It is reasonable to project that the primary mode to access Seattle-Tacoma International Airport will be some form of private vehicle for the foreseeable future (personal car, rideshare service, taxi), with transit and other modes remaining as small percentages. Eventually, new technologies hold the promise of realistic alternatives that may also reduce overall traffic congestion.

Therefore, care must be taken to make the necessary infrastructural improvements that meet current and projected demand while concurrently "future-proofing" said improvements to maximize financial efficiency. For example, should airport parking demand peak or decrease in the future, current (and new) parking facilities could be become the structural framework of future buildings (retail, hospitality, office, etc.). The Port of Seattle is in a position to conduct ongoing monitoring regarding its parking and circulation requirements and can be proactive in adjusting to changes in demand.

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