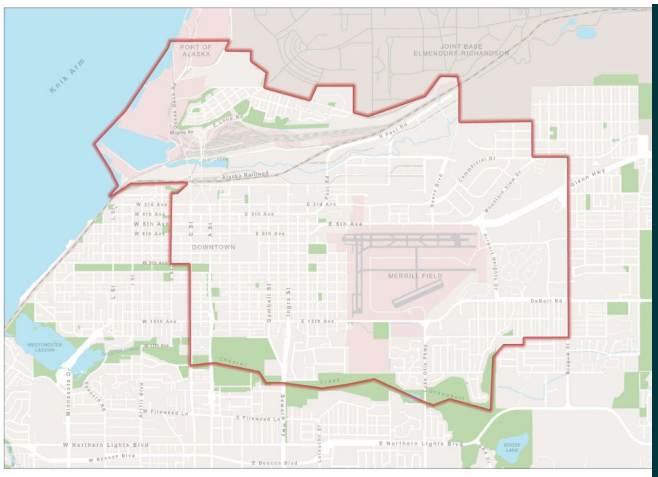

AMATS: Seward Highway to Glenn Highway Connection
Planning & Environmental Linkage Study
State Project No.: CFHWY00550
Federal Project No.: 0001653

DRAFT System Performance Memorandum

May 2022

This planning document may be adopted in a subsequent environmental review process in accordance with 23 USC 168 Integration of Planning and Environmental Review and 23 CFR 450 Planning Assistance and Standards.

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 USC 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

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Acronyms

AADT	annual average daily traffic
AHS	Alaska Highway System
AMATS	Anchorage Metropolitan Area Transportation Study/Solutions
CCS	Continuous Count Stations
CFR	Code of Federal Regulations
DEIS	Draft Environmental Impact Statement
DoD	Department of Defense
DOLWD	Alaska Department of Labor and Workforce Development
DOT&PF	Alaska Department of Transportation and Public Facilities
EAST	*East Anchorage Study of Transportation*
FHWA	Federal Highway Administration
GSD	Greenway-Supported Development
IRI	International Roughness Index
LOS	level of service
LRTP	Long Range Transportation Plan
LTS	Level of Traffic Stress
LUP	Land Use Plan
MIS	Major Investment Study
MOA	Municipality of Anchorage
mph	miles per hour
MSB	Matanuska-Susitna Borough
MTP	Metropolitan Transportation Plan
NEPA	National Environmental Policy Act
NHFN	National Highway Freight Network
NHS	National Highway System
NPRN	National Port Readiness Network
OSHP	*Official Streets and Highways Plan*
PEL	Planning and Environmental Linkages
POA	Port of Alaska
STRAHNET	Strategic Highway Network

TDM	Transportation Demand Management
TSM	Transportation Systems Management
UMED	University Medical
USC	United States Code
VHD	vehicle hours of delay
VHT	vehicle hours of travel
VMT	vehicle miles of travel

1. Introduction

The purpose of this memorandum, consistent with 23 United States Code (USC) 168 and 23 Code of Federal Regulations (CFR) 450.212 and 450.318, is to summarize the existing and desired transportation conditions of the study area. Where possible, the existing and future transportation performance conditions were identified for a variety of travel modes, including automobile, public transportation, walking, and bicycling. This includes a review of the system performance published in existing approved transportation plans, analysis conducted for the Planning and Environmental Linkages (PEL) Study, as well as stakeholder input on desired system performance. The information presented in this memorandum will be used to support the study's purpose and need statement as well as the alternative selection criteria, and will be included in the final Seward-Glenn Mobility PEL Study report.

The Seward-Glenn Mobility PEL Study will identify and evaluate options to improve transportation mobility, safety, access, and connectivity between the Seward Highway, near 20th Avenue, and the Glenn Highway, east of Airport Heights Drive. The study will also identify ways to improve access to and from the Port of Alaska (POA) to the highway network. The study area is shown in Figure 1.

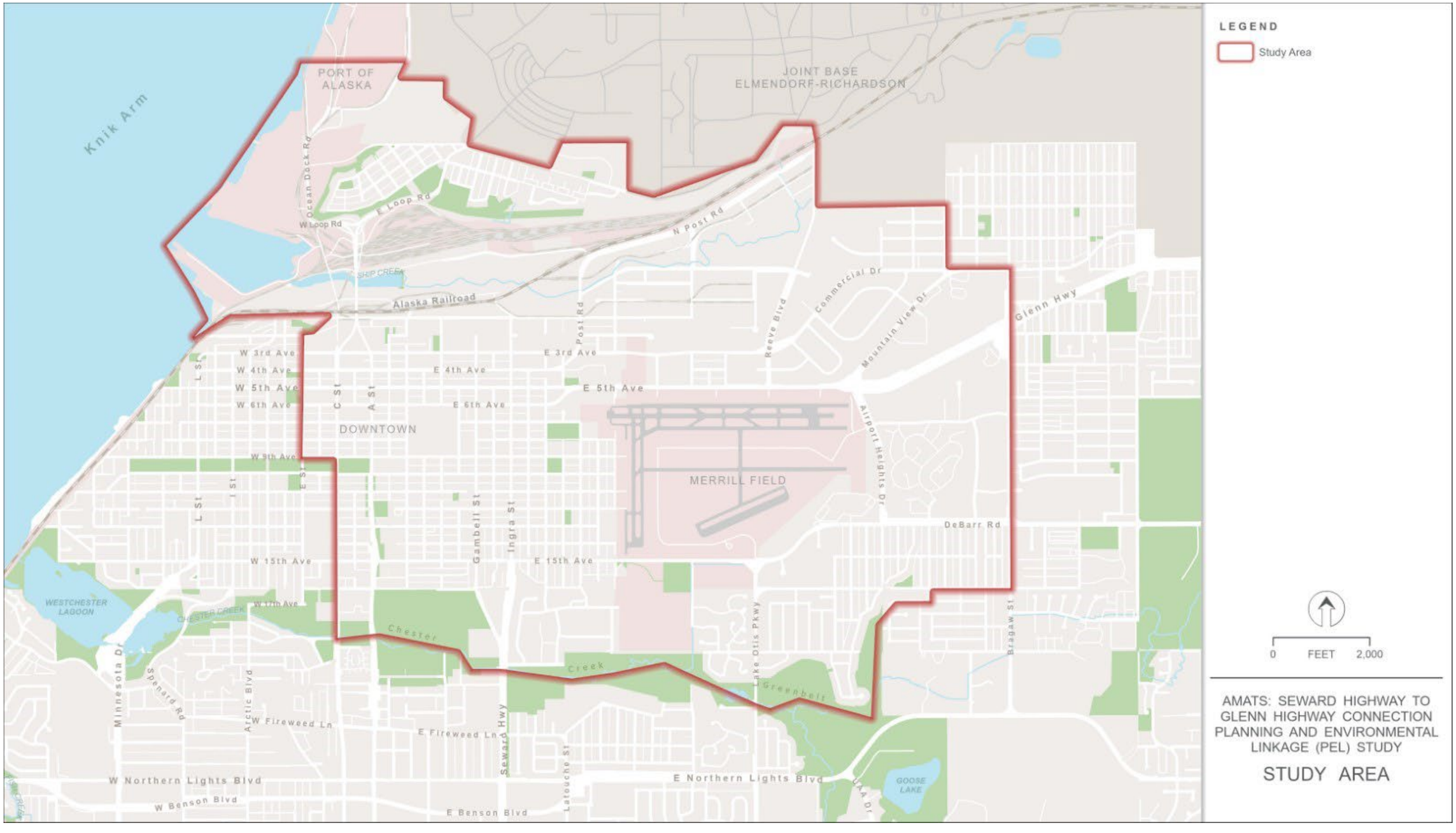
This memorandum may be adopted or incorporated by reference by a relevant agency during a later environmental review process, as allowed by law and regulations. The environmental review, consultation, and other actions required by applicable federal environmental laws for this study are being, or have been, carried out by the Alaska Department of Transportation and Public Facilities (DOT&PF) pursuant to 23 USC 327 and a Memorandum of Understanding dated November 3, 2017, and executed by the Federal Highway Administration (FHWA) and DOT&PF.

This memorandum examines the transportation system performance in terms of the nine items that FHWA guidance recommends are often a relevant part of a project's purpose and need statement (https://www.environment.fhwa.dot.gov/nepa/trans_decisionmaking.aspx):

- Legislation
- Project Status
- System Linkage
- Capacity
- Transportation Demand
- Social Demands or Economic Development
- Modal Interrelationships
- Safety
- Roadway Deficiencies

Within each section of this memorandum, each item is described per FHWA guidance, followed by an analysis of the current system performance within the study area and a recommendation of the desired system performance for each item.

Figure 1. Study Area



2. Legislation

2.1 FHWA Purpose and Need Guidance

“Explain if there is a Federal, state, or local governmental mandate for the action.”

2.2 System Analysis

There are no federal, state, nor local government mandates that apply to the project study area and this PEL study. However, the project is identified in several local plans. For additional information, please see Section 3, Project Status.

2.3 System Performance: Relevance to Purpose and Need

No performance gap is identified and no change is recommended. Since there is no legislation mandating action in this corridor, this purpose and need factor is not applicable.

3. Project Status

3.1 FHWA Purpose and Need Guidance

“Briefly describe the action's history, including measures taken to date, other agencies and governmental units involved, action spending, schedules, etc.”

3.2 System Analysis

3.2.1 Transportation Planning History of Study Area

Constructed in the 1940s, the Seward and Glenn Highways are controlled-access freeways separated by urban arterial streets within the Downtown and Midtown areas of Anchorage. By the late 1960s, the population of Anchorage and the Matanuska-Susitna Valley had grown substantially due to the development of both areas, resulting in an increased volume of traffic on roads and highways in Anchorage that accessed major employment, commercial, and industrial centers. The two freeways are the primary National Highway System (NHS) corridors within the Anchorage Bowl. As a result, transportation planners have consistently identified these highways as areas for improvement in various planning documents over the last 45 years. Over time, these documents have contained plans for the construction of a freeway-type connection of the two highways along the eastern edge of the Downtown and Midtown areas.

Anchorage Freeway Study (1963), DOT&PF. The *Anchorage Freeway Study* documented that traffic volumes and congestion issues in Anchorage would increase as the population grew, and it included preliminary designs for a highway system in Anchorage. Three system alternatives (A, B, and C) and a slight variation on one of the alternatives (Alternative D) were analyzed. Alternative C (with some modifications) was chosen as the recommended network for Anchorage; however, the City of Anchorage, Spenard Utility District, and citizens ultimately rejected this plan and eventually recommended developing a network of one-way streets and

three major roads. The recommended alternative included the Seward Highway Freeway, from the Ship Creek Freeway south on a line parallel to the Old Seward Highway to the Potter Marsh area.

Anchorage Metropolitan Area Transportation Plan (1968), AMATS. The *Anchorage Metropolitan Area Transportation Plan* was developed to recommend a transportation network that would meet Anchorage's transportation needs in the horizon year (1990). Seven alternative networks were examined, but only three were studied in more detail. It was determined that none of the alternatives "achieved the objective of a balanced plan" (Department of Highways 1970). Consequently, a recommended network was developed independent of the plan alternatives. Several of the alternative networks studied included freeway segments. The recommended network was presented to the Anchorage Metropolitan Area Transportation Study (AMATS) Policy Committee in 1971 and was accepted as a conceptual plan. However, several government agencies began questioning much of the study's assumptions by the end of the year.

Revised Transportation Plan (1972), AMATS. The *1972 Revised Transportation Plan* (also referred to as "the 10-Year Plan") featured roadway improvements that upgraded the existing network by adding a minimal number of new arterials to accommodate a minimum population of 200,000 and could be completed by 1982. It focused primarily on automobiles as the main form of transportation. The plan was reevaluated due to an increased awareness of environmental concerns, rising gas prices, and the increasing need to provide transportation services to the elderly and disabled. No Seward to Glenn Highway freeway connection was included in this plan.

Long Range Element (1976), City of Anchorage. The *1976 Long Range Element* anticipated a shift in traffic to the center and southern portions of the Anchorage Bowl. The plan's authors expected industrial and wholesaling activity to move to South Anchorage and examined three roadway alternatives that included minimal freeway development. The *1976 Long Range Element* recommended Alternative 2 as the basis for the roadway system, upgrading all principal and minor arterials to four lanes and adding several new road connections to the network. The roadway alternatives included minimal freeway development due to the strong public opinion against them voiced at previous public hearings.

Major Corridors Study (1982), DOT&PF. The *Major Corridors Study* analyzed the Northside, Seward, and 15th Avenue Bypass corridors as well as system alternatives to provide a comprehensive comparative analysis of a broad range of alternatives (including a No-Build) to help select a preferred plan. Each alternative involved sacrificing traffic benefits to minimize impacts, resulting in no clear best alternative. Several of the alternatives included construction of freeway segments and new interchanges.

Ultimately, Alternative II-B (NC-2, SC-2, BC-1) was recommended due to its low cost, good traffic service in the year 2000, adaptability to future needs, and accommodation of different decisions made regarding the Knik Arm Crossing. This alternative included a 3rd/5th One-Way Couplet, extending a freeway on the New Seward Highway from Tudor Road north to approximately 12th Avenue, where a below-grade freeway north of 15th Avenue would have

come to grade at 12th Avenue, then transitioned to a one-way at-grade couplet (Ingra Street northbound and Hyder Street southbound) north to 3rd Avenue. Gambell Street would have converted to a two-way road and connected with the west freeway frontage road at 15th Avenue, providing a non-freeway connection south to Northern Lights Boulevard. Also included was a four-lane arterial/expressway that would have been constructed from the Glenn Highway west of Bragaw Street in a southwesterly direction past Merrill Field, becoming 15th Avenue west of Lake Otis Parkway.

Long Range Transportation Plan (1984), AMATS. The *1984 Long Range Transportation Plan* (LRTP) developed a series of new road and transit alternatives. The plan included an analysis of existing conditions that found that both the Glenn and Seward Highway corridors were experiencing peak hour congestion. It examined four roadway alternatives: No-Build, Low, Intermediate, and High. The 1984 LRTP recommended the construction of a continuous highway connection between the Seward and Glenn Highways, which advanced the project to the environmental stage of planning, and work began on a Draft Environmental Impact Statement (DEIS) as required by the National Environmental Policy Act (NEPA). The DEIS was not completed, and the project entered a dormant period during which it was not pursued.

Long Range Transportation Plan (1991), AMATS. In the late 1980s, Anchorage experienced a change in economic conditions, a reduced population growth rate, and shifts in transportation needs that required an update to the 1984 LRTP. Authors of the 1991 LRTP expected that South Anchorage would experience the largest population increases, including an estimated 97 percent growth of housing units in the Hillside area. Some of the 1991 LRTP recommendations included expanding 5th Avenue up to eight lanes and extending the Seward Highway north to Fireweed Lane as a six-lane freeway with frontage roads. Additionally, the plan contained a future connection between the Seward and Glenn Highway corridors, and recommended a corridor study prior to finalizing a location. This LRTP was adopted by the AMATS Policy Committee on October 31, 1991.

Long Range Transportation Plans (1994 and 1997), AMATS. The 1994 and 1997 LRTPs were both minor updates to the 1991 LRTP, with very few changes. The 1997 LRTP recognized that improvements to the Seward and Glenn Highways would benefit truck (freight) mobility. The 1997 LRTP was approved by the AMATS Policy Committee on February 11, 1999. After 1997, congestion in the Anchorage Bowl worsened, resulting in a revival of interest in connecting the Seward and Glenn Highways.

Long Range Transportation Plan (2001), AMATS. The 2001 LRTP acknowledged that several issues remaining from the 1991 LRTP would be better addressed in a sub-area or corridor study, which included the *East Anchorage Study of Transportation* (EAST), along with the Glenn Highway Major Investment Study (MIS) and Seward MIS. The 2001 LRTP was approved by the AMATS Policy Committee and adopted by the Anchorage Assembly in April 2001.

Glenn Highway Major Investment Study (2001), DOT&PF. The purpose of the Glenn Highway MIS was to identify potential improvements to the Glenn Highway between Gambell and McCarrey Streets. This corridor planning project documented the serious congestion problems on the Glenn Highway/5th Avenue corridor and evaluated alternatives for solving

those problems. The project involved developing background information on traffic problems on the Glenn Highway between Gambell and McCarrey Streets, writing the purpose and need statement for the project, developing and analyzing multimodal solutions (including bus, light rail, Transportation Systems Management [TSM], Transportation Demand Management [TDM], roadway, and pedestrian improvements), and public and agency involvement. The AMATS Technical Advisory and Policy Committees adopted the project's recommendations unanimously. The results of the study were adopted into Anchorage's LRTP and lead to a series of improvement projects, including adding an additional highway lane in each direction, developing an interchange at Bragaw/Glenn Highway, and reconstructing 5th Avenue and adding an additional arterial lane each direction.

New Seward Highway Major Investment Study (2002), DOT&PF. The New Seward Highway MIS evaluated the New Seward Highway between Rabbit Creek and 36th Avenue, and recommended highway improvements combined with strategies for TSM and TDM. The MIS did not address the existing arterial extension of the highway into Downtown Anchorage.

East Anchorage Study of Transportation (2003), DOT&PF. EAST was commissioned in 2001 and finalized in 2003 to find long-range solutions to travel mobility within and through East Anchorage, and to identify current problems, forecast future transportation demands and deficiencies, and analyze approaches to improve traffic safety and efficiency. EAST concluded that all projects identified in the 2001 LRTP needed to be constructed, but that completing these projects would not solve all of Anchorage's congestion issues. The study recommended connecting the Seward and Glenn Highways.

Anchorage Bowl 2025 Long-Range Transportation Plan (2005), AMATS. The 2025 LRTP incorporated recommendations from the Anchorage 2020 (MOA 2002), EAST, Glenn Highway MIS, and New Seward Highway MIS. One project that the 2025 LRTP recommended was the Seward-Glenn Highway connection, which would serve regional trips to and from employment centers and reduce traffic on neighborhood streets, while improving park and trail connections. Although the language in the LRTP is quite specific about the project, the 2025 LRTP does not rely solely on the Seward-Glenn Highway connection to improve traffic in this corridor. Other improvements such as increased rideshare, High Occupancy Vehicle lanes, and traffic management systems were recommended.

Metropolitan Transportation Plan 2035 (2012), AMATS. The Metropolitan Transportation Plan (MTP) 2035 included recommended road improvements to "connect the Glenn and Seward highways to provide needed capacity and more efficient freight distribution." The third and final phase of the recommended improvements was to connect the Seward and Glenn Highways between Chester Creek and Airport Heights. The potential of a highway connection to "bisect the low-income neighborhoods of Mountain View and Fairview" is acknowledged in the MTP, as well "strategies to mitigate the adverse impacts of the Seward Highway to Glenn Highway project on adjacent neighborhoods," such as depressing the highway to reduce visual and noise impacts; covering the freeway at strategic locations, allowing opportunities to develop parks or open spaces on top of the freeway; and extensively using bridges to improve pedestrian access

and reconnect neighborhoods currently divided and isolated; and converting streets that are now heavily traveled (such as Ingra and Gambell streets) into pedestrian-friendly main streets.

Metropolitan Transportation Plan 2040 (2020), AMATS. The MTP 2040 includes this PEL study as a short-term project (MTP #129), described as follows: “The intent of this PEL is to define a vision for the future of this connection, identify environmental and resource concerns and opportunities in the study area, and use the information to develop reasonable alternatives through consultation with the affected agencies and the public” (AMATS 2020). Additionally, a long-term project (MTP #214) is to “Construct freeway connection between Seward Highway/20th Avenue and 13th Avenue with freeway access and egress ramps onto Ingra/Gambell Streets near the northern termini of the project” (AMATS 2020). Grade-separated crossings and an interchange at Airport Heights Drive are also included in this project description. MTP 2040 describes the following purposes for the project: “Safety (Vision Zero High Injury Network Corridor), Congestion, Access, Connectivity, and Freight (Proposed Regional Truck Route)” (AMATS 2020). Additionally, the project is intended to address the following federal performance areas: injuries and fatalities, performance of the NHS, freight movement/economic vitality, and environmental sustainability.

3.3 System Performance: Relevance to Purpose and Need

Transportation issues surrounding the connection between the Seward and Glenn Highways have been identified in Anchorage area transportation planning documents for decades. Several plans have explicitly stated the desire to construct a limited-access freeway connection between the highways. This PEL study and a long-term (2031–2040) project to construct a connection between the highways are identified as projects in the current approved MTP (MTP #129 and MTP #214, respectively; AMATS 2020). The 2018 cost estimate for the construction project is listed as $237,500,000. The planning history suggests that there are long-standing transportation and land use issues in the study area affecting local neighborhoods that are relevant to the purpose and need. Recently adopted plans have direct project relevance and should be considered in developing the purpose and need statement for the project. The issues raised by these plans and relevance to the purpose and need are discussed in Section 7.

4. System Linkage

4.1 FHWA Purpose and Need Guidance

“Discuss if the proposed action is a “connecting link” and how it fits into the transportation system.”

4.2 System Analysis

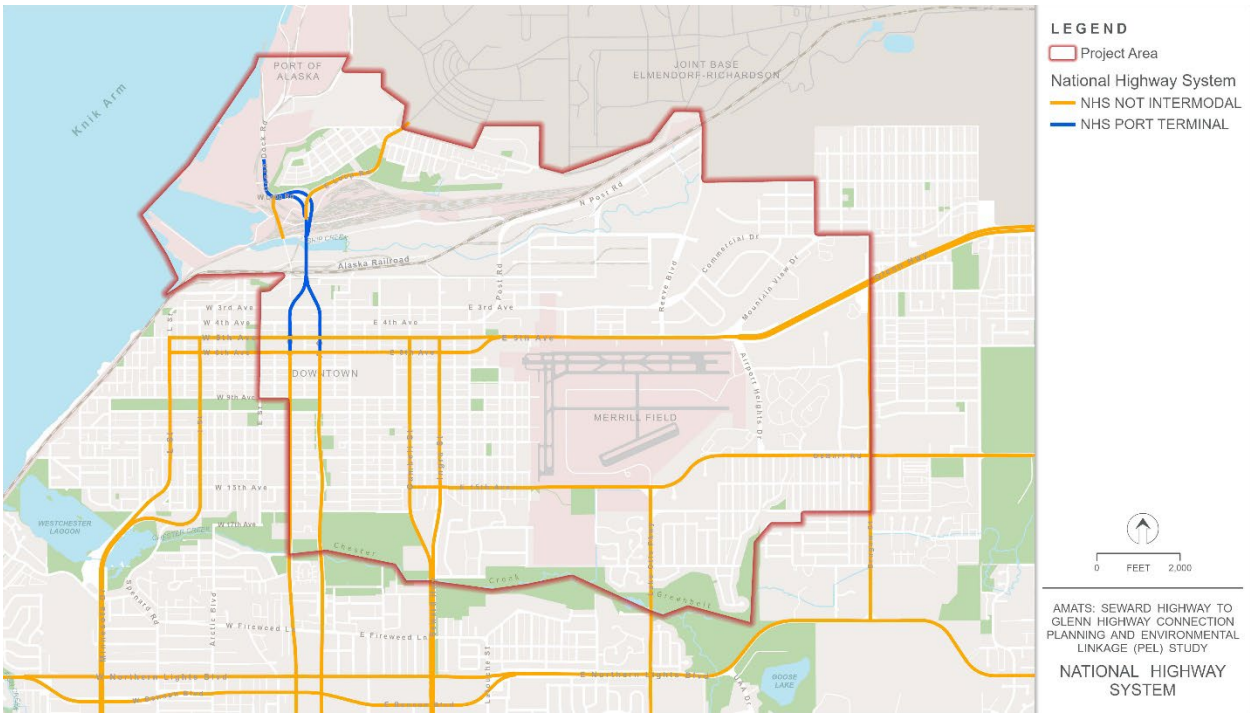
System linkage refers to a how a project fits into the transportation system (i.e., is the project needed to complete a missing link in the transportation network). The desire is to have a multimodal transportation network that supports mobility and access, and allows people to travel

in an efficient, safe, and predictable manner based on travel speed, degree of controlled assess, and land use setting or context.

4.2.1 National Highway System

The NHS is an interconnected system of routes that serve important national functions: security, commerce, and travel. The NHS consists of interstates, principal arterial routes, the Strategic Highway Network (STRAHNET), major strategic highway connectors, and routes connecting to major intermodal facilities such as airports, ports, and ferry terminals. NHS routes in Alaska are typically managed and maintained by DOT&PF. Figure 2 shows NHS facilities in the study area. These include the Glenn and Seward Highways, 5th Avenue, 6th Avenue, C Street (south of 6th Avenue), A Street (south of 6th Avenue), and 15th Avenue. The Seward and Glenn Highways are classified as interstate routes, STRAHNET, strategic highway connectors, and routes connecting to major intermodal facilities.

Figure 2. National Highway System



Source: DOT&PF n.d.

4.2.2 Alaska Highway System

The Alaska Highway System (AHS) consists of highways that have statewide significance but are not on the NHS. The AHS includes routes that connect communities and link to recreational sites or areas of resource development. DOT&PF manages and maintains most AHS routes. Figure 2 shows NHS facilities in the study area, including A and C Streets north of 6th Avenue (shown in blue).

4.2.3 Functional Classification

Functional classification is used by DOT&PF and the Municipality of Anchorage (MOA) to classify each road based on their relative emphasis on mobility versus land access. Table 1shows DOT&PF and MOA's classification systems. The approximate equivalents are shown in the same row.

Table 1. DOT&PF and MOA Functional Classification Hierarchies

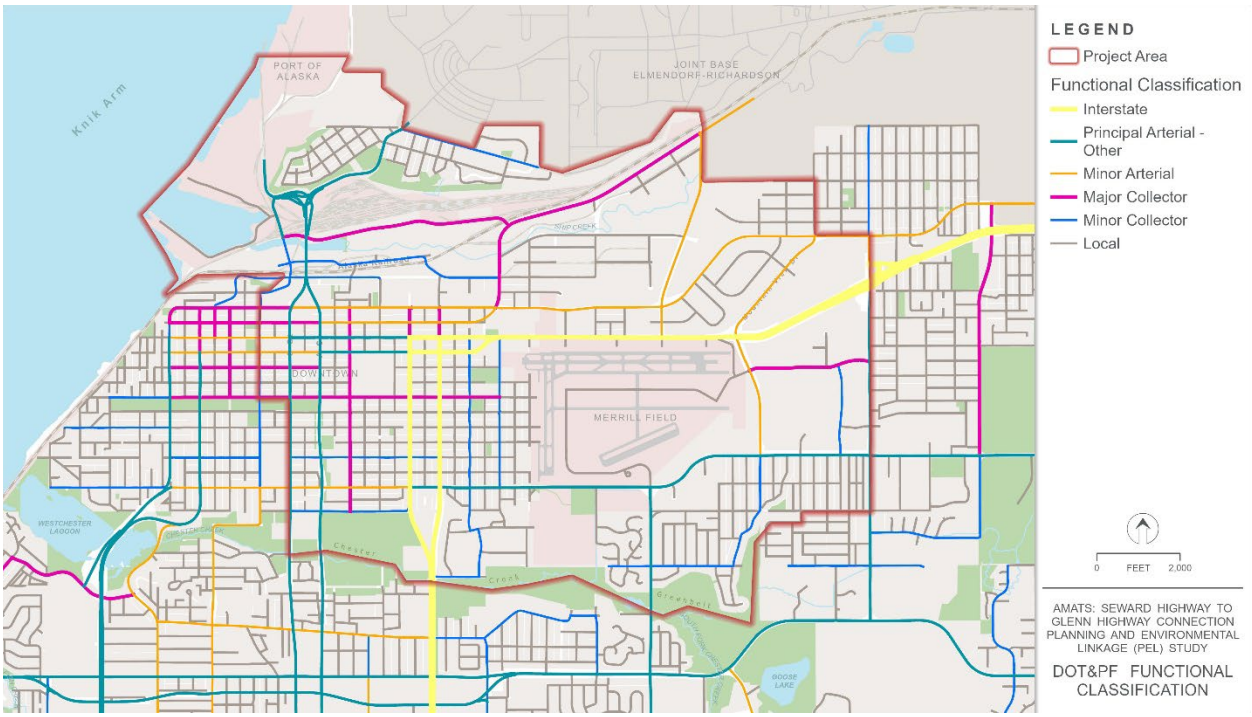
DOT&PF Urban	MOA
Principal Arterial Interstate	Freeway
Principal Arterial – Other Freeways and Expressways	Expressway
Other Principal Arterial	Major Arterial
Minor Arterial	Minor Arterial
Collector	Collector
Local	Local

Source: DOT&PF n.d.

Freeways, expressways, and interstates have the greatest mobility but typically have limited access, meaning access to these roadways is controlled or limited to maximize mobility by eliminating conflicts with driveways and at-grade intersections that would otherwise hinder travel speed and safety. Access to these roadways is often limited to controlled locations at entrance and exit ramps. Local roads primarily provide property/land access and have greater limits to mobility and speed. Collectors and arterials are intermediate between local roads and freeway classifications and have a balance between access and mobility. Figure 3 shows the DOT&PF functional classification system within the study area. The Glenn and Seward Highways, along with Ingra and Gambell Streets, are classified as Principal Arterial Interstate. The other roads are a mix of Principal Arterial – Other, Minor Arterial, Major Collector, Minor Collector, and Local.

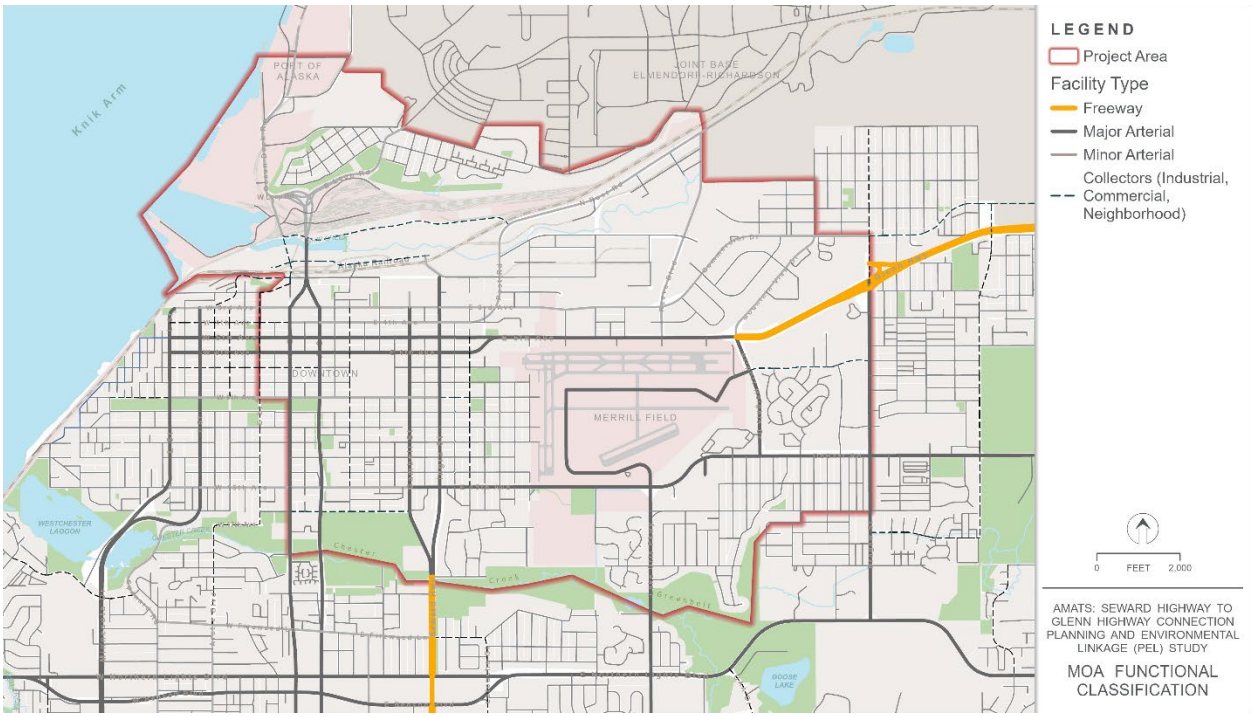
Figure 4 shows the MOA functional classification as listed in the Anchorage's *Official Streets and Highways Plan* (OSHP) (MOA 2014a). It shows the Glenn and Seward Highways as interstate, and Ingra and Gambell Streets as major arterials. Other major arterials in the study area include 5th Avenue, 6th Avenue, A Street, C Street, 15th Avenue, Lake Otis Parkway, and Merrill Field Drive. Most of the remaining roads in the study area are minor arterials or collectors.

Figure 3. DOT&PF Functional Classification



Source: DOT&PF n.d.

Figure 4. MOA Functional Classification



Source: MOA 2014a

4.3 System Performance: Relevance to Purpose and Need

The Seward Highway – Glenn Highway corridor is designated as an NHS and Interstate Highway System. The DOT&PF and MOA functional classifications system have differing classifications for Ingra and Gambell Streets; the DOT&PF classifies the streets as interstate principal arterial, while the MOA classifies the streets as major arterial. The functions of both of the respective classifications are to move large volumes of traffic through the corridor.

The FHWA's Highway Functional Classifications (FHWA 2017) states:

> Interstates are the highest classification of Arterials and were designed and constructed with mobility and long-distance travel in mind. Since their inception in the 1950's, the Interstate System has provided a superior network of limited access, divided highways offering high levels of mobility while linking the major urban areas of the United States… All routes that comprise the Dwight D. Eisenhower National System of Interstate and Defense Highways belong to the Interstate functional classification category and are considered Principal Arterials.

The FHWA's classification of "Other Principal Arterial" may describe the current connection between the Glenn Highway and Seward Highway more accurately (FHWA 2017):

> These roadways serve major centers of metropolitan areas, provide a high degree of mobility and can also provide mobility through rural areas. Unlike their access-controlled counterparts, abutting land uses can be served directly. Forms of access for Other Principal Arterial roadways include driveways to specific parcels and at-grade intersections with other roadways. […] For the most part, roadways that fall into the top three functional classification categories (Interstate, Other Freeways & Expressways and Other Principal Arterials) provide similar service in both urban and rural areas. The primary difference is that there are usually multiple Arterial routes serving a particular urban area, radiating out from the urban center to serve the surrounding region. In contrast, an expanse of a rural area of equal size would be served by a single Arterial.

The OSHP (MOA 2014a) states the following regarding major arterial classification:

> Major arterials are designed to rapidly move large volumes of traffic and access should be controlled. Major arterials also connect major traffic generators within a city and link important inter-city routes by forming an integrated system within the community. A secondary function of major arterials is to provide land access.
>
> Traffic volumes on these streets will typically be over 20,000 trips a day. There should be at least 4 moving lanes, paved shoulders (for emergency parking), and a divider wherever possible. Access should be carefully controlled. Residential development should be served from side streets. A detailed traffic analysis should be made to determine how best to serve commercial property, whether from service roads, shared entrances, or side streets.

The current system experiences conflicting and competing travel functions in the Glenn and Seward Highway corridor within the study area. These roadways are classified in a way that focuses on moving large volumes of traffic through the corridor; however, access is not controlled through the corridor, and there are numerous stoplight-controlled intersections and uncontrolled driveways. The “highways” are composed of arterial streets that traverse local neighborhoods and also serve important local travel functions, including property access and mobility for shorter, local trips.

The Seward and Glenn Highways in the study area provide important regional connecting links between major employment centers, residential areas, and the POA. As regionally important facilities that are part of the NHS, these roadways are intended to serve longer distance travel and are focused on mobility and travel efficiency. These facilities also carry a large portion of truck freight and are part of the Regional Truck Routes identified in the *Anchorage Freight Mobility Study* (AMATS 2017). The NHS in the study area provides several critical regional linkages, including: (1) connecting residential areas to employment centers for people on their daily commutes; (2) connecting the POA and Ship Creek industrial area to the highway network for truckers distributing containers to communities throughout the Alaska road system; and (3) connecting Joint Base Elmendorf-Richardson to the highway network to allow efficient deployment throughout Alaska should the need arise. These roadways have been designed as high-capacity roadways with relatively high travel speeds; however, conflicts do occur with local traffic, reducing the functionality of the NHS for regional travel.

Figure 5 shows the existing arterial connection in the regional highway network and some of the regional destinations this important link connects to.

Local travelers face barriers associated with wide streets, high speeds, and congestion in getting across the NHS facilities in the current Seward and Glenn Highway corridor within the study area. The facility design does not meet current design standards. Connectivity of facilities for walking, bicycling, and non-motorized uses, modes that are critical to the local neighborhood, are deficient and not consistent with recently adopted development plans. The multi-laned, wide streets and heavy traffic volumes on the existing arterial streets that comprise the Seward and Glenn Highways make travel across and along these roads difficult and uncomfortable for bicycle, pedestrian, and vehicle users, adversely affecting travel within and between adjacent neighborhoods. The neighborhood most adversely affected is Fairview. Residents in Fairview tend to have lower incomes and make a greater percentage of their trips using non-motorized modes or transit than other areas of Anchorage.

Figure 5. Regional System Linkage

Source: HDR

5. Roadway Capacity

5.1 FHWA Purpose and Need Guidance

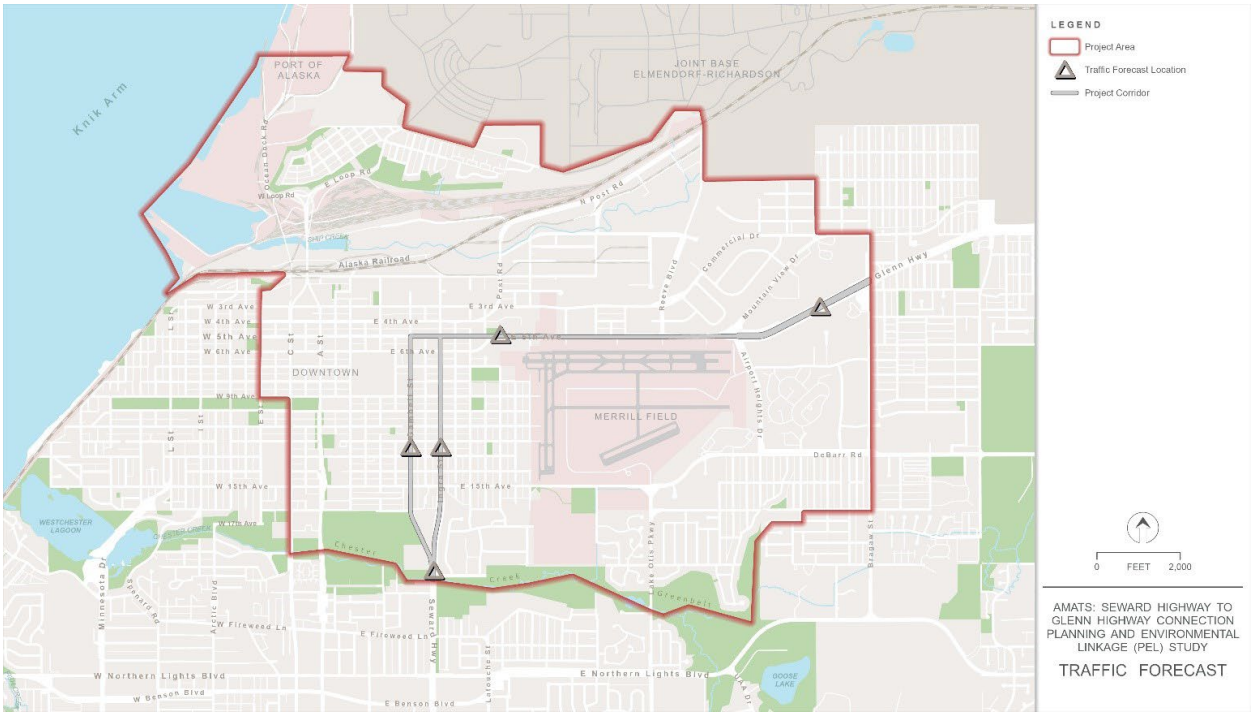
"Discuss the capacity of the present facility and its ability to meet present and projected traffic demands. Discuss what capacity and levels of service for existing and proposed facilities are needed."

5.2 Roadway System Analysis

5.2.1 Vehicle Traffic Count Stations

This section documents historical and forecast vehicle traffic in the project area. For information on bicycle and pedestrian demand, see Section 8.2.4. Vehicle traffic counts and forecasts were identified for the Continuous Count Stations (CCS) along the Seward and Glenn Highway corridor closest to the study area (see Figure 6). The CCS locations were used because these sites are considered to have the most reliable traffic count data. Traffic counts were also identified for 5th Avenue just east of Medfra Street (where the 5th/6th Avenue couplet ends) and Ingra and Gambell Streets (between 12th and 14th Avenue), although these locations are not CSS. Traffic count information was obtained from the DOT&PF Traffic Analysis and Data Application website and DOT&PF Central Region's *2010–2012 Traffic Volume Report* (DOT&PF n.d.).

Figure 6. Vehicle Traffic Count and Continuous Count Station Locations



Source: DOT&PF

5.2.2 Historic and Current Vehicle Traffic Volumes

The primary routes into the study area are the Glenn and Seward Highways. Table 2 shows traffic on these routes at selected locations. Data for the years 2010 through 2019 are reported; traffic count data for 2020 is not included in this analysis because COVID-19-related conditions resulted in lower than typical traffic volumes. Overall, traffic counts at these locations have remained relatively flat.

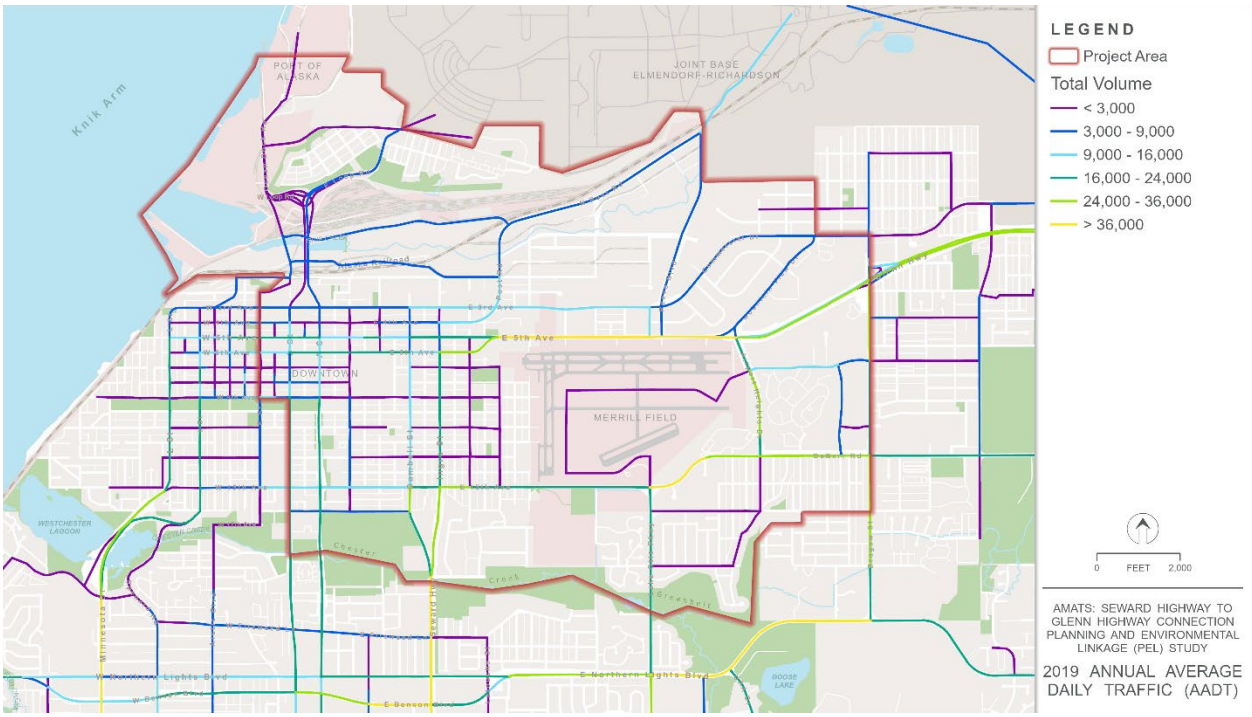
Table 2. Historical Traffic Counts, 2010–2019

Location	Year[a]									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Glenn Highway (Airport Heights to Bragaw)	47,089	48,230	47,836	47,958	48,166	50,416	50,450	48,304	48,484	49,423
5th Avenue (just east of Medfra Street)	50,404	47,474	47,266	48,096	48,305	44,270	50,852	49,845	N/A	47,803
Ingra Street (between 12th and 14th Avenues)	22,150	N/A	N/A	N/A	N/A	22,656	22,918	20,475	20,193	21,306
Gambell Street (between 12th and 14th Avenues)	21,008	19,543	18,873	19,553	19,141	16,635	18,298	17,747	17,491	19,187
Seward Highway at Ingra and Gambell Streets	52,206	51,113	49,085	47,565	50,037	51,490	51,446	49,074	47,977	48,503

Source: DOT&PF n.d.
Notes: N/A = not applicable
[a] Data for 2020 is excluded due to the changes in traffic due to COVID-19-related conditions.

Figure 7 depicts annual average daily traffic (AADT) as predicted by the updated traffic model. These model results were calibrated to 2019 conditions to replicate estimated traffic prior to COVID-19-related influences on travel behavior.

Figure 7. 2019 Average Daily Vehicle Traffic



Source: Project Traffic Modeling, RSG 2022

5.2.3 Future Vehicle Traffic

A range of forecasts were developed to account for the uncertainty associated with a 30-year planning horizon. The most likely scenario is the medium-growth scenario. The medium-growth scenario is recommended for use as the basis for determining future infrastructure needs as it is the most likely scenario based on what is currently known. The low-growth scenario represents the lowest growth that is likely to occur during the planning horizon. A high-growth scenario is estimated because it establishes the probable upper bounds of potential traffic growth. Additional details are found in the *Traffic Forecast Memorandum* (March 2022) for this project.

The medium-growth scenario is based on the Alaska Department of Labor and Workforce Development (DOLWD) population projection for the MOA/Matanuska-Susitna Borough (MSB) region over the next 30 years. The DOLWD population projection predicts regional population increasing from 398,235 residents in 2020 to 458,479 residents in 2045, which represents an annual percent change of 0.61 percent. As noted in Section 5 of this memorandum, the population growth in Anchorage and the MSB has been reduced substantially from past DOLWD forecasts. This scenario assumes that changes in traffic volumes are related to changes in population. Table 3 presents the resulting forecast of projected traffic volumes by year.

Table 3. Medium Growth Scenario, Projected Traffic Volumes, 2010–2050

Roadway Segment	Historical (Actual) Data		Forecast: 2020–2050							Percent Change
	2010	2015	2020	2025	2030	2035	2040	2045	2050	2010–2050
Glenn Highway (between Bragaw and Airport Heights)	47,089	50,416	49,722	51,245	52,814	54,431	56,098	57,816	59,587	26.54
5th Avenue	50,404	44,270	48,092	49,565	51,083	52,647	54,260	55,921	57,634	14.34
Gambell Street	21,008	16,635	19,303	20,503	21,121	21,778	22,445	22,445	25,688	15.97
Ingra Street	22,150	22,656	21,435	22,091	22,768	23,465	24,184	24,924	23,133	10.11
Seward Highway at 20th Avenue	52,206	51,490	48,796	50,291	51,831	53,418	55,054	56,740	58,478	12.01

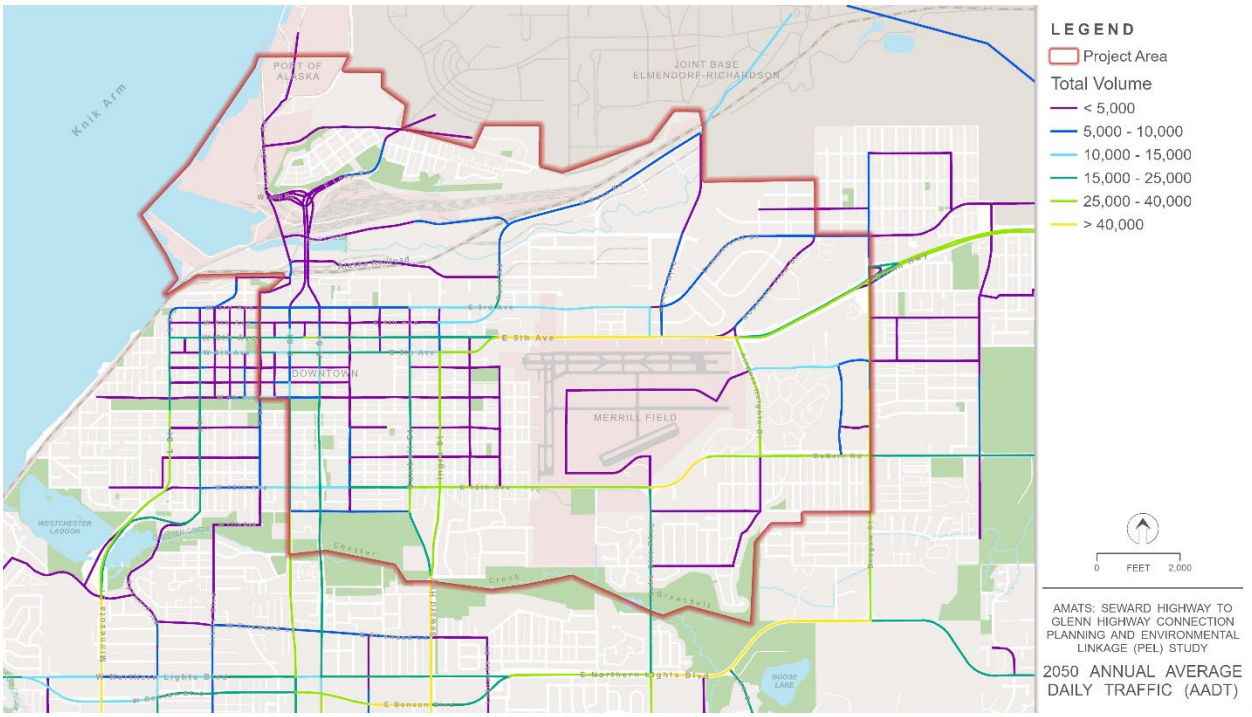
Source: Traffic Forecast Memorandum, March 2022

In addition to the trendline analysis presented above, DOT&PF commissioned a traffic model update specifically for this PEL study to update the model input parameters to the most current data available. This section describes the summary findings of the "No Build model run," which models future traffic conditions that are anticipated to be absent any roadway improvements. Details of the model update methodology can be found on in the *Travel Demand Modeling Memorandum* (August 2021) for this project. The updated model calibration results and information on the No Build model run can be found in the *Draft Travel Demand Modeling Report* (RSG 2022) for this project, also available on the Seward-Glenn Mobility PEL Study project website (sewardglennmobility.com).

Figure 8 depicts AADT as predicted in 2050 by the updated traffic model. The Gambell-Ingra Street couplet, which comprises the Seward Highway in the study area, is predicted to have 15,000 to 40,000 AADT in 2050. The 5th Avenue corridor, which comprises the Glenn Highway between the Airport Heights Drive intersection and the 5th Avenue/6th Avenue couplet split, is modeled to have the highest traffic volumes, at more than 40,000 AADT. The 15th Avenue corridor between Ingra Street and Airport Heights Drive is modeled to experience traffic volumes of 25,000 to more than 40,000 AADT, with the highest traffic volumes predicted in the curve by the Alaska Regional Hospital.

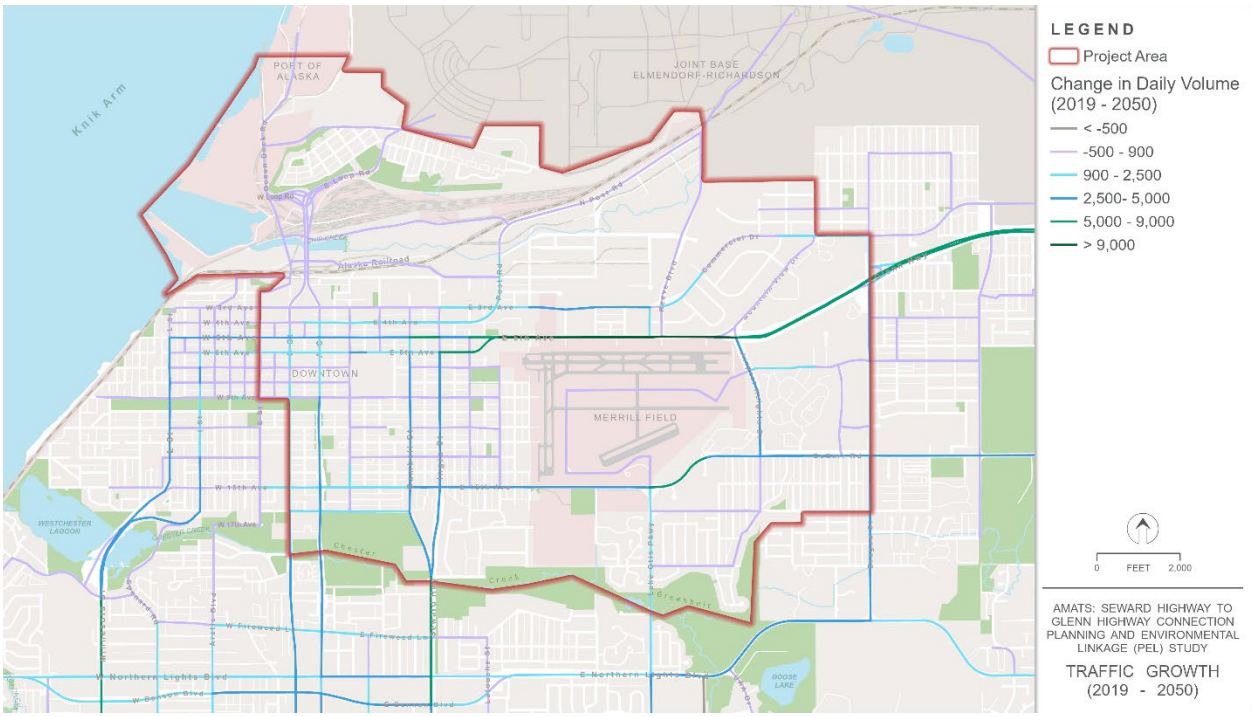
Figure 9 depicts the change in AADT between 2019 and 2050 for selected roadways within the study area. The Gambell-Ingra Street couplet is modeled to experience growth of 2,500 to 5,000 AADT. The 5th Avenue corridor, which comprises the Glenn Highway between the Airport Heights Drive intersection and the 5th Avenue/6th Avenue couplet split, is modeled to experience a growth of more than 9,000 AADT. The 15th Avenue corridor between Ingra Street and Airport Heights Drive is modeled to experience growth of 2,500 to 9,000 AADT.

Figure 8. Study Area Average Daily Vehicle Traffic, 2050



Source: RSG 2022

Figure 9. Change in Study Area Average Daily Vehicle Traffic, 2019 to 2050



Source: RSG 2022

5.2.4 Vehicle Traffic Mobility

Table 4 and Table 5 illustrate the No Build model run forecast results for 2050 vehicle miles of travel (VMT), vehicle hours of travel (VHT), and vehicle hours of delay (VHD) based on the volumes presented above. Of note are the changes on both the northbound and southbound portions of the Glenn Highway within the Anchorage Bowl—both directions are anticipated to see a greater increase in both VMT and delay than their counterpart Seward Highway segments south of the couplet. Tudor Road is anticipated to continue to be a key route, with its selected segment increasing to more than 212,000 VMT, with 4.4 percent of its roughly 6,400 VHT experiencing delay. Ingra Street (the northbound leg of the couplet in the study area) would likely experience 2.9 percent of its VHT in delayed conditions, while the Glenn Highway east of the couplet would experience 3.2 to 3.5 percent of its daily VHT in delay (depending on direction).

It is notable that the Seward Highway within the study area is not forecast to experience the increases in volume and congestion noted above, except for its immediate northbound approach to the Ingra-Gambell Street couplet. Taken together (and factoring in the findings from the 2019 *Origin-Destination Study*), the forecast traffic numbers suggest that major generators of future traffic using the Seward-Glenn Highway corridor will be the northeastern part of the Anchorage Bowl, Chugiak-Eagle River, and MSB. Additionally, it appears that Tudor/Muldoon Road is likely to play an increased future role as an alternative path to the Seward-Glenn Highway corridor. Both directions of the Glenn Highway plus Muldoon Road show forecast VMT increases (approximately 26 to 30 percent), well above the study area average increase of 14 percent (from 2019 to 2050 in the No Build condition).

Table 4. Anchorage Bowl Forecast – 2050 No Build Condition for Volumes, VMT, VHT, and VHD by Selected Roads

Facility	VMT	VHT	VHD	VHD as % of VHT
Tudor	212,277	6,422	285	4.4
Dimond-Abbott	160,685	4,083	49	1.2
Muldoon	113,630	3,060	52	1.7
Seward SB	152,015	2,734	19	0.7
Seward NB	166,455	3,263	39	1.2
O'Malley	46,148	1,464	10	0.9
Minnesota Dr. SB	86,218	1,464	2	0.1
Minnesota Dr. NB	73,630	1,391	7	0.5
Gambell	21,426	766	5	0.7
Ingra	31,890	1,288	37	2.9
Glenn SB	121,388	2,576	90	3.5
Glenn NB	127,229	2,388	77	3.2
Total	**1,312,991**	**30,533**	**672**	**2.2**

Source: Travel Demand Modeling Report, RSG, May 2022

Table 5. Anchorage Bowl Forecast – 2050 No Build Condition Change from 2019 VMT, VHT, and VHD

Facility	VMT	VMT % Difference	VHT	VHT % Difference	VHD	VHD % Difference	VHD as % of VHT
Tudor	26,367	14	847	15	99	53	1.1
Dimond-Abbott	16,067	11	420	11	15	44	0.3
Muldoon	26,167	30	717	31	33	174	0.9
Seward SB	9,750	7	180	7	6	46	0.2
Seward NB	11,056	7	227	7	10	34	0.2
O'Malley	4,758	11	115	12	3	43	0.2
Minnesota Dr. SB	9,290	12	159	12	1	100	–
Minnesota Dr. NB	7,735	12	149	12	2	40	0.1
Gambell	2,146	11	78	11	2	67	0.2
Ingra	3,815	14	159	14	13	54	0.7
Glenn SB	26,102	27	631	32	72	400	2.6
Glenn NB	26,115	26	531	29	60	353	2.3
Total	**169,367**	**15**	**4,213**	**16**	**316**	**89**	**0.8**

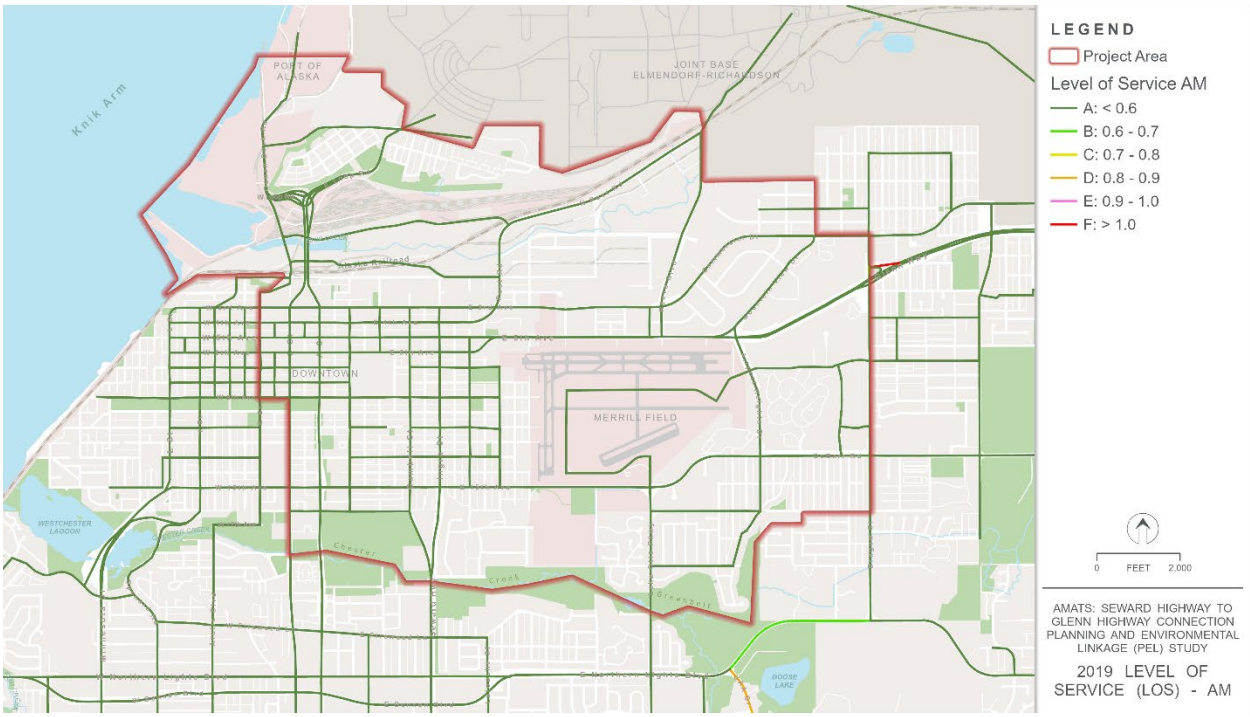
Source: Travel Demand Modeling Report, RSG, May 2022

Figure 10 and Figure 11 depict a 3-hour level of service (LOS) in the AM peak period. LOS is a measure of congestion that is represented with a letter grade. Below D is considered unacceptable. In a 3-hour LOS, traffic volumes are averaged over that 3-hour period. Congested conditions could occur for shorter durations during the 3-hour period. The analysis shows that if volumes were spread over the 3-hour period, congestion would not rise to unacceptable levels in most of the study area.

Figure 12 and Figure 13 depict a 3-hour LOS in the PM peak period. A congested condition could occur for shorter durations during the 3-hour period. The analysis shows that if volumes were spread over the 3-hour period, congestion would not rise to unacceptable levels in most of the study area. Outbound traffic on the Glenn Highway would approach unacceptable conditions in the 2050 PM peak period.

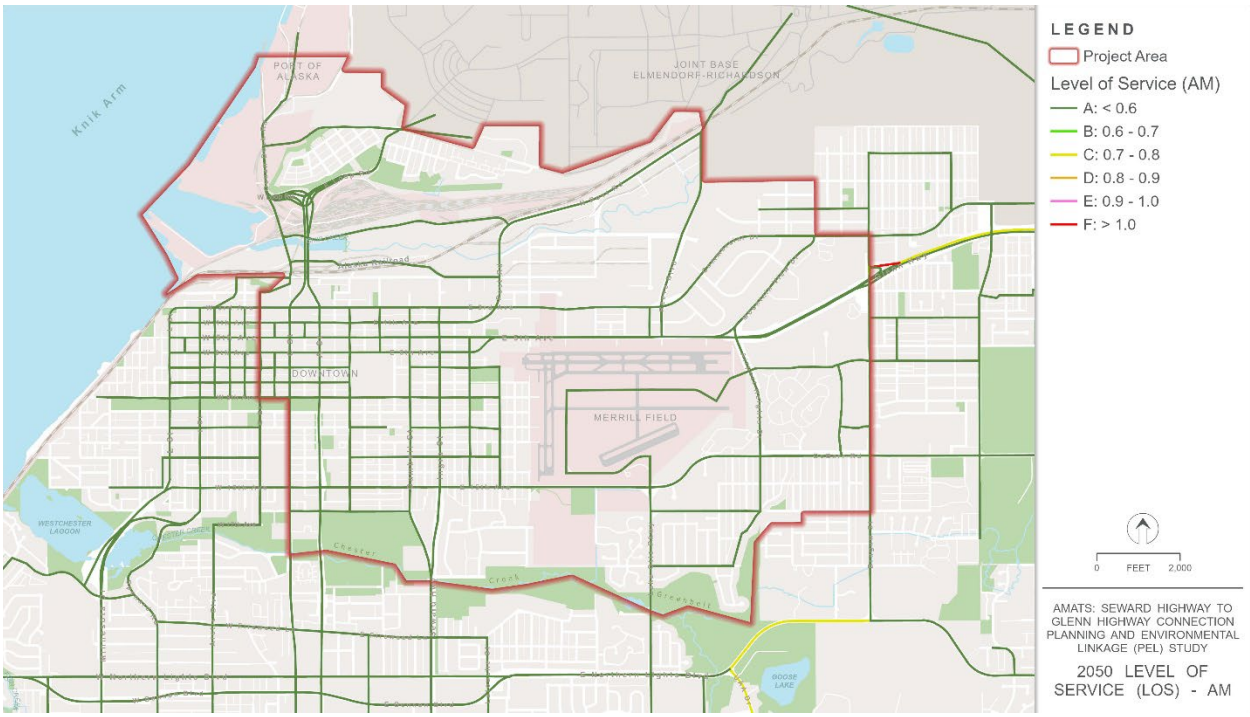
Post-processing analysis of the model was conducted to determine whether LOS conditions were substantially different for a peak hour compared to a peak period of 3 hours, to qualitatively determine the results for a shorter duration "rush hour." The results for the peak hour basis show a similar pattern to the peak period results described above. By 2050, LOS is not expected to rise to unacceptable levels during rush hour in most of the study area.

Figure 10. No Build AM Peak Period (3-hour) Level of Service, 2019



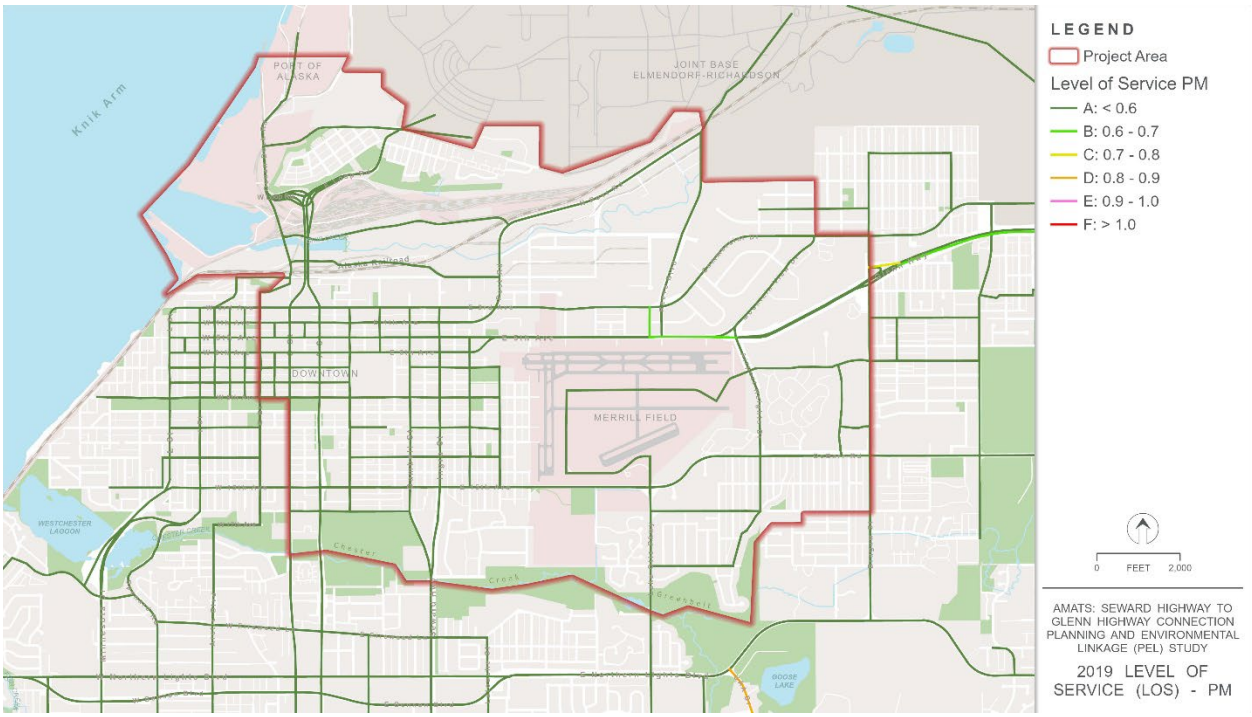
Source: RSG 2022

Figure 11. No Build AM Peak Period (3-hour) Level of Service, 2050



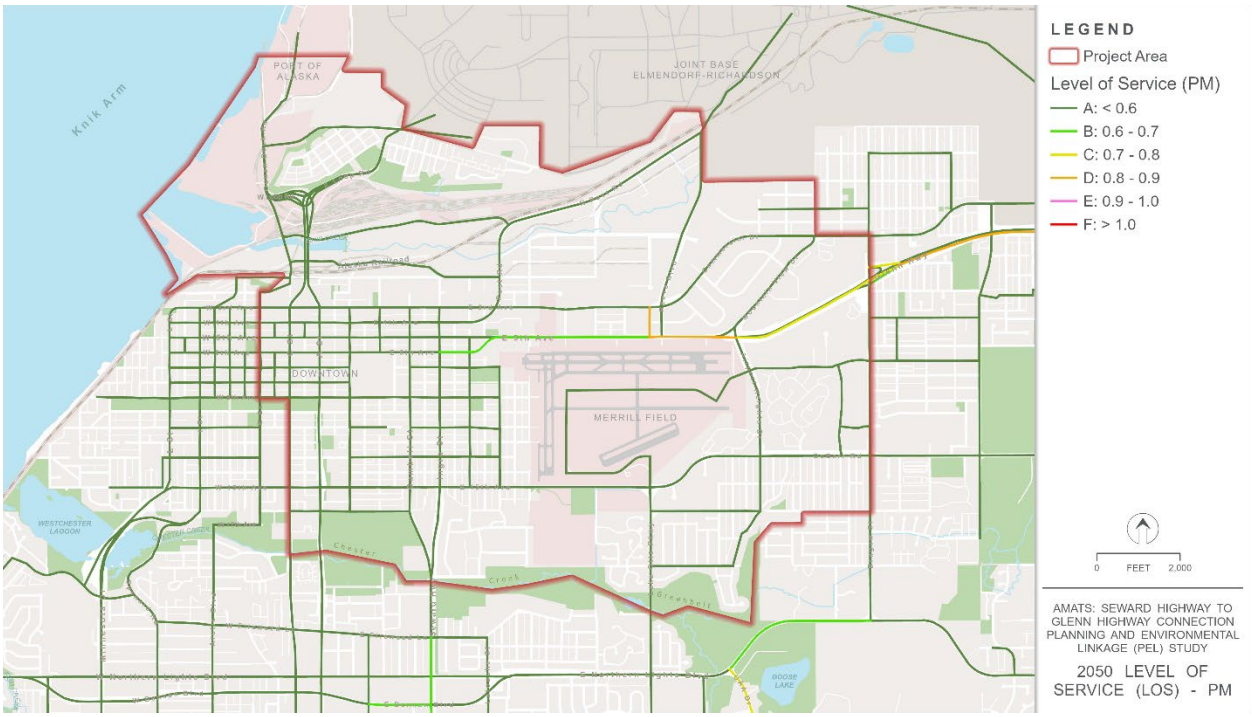
Source: RSG 2022

Figure 12. No Build PM Peak Period (3-hour) Level of Service, 2019



Source: RSG 2022

Figure 13. No Build PM Peak Period (3-hour) Level of Service, 2050



Source: RSG 2022

In summary, combining the many data points cited above, and considering the *Origin-Destination Study*, there are several over-arching observations from the *Travel Demand Modeling Report* (RSG 2022):

- Congestion will increase in the study area overall in a 2050 No Build future condition but would still be relatively low (2.4 percent of overall VHT spent in delay conditions) compared to other regions of the MOA, like traffic on the Glenn Highway east of the Muldoon Road interchange.
- The Glenn Highway east of the Ingra/Gambell Street couplet will likely become more of a chokepoint in a 2050 No Build future condition. The Seward Highway immediately south of the couplet is also likely to become more congested in such a scenario but is unlikely to experience as much performance degradation as the Glenn Highway.
- There currently is, and will likely continue to be, strong demand on a diagonal axis from the southwestern portion of the Anchorage Bowl to and from the northeast (and parts beyond) that uses the combined system of Ingra/Gambell, L/I, and A/C Street couplets. The combination of those facilities and the Downtown Anchorage street grid appear to be relatively resilient but will start to become more taxed in a 2050 No Build future condition.
- Flows to and from the Ted Stevens Anchorage International Airport will grow, adding delay to the International Airport/Minnesota Drive corridor and likely contributing to the increased traffic in the Ingra/Gambell, L/I, and A/C Street couplets combined system.
- In a No Build future condition, demand to and from areas straddling and to the southeast of the Ingra/Gambell Street couplet accessing areas east of Downtown Anchorage and out the Glenn Highway to the far northeast will contribute to more delay on Ingra Street and more impact on the Glenn Highway. Lake Otis Parkway may be considered a key parallel facility to the Seward/Glenn Highways.
- The Seward-Glenn Mobility PEL Study alternatives design process should consider the performance of the L/I and A/C Street couplets and Lake Otis Parkway facilities as part of any overall plan to improve performance of the specific Seward-Glenn Highway and Ingra/Gambell Street facilities, balanced with community concerns and land use policies along those corridors.

5.3 System Performance: Relevance to Purpose and Need

Based on a 3-hour analysis of traffic on the Seward and Glenn Highways within the study area during AM or PM peak periods, congestion is not anticipated to be a factor in the purpose and need statement. Traffic volumes are forecast to increase by 2050, and congested conditions will occur during short durations. It should be noted that while the volumes on street segments are predicted to function acceptably (averaged over a 3-hour period), intersection capacity exceedances may result in congestion. More detailed analysis would be required to evaluate intersection LOS to determine specific intersection-level forecast future performance.

6. Transportation Demand

6.1 FHWA Purpose and Need Guidance

“Discuss the action's relationship to any statewide plan or adopted urban transportation plan. In addition, explain any related traffic forecasts that are substantially different from those estimates of the 23 U.S.C. 134 (Section 134) planning process.”

6.2 System Analysis

6.2.1 Relationship to the Statewide Long Range Transportation Plan

The DOT&PF Statewide Long-Range Transportation Plan (Let’s Keep Moving 2036) establishes transportation policies, goals, and implementing actions for the DOT&PF through 2036, setting overall policy and investment priorities (DOT&PF 2016). The LRTP does not list specific projects. It provides policy direction and specifies priorities and implementing actions that align capital and maintenance expenditures with goals for the preservation and modernization of Alaska’s “as-built” transportation system. This is accomplished by providing direction for the scope of area and modal plans that identify project priorities for inclusion in the capital improvement program. The plan directs investments by the DOT&PF strategically to:

- Preserve the system;
- Maintain the basic connectivity across the state; and
- Pursue modernizing the system to address the expected travel demand growth in the fastest growing parts of the state.

Any projects that may result from the recommendations of this PEL Study that are implemented by DOT&PF would need to align with the LRTP policy and goals effective at that time.

6.2.2 Relationship to the Adopted Transportation Plan

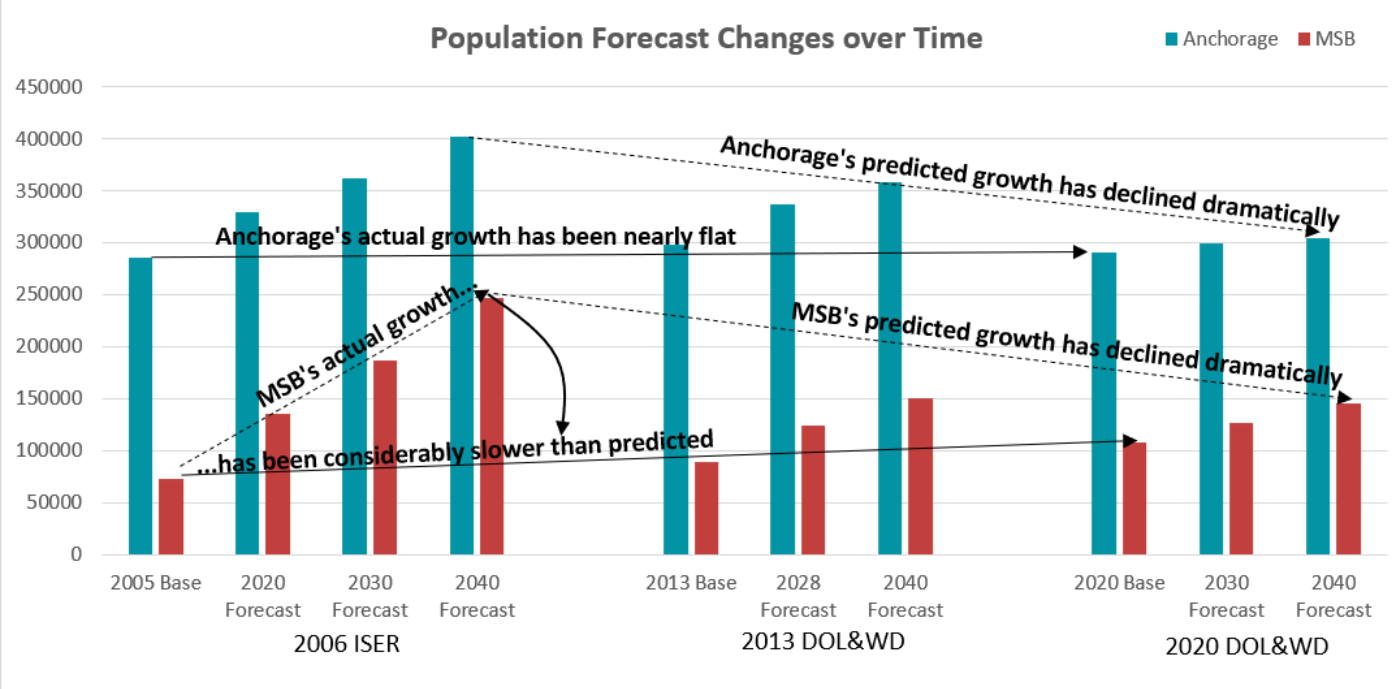
As mentioned in Section 3, MTP 2040 includes a long-term project, MTP #214, that is planned to “Construct freeway connection between Seward Highway/20th Avenue and 13th Avenue with freeway access and egress ramps onto Ingra/Gambell Streets near the northern termini of the project” (AMATS 2020). MTP 2040 indicates that safety, congestion, access, connectivity, and freight are purposes for the project. Additionally, the project is intended to address the following federal performance areas: injuries and fatalities, performance of the NHS, freight movement/economic vitality, and environmental sustainability.

6.2.3 Traffic Forecast Differences

This section discusses traffic forecasts that are substantially different than those previously adopted by AMATS. Traffic forecast and modeling completed for the project show considerably lower traffic forecasts for the Seward and Glenn Highways in the study area compared to previously adopted forecasts. The lower traffic forecasts are a result of slower regional population growth and population projections that are dramatically lower in future years compared to past projections.

Figure 14 shows how population forecasts have changed over time in Anchorage and the MSB. In forecasts prepared by ISER (Goldsmith 2005), population in the region was expected to grow to nearly 650,000 by 2040[1]. That growth was predicted to be dramatically influenced by growth in the MSB, which was one of the fastest growing locales in the United States at that time. The national recession of 2008 and 2009, and more recently the recession in Alaska over the last 8 to 10 years, have dampened population growth in Southcentral Alaska. As can be seen in Figure 14, Anchorage's population change has been nearly flat and the MSB's growth has been considerably lower than predicted in 2006. A 2020 forecast by DOL&WD predicts only 449,609 people in the region in 2040, an estimate that is 200,000 fewer people living in the region compared to the 2005 predictions (Goldsmith 2005).

Figure 14. Population Forecast Changes over Time



Source: AMATS 2016, 2020; Goldsmith 2005

Additionally, transportation improvements and land use changes of the preceding 20 years have also influenced trip patterns and have lowered traffic levels in the study area. Among the changes affecting study area traffic include:

- Improvements to the Lake Otis Parkway-Tudor Road intersection removed a bottleneck at that intersection that previously caused more traffic to travel onto the Seward Highway.
- Completion of the Martin Luther King Boulevard and Dowling Road projects created a bypass route around the study area from the Glenn Highway at Boniface Parkway to the Seward Highway and Minnesota Drive.

[1] ISER's (Goldsmith 2005) forecast went through 2035. A straight-line extrapolation was applied to obtain a 2040 value for comparison purposes.

- Tikhatnu Commons created a regional shopping destination, meaning shoppers from Chugiak-Eagle River and the MSB do not need to go downtown to the 5th Avenue Mall or locations on Dimond Boulevard.
- The MSB developed services (like a new hospital) and commercial opportunities that reduced the need to travel into Anchorage to obtain such services.

The result is that considerably fewer trips are predicted to use the Seward and Glenn Highways in Anchorage. The Glenn Highway at Airport Heights Drive is predicted to have approximately 60,000 trips per day in 2050 (an increase of approximately 10,000 trips per day over pre-COVID-19 levels). The Seward Highway is predicted to have similar growth (from approximately 49,000 trips per day just before the COVID-19 pandemic to 48,500 trips per day in 2050). See details on the forecast methodology in the following reports prepared for this PEL study: *Traffic Forecast Memorandum* (March 2022) and the *Draft Travel Demand Modeling Report* (RSG 2022), available on the project website (sewardglennmobility.com).

6.3 System Performance: Relevance to Purpose and Need

It is typical to use the adopted MTP model to estimate the forecast of future traffic for PEL studies. However, because the base year of the currently adopted plan is 2013 (which is at the beginning of Alaska's recession), DOT&PF determined that an updated forecast should be prepared for this PEL study. DOT&PF commissioned two independent traffic forecast estimates for this PEL study, using two discrete methodologies. Because of the Alaska recession and the dramatic changes that have occurred in future predicted population, the MTP 2040 model forecast for traffic growth is not recommended to be used for modeling future traffic volumes in the study area. Rather, the project team recommends using the updated traffic model, detailed in the *Draft Travel Demand Modeling Report* (RSG 2022) for project evaluation. Furthermore, the updated traffic model does not indicate a large increase in traffic demand on the roadways within the study area; therefore, increased traffic demand in the Seward and Glenn Highway corridor is not proposed as a purpose and need factor.

7. Social Demands or Economic Development

7.1 FHWA Purpose and Need Guidance

"Describe how the action will foster new employment and benefit schools, land use plans, recreation facilities, etc. In addition, describe projected economic development/land use changes that indicate the need to improve or add to the highway capacity."

7.2 System Analysis

7.2.1 Land Use and Development

There are a number of relevant land use plans that provide a vision for land use in the study area. These plans will be used to guide transportation development in this PEL study, with the intent that the PEL study results will be consistent with and work toward the realization of these plans.

Anchorage 2020 Comprehensive Plan (2002). Anchorage 2020 (MOA 2002) established the framework for land use decisions until the year 2020. It is the most recent comprehensive plan for the Anchorage Bowl and outlines expected increases in both population (to 298,300 people) and employment (to 158,600 jobs) in the Anchorage Bowl. The plan's Land Use Policy Map identified the approximate location of new land use policy areas, including major employment centers, redevelopment/mixed use areas, town centers, neighborhood commercial centers, industrial reserves, and transit-supportive development corridors.

***Anchorage 2040 Land Use Plan* (2017).** The 2040 Land Use Plan (LUP) (MOA 2017) includes a "Greenway-Supported Development" (GSD) overlay along the Ingra Street corridor, from 3rd to 15th Avenue, and connecting the Chester Creek Greenbelt on the southern end. The plan describes a GSD as a location where new development will incorporate natural open spaces and pedestrian routes, which will focus on catalyzing new infill and redevelopment projects to enhance new construction and property values by attracting more uses, housing, businesses, and employment. A key element of the GSD feature in the 2040 LUP is redevelopment of existing built areas in designated Mixed-use Centers and Main Street Corridors. For GSDs to most effectively catalyze redevelopment and alternative access modes, they should connect to existing pedestrian corridors and trails (MOA 2017).

***Gambell Street Redevelopment and Implementation Plan* (2013).** This plan was prepared for Gambell Street between 3rd and 20th Avenues (CH2M Hill, Inc. 2013). This plan recommends converting Gambell Street from four to three lanes between 3rd and 15th Avenues, which would allow for three 11-foot travel lanes, sidewalks on both sides of the road, and an area for snow storage.

***Fairview Neighborhood Plan* (2014).** One of the top five priorities identified for this plan is the resolution of long-standing transportation system impacts. The plan "calls for a resolution of the transportation, land use, and planning issues related to this corridor to enable the redevelopment of Gambell Street, amenities that would enhance the community and encourage investment, and provide clarity for property owners as to the future of their lands" (MOA 2014b:2). The plan includes the Seward to Glenn Highway Connection project as one of its implementing actions. The plan indicates the project should "Maintain the integrity of Fairview, by following a cut and cover approach, creating a greenway connection between Ship and Chester Creek with a Hyder Street alignment or alternatives that reduce impact on the neighborhood, while providing needed neighborhood street and pedestrian improvements that support mixed-use and other land-use redevelopment and development identified on the approved land-use plan map" (MOA 2014b:58). The plan also calls for the implementation of the Gambell Street Redevelopment and Implementation Plan (CH2M HILL, Inc. 2013). The *Fairview Neighborhood Plan* was adopted by the Anchorage Assembly in 2014.

7.2.2 Social Demands

As part of identifying the needs for the project, the project team conducted several outreach activities, including a virtual public meeting, an online open house, presentations to community groups, and two listening posts. Through these activities, the project team asked stakeholders to identify their transportation needs. The project team received 422 comments identifying what

stakeholders considered to be the transportation needs in the study area. The majority of the comments were about alternatives, non-motorized needs, and quality of life concerns. Other comments included safety, screening criteria, traffic, environmental justice, stakeholder engagement, and land use, among other issues.

Commentors suggested a variety of alternatives to be considered, including:

- Creating a highway/eliminating the traffic lights on the current alignment
- Downsizing the Ingra/Gambell Street couplet
- Developing a connection along DeBarr Road and Northern Lights Boulevard
- Not expanding DeBarr Road
- Considering a corridor west of Muldoon Road
- Widening Lake Otis Parkway and adding turn lanes at Lake Otis Parkway and 15th Avenue
- Considering commuter rail
- Building the Knik Arm Crossing
- Building a new connection along Orca Street
- Building a new connection behind Alaska Regional Hospital
- Tolling the Glenn Highway

In terms of non-motorized needs, commentors suggested locations where improvements were needed to the existing system, where new connections were needed, data collection needs, and others. Some of the comments received included:

- Provide conditions to allow walking in winter (lighting, snow removal, etc.)
- Gambell and Ingra Streets are high priority pedestrian corridors
- Improve safer conditions for pedestrians (i.e., walking in some areas is unsafe due to icy conditions, lack of buffers, proximity to high-speed traffic, inadequate sidewalk width)
- Provide non-motorized separated pathways
- Maintain the Chester Creek Trail
- Improve poor east-west connectivity

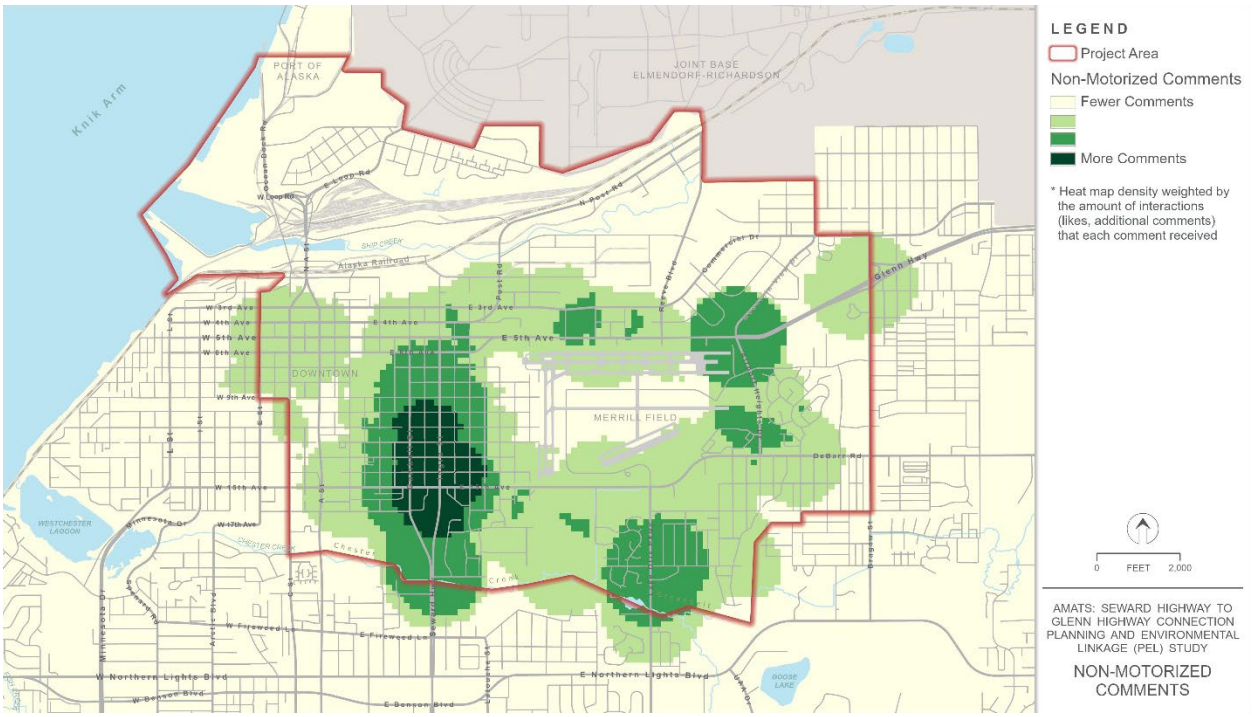
Figure 15 displays where the public suggested non-motorized issues exist in the study area.

Quality of life-related concerns included:

- Lower property values in the area;
- Potential for residential and commercial relocations; and
- Loss of community cohesion.

To see a complete list of the comments, please see Appendix A.

Figure 15. Non-Motorized Issues Density Map from Public Comment



Source: HDR

The project team will consider the alternatives identified by stakeholders as part of the alternative identification process. The other comments will be considered in a variety of ways. Some of the issues raised, such as existing conditions for non-motorized users, will be addressed in sections of this system performance report. Other comments will be considered as part of developing the project's purpose and need statement and screening criteria. Other comments will be considered as part of the environmental impact assessment.

Some comments that address issues such as snow removal and localized improvements were shared with the MOA as they may be better addressed by the MTP or other processes.

7.3 System Performance: Relevance to Purpose and Need

Neighborhood plans and public input to this PEL Study identify that the current street design and heavy traffic have hampered neighborhood development. Adopted land use and neighborhood plans envision that corridor transportation improvements will benefit economic development and reduce the impact that past transportation decisions have had on the Fairview neighborhood. Public input indicated that uncertainty with the highway's ultimate location and design have resulted in disinvestment in area residential and commercial development. Information provided by the public and agencies related to this topic has been considered and incorporated into needs #1 (Conflicting Travel Functions) and #3 (Social Demands and Economic Development) in the purpose and need statement, and are reflected in the proposed screening criteria. As described in the FHWA guidance (Section 7.1), the PEL Study will describe how alternatives may foster new employment and benefit schools, land use plans, recreation facilities, and others. The PEL analysis will also describe projected economic

development and land use changes that may indicate the need to improve or add to the highway capacity.

8. Modal Interrelationships

8.1 FHWA Purpose and Need Guidance

"Explain how the proposed action will interface with and serve to complement airports, rail and port facilities, mass transit services, etc."

8.2 System Analysis

This section is divided into sections that detail the current performance of the multiple modes that are present within this study area: freight, ports, mass transit, and non-motorized facilities.

8.2.1 Freight

Anchorage has a much higher concentration of air and barge traffic than other United States regions. The MOA is the major year-round marine, rail, and air hub serving Alaska along the Railbelt. The POA, located at the head of Cook Inlet directly north of Downtown, is primarily a receiving port. Inbound cargo spans the full range of goods, materials, and equipment needed by consumers and businesses in the MOA and most of the rest of Alaska. Most freight is brought to the POA via container ship. Ships are off-loaded, and the containers may be hauled by truck tractor to either the destination of consumption or to a warehouse facility off port premises, where they are off-loaded and redistributed in smaller trucks or consolidated for tractor transport (AMATS 2017). A substantial number of trucking, transfer, and consolidating firms are located in the Ship Creek industrial area north of Downtown and within the study area. Additionally, the Alaska Railroad Corporation operates a trailer-on-flat-car facility at its main yard in the Ship Creek basin, which is used to load and unload container vans arriving from the port. The freight is then moved by rail, predominantly to Fairbanks and nearby military bases.

The Ship Creek area remains one of MOA's major warehousing and transportation-related industrial areas and continues to play a critical role in the shipment and distribution of goods to the MOA and the rest of the state. However, the bulk of outdoor storage facilities and warehousing, as well as manufacturing/processing plants and construction yards, has gravitated from the Downtown-Ship Creek basin area to the rail/highway industrial corridor between the New Seward Highway and Arctic Boulevard, south of International Airport Road. This places most truck traffic to or from the POA onto the New Seward Highway, Gambell-Ingra Streets, and A-C Streets. Some truck traffic also uses the L Street-Minnesota Drive connection.

National Highway Freight Network. The National Highway Freight Network (NHFN) was established through the Fixing America's Surface Transportation Act. Alaska's NHFN includes the Glenn and Seward Highways, 5th Avenue, and 6th Avenue (see Figure 16).

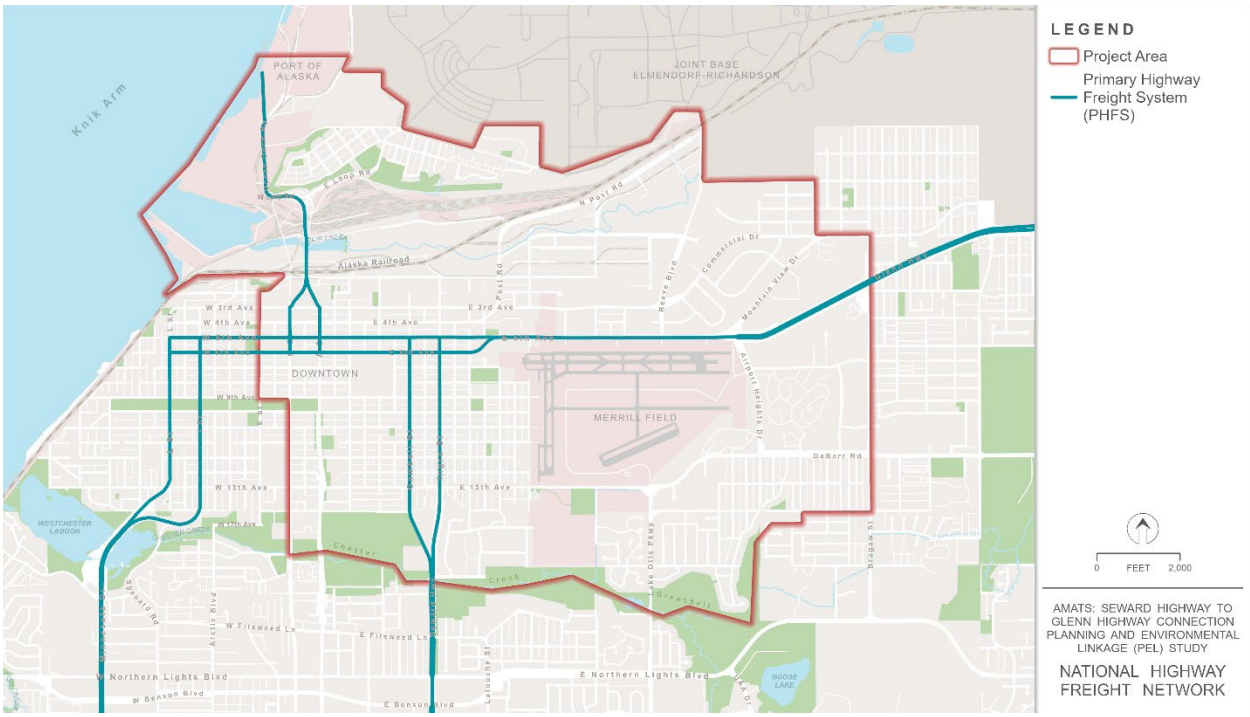
Regional Truck Routes. The *Anchorage Freight Mobility Study* (AMATS 2017), prepared for AMATS, identified a regional truck route network that should be designed to accommodate

trucks. The proposed network is shown in Figure 17 and includes the Seward and Glenn Highways, 5th and 6th Avenue, and Ingra and Gambell Streets in the study area.

Figure 18 depicts annual average daily truck volumes in 2019 as predicted by the updated traffic model. These volume estimates represent a No Build condition, meaning no future roadway improvements are included. Figure 19 depicts estimated truck volume in 2050, again without any roadway improvements.

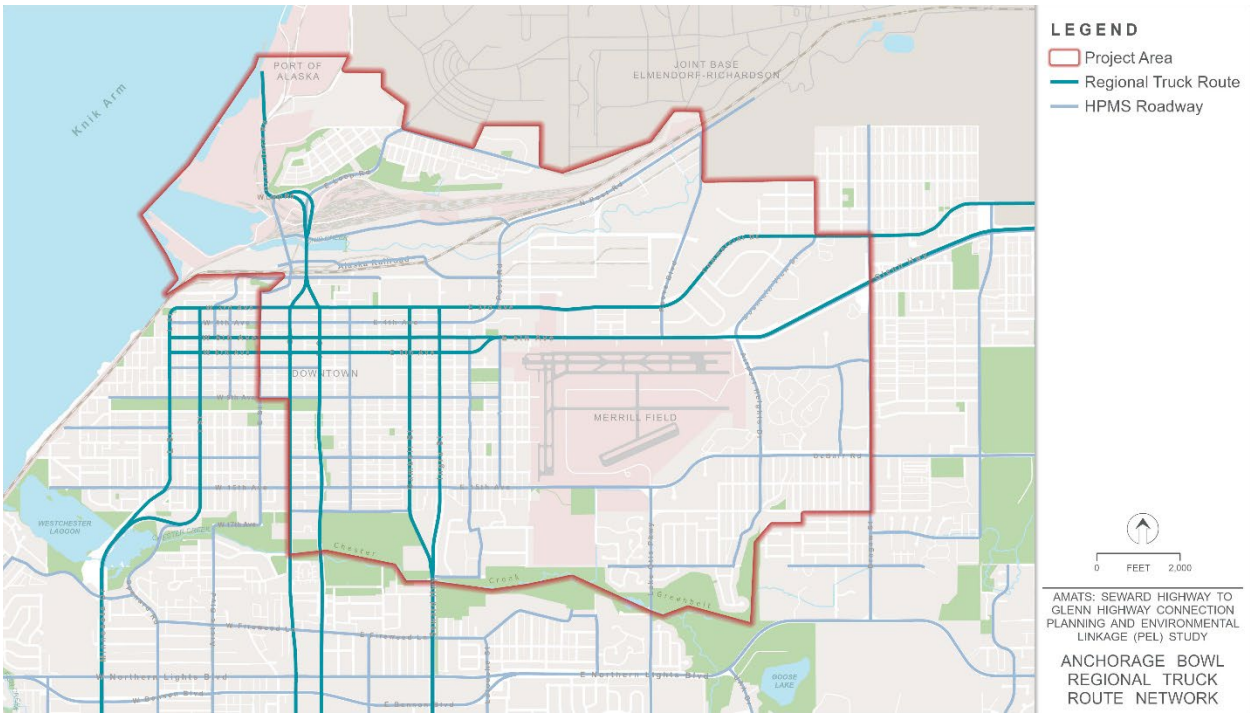
Important freight routes are modeled, showing a reduction in truck traffic on some routes, such as the POA-access A Street viaduct, 5th Avenue/Glenn Highway between the couplet and Airport Heights Drive, and 3rd Avenue between A Street and Post Road. Other segments of important freight routes show no reduction in traffic and remain at the highest category of traffic (more than 900 heavy trucks per day), including Ocean Dock Road, Whitney Road, Post Road, and 3rd Avenue between Post Road and Commercial Drive. Heavy truck traffic is predicted to remain mostly stable along the Gambell/Ingra Street couplet at 350 to 600 trucks per day between 2019 and 2050.

Figure 16. National Highway Freight Network



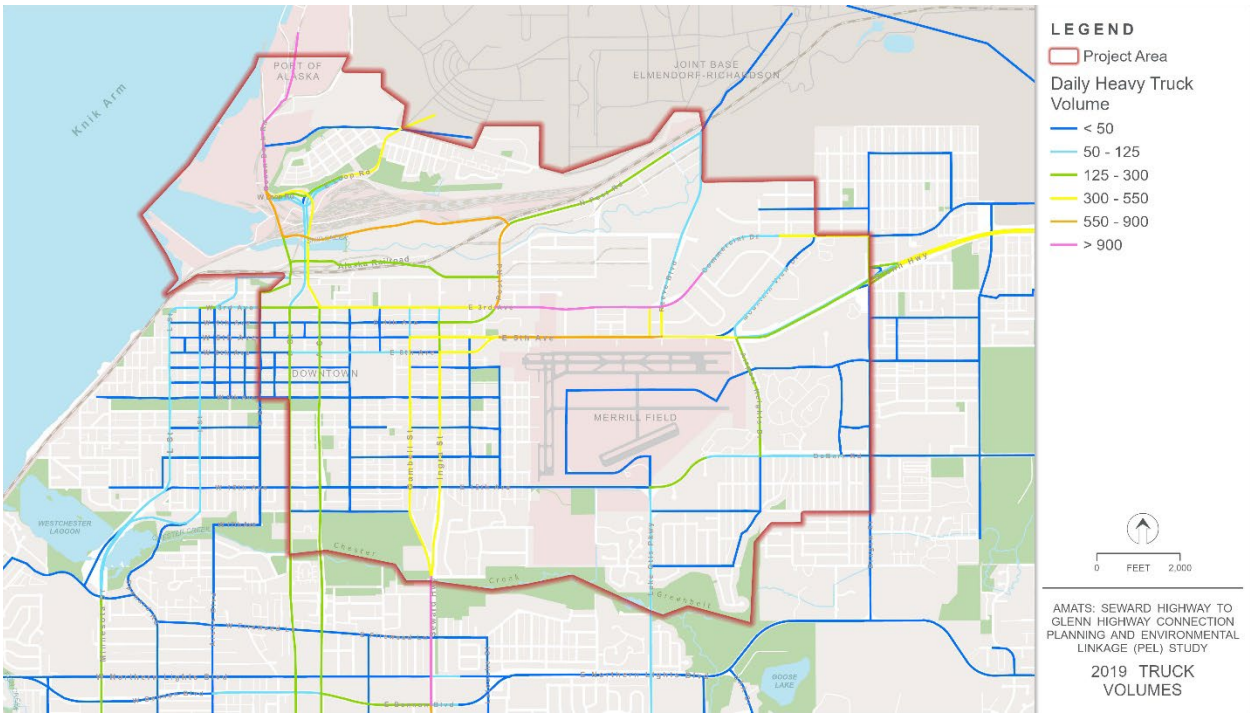
Source: FHWA 2015

Figure 17. Anchorage Bowl Regional Truck Route Network



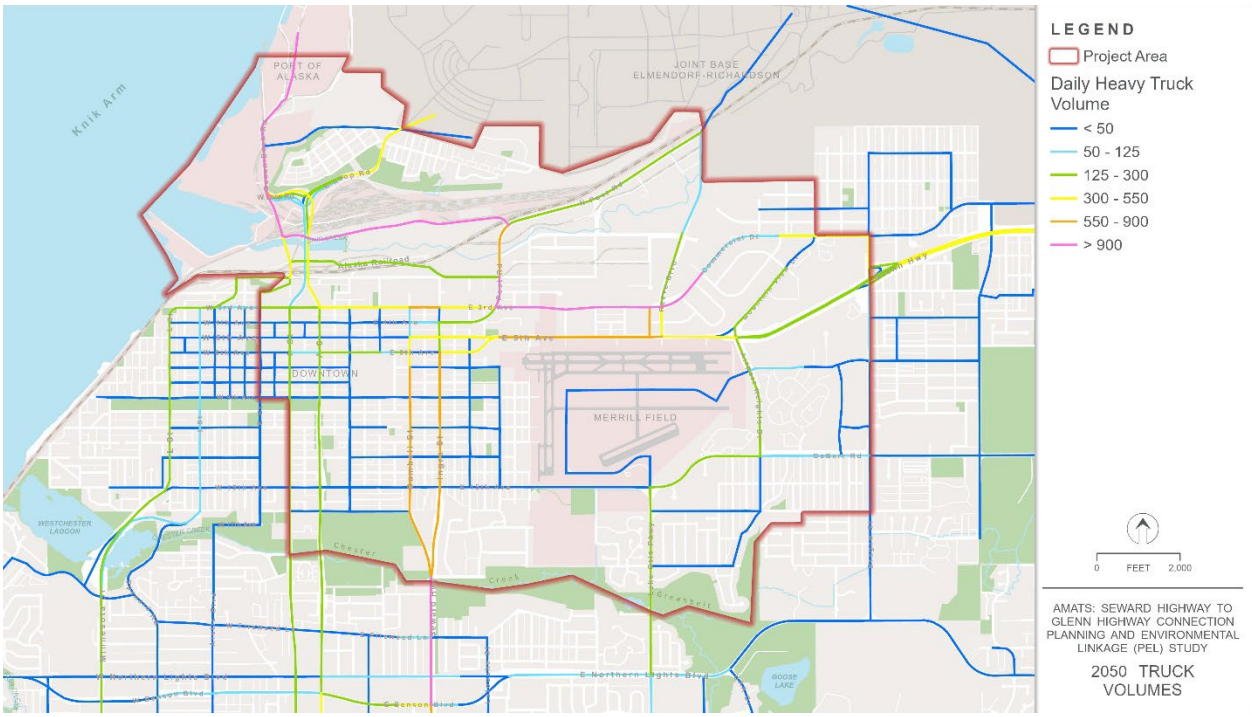
Source: AMATS 2017

Figure 18. Study Area Truck Volumes, 2019



Source: RSG 2022

Figure 19. Study Area Truck Volumes, 2050



Source: RSG 2022

8.2.2 Ports

The POA is a major asset to the regional economy. Fifty-five percent of the waterborne freight and 90 percent of all refined petroleum products that enter the state arrive through the POA (AMATS 2017). While some of the freight and petroleum stays in the Anchorage area, much is destined for other parts of the state. In 2020, tonnage through the POA was 4,704,374 tons (POA 2021). Approximately 35 percent of that was composed of vans, flats, and containers (POA 2021)

Designated National Strategic Seaports. The POA is one of 22 (17 commercial and 5 military) Department of Defense (DoD) Designated National Strategic Seaports. “Strategic seaports are designated because of their ability to support major force and material deployments in times of war and national emergency, based on their proximity to deploying military units and their transportation links close to those units, and varying other capabilities the DOD has deemed important, including the importance of having strategic ports on all four of the nation’s coasts (Atlantic, Gulf, Pacific, and Alaska)” (Bondareff 2012). Strategic seaports “are significant transportation hubs that are important to the readiness and cargo throughput capacity of the DOD” (Bondareff 2012).

“One of the major responsibilities of strategic seaports is to be prepared to make the port and its facilities available within short notice for the deployment of military forces and supplies in support of DOD operations” (Bondareff 2012). “Strategic seaports need to be able to make their facilities available to the military with as little as 48 hours’ notice, and for long periods of time, if necessary” (Bondareff 2012). Between 2005 and 2010, the POA “has supported over 20 military

deployments including Stryker Brigade deployments to Iraq and Afghanistan. During that same time period, over 18,000 pieces of military equipment passed through the Port's facilities" (Bondareff 2012).

The POA is also part of the U.S. Department of Transportation, Marine Administration's National Port Readiness Network (NPRN). The NPRN "is a cooperative designed to ensure readiness of commercial ports to support force deployment during contingencies and other national defense emergencies" (MARAD 2021).

8.2.3 Mass Transit

People Mover. The MOA Public Transportation Department operates the PeopleMover, Anchorage's fixed route transit system. This system is the largest in Alaska. Within the study area, it operates 10 bus routes (see Figure 20). Figure 20 shows average weekday bus ridership by stop in 2019[2].

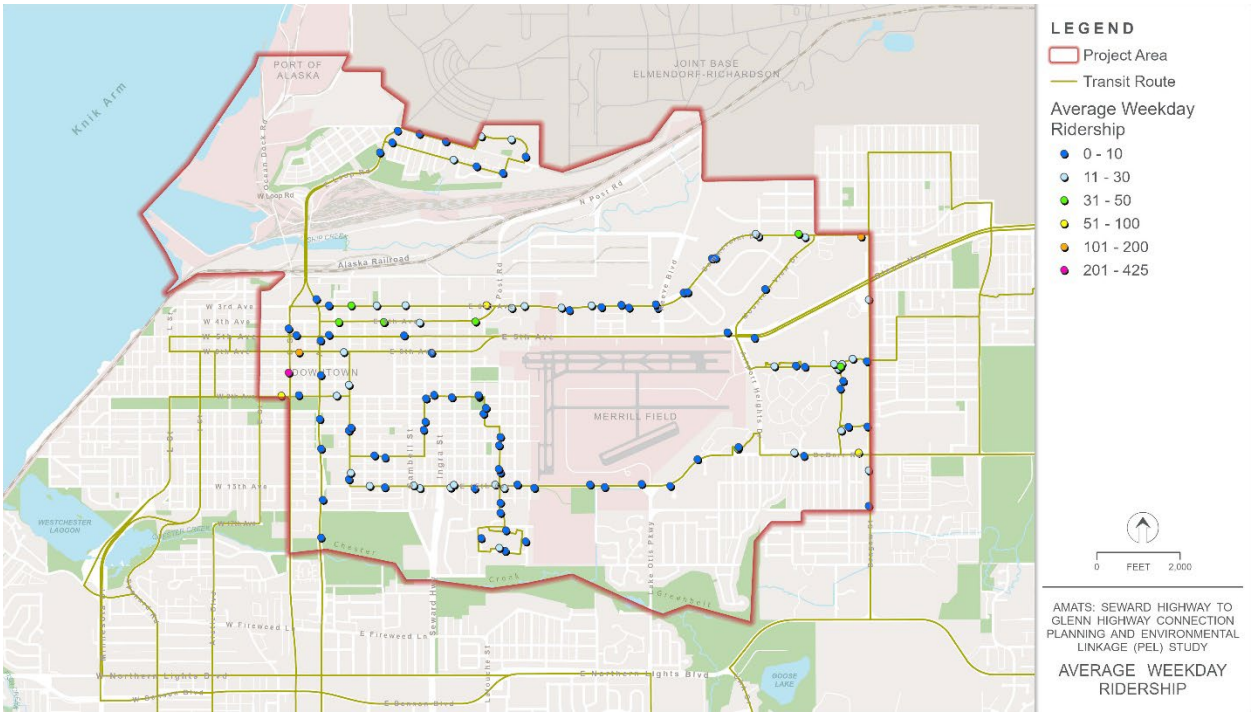
- **Route 11 Fairview/Senior Center:** Route 11 travels between City Hall and the Anchorage Senior Center via Medfra Street, 9th Avenue, Hyder Street, 13th Avenue, and Cordova Street. This is a neighborhood route and has 60-minute headways.
- **Route 20 Mountain View/UMED:** Route 20 travels between the Downtown Transit Center and the Alaska Native Medical Center via 3rd and 4th Avenues, Mountain View, Northway Mall, East High School, and the University-Medical District. It is classified as a frequent route. It has 15-minute headways on weekdays and 30-minute headways on weekends.
- **Route 21 Mountain View/Northway**: Route 21 travels in a counterclockwise loop, beginning on Penland Parkway at the Northway Mall. From Penland Parkway, the route travels on Bragaw Street, DeBarr Road, Pine Street, McCarrey Street, Mountain View Drive, Lane Street, and Parsons Avenue before returning to Penland Parkway via Bragaw Street and Mountain View Drive. It is considered a neighborhood route and has 30-minute headways.
- **Route 25 Tudor:** Route 25 travels between the Downtown Transit Center and Veteran Affairs Clinic via A and C Streets, Tudor Road, the Alaska Native Medical Center, and Muldoon Road. This route is considered a standard route, and generally has 15-minute headways on weekend and 30 minute headways on weekends.
- **Route 30 DeBarr:** Route 30 travels between the Downtown Transit Center and the Muldoon Transit Hub via Cordova Street, 15th Avenue, Alaska Regional Hospital, and DeBarr Road. Route 30 is a frequent route, and has 15-minute headways on weekdays and 30-minute headways on weekends.
- **Route 41 Government Hill:** Route 41 travels from City Hall to the Anchorage Museum, Bluff Drive, Richardson Vista Road, Ivy Street, and Hollywood Drive, then returns to City Hall. It is a neighborhood route with 60-minute headways.

[2] 2019 ridership information is presented because it represents a typical year. The 2020 and 2021 data does not reflect typical ridership patterns due to the COVID-19 pandemic.

- **Route 92 Eagle River:** Route 92 is a commuter express route that stops at City Hall and the Eagle River Transit Center via the Glenn Highway. It is a rush hour route and has rush hour service.

The MOA Public Transportation Department also operates AnchorRIDES, a paratransit system, within the study area, providing shared ride, accessible door-to-door transportation within the urbanized Anchorage area. This service does not operate on set routes.

Figure 20. Average Weekday Transit Ridership



Source: MOA

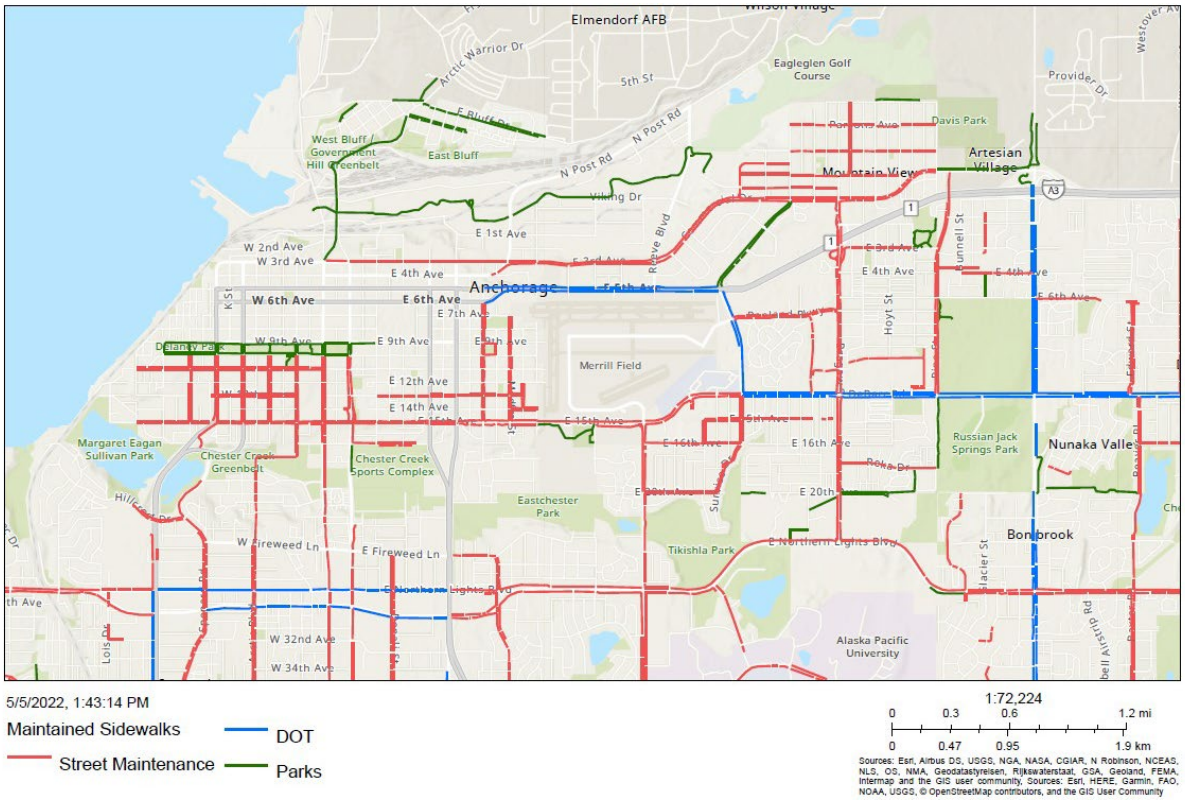
8.2.4 Non-Motorized Facilities

Sidewalks

The DOT&PF, MOA Streets Maintenance, and MOA Parks and Recreation Department share maintenance responsibilities for sidewalks and trails in the study area. Figure 21 shows which agency has the maintenance responsibility for sidewalks and trails in the study area.

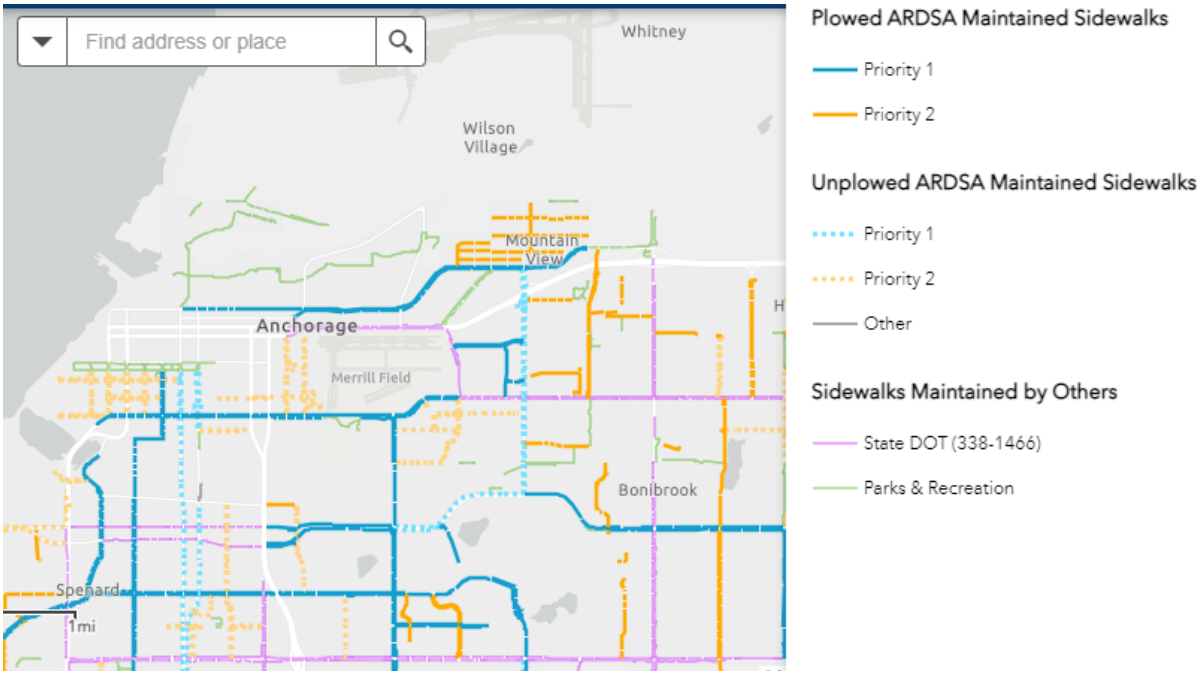
Primary funding of road, drainage, and safety improvements is via road bond proposition. The bond service area within Anchorage is called the Anchorage Road and Drainage Service Area. Figure 22 shows the sidewalk winter maintenance priorities within the study area. Sidewalks are prioritized for snow removal based on two levels. Level 1 sidewalks are cleared first following winter weather events, focusing on the sidewalks that provide essential mobility to pedestrians and non-motorized users.

Figure 21. Sidewalk and Trail Maintenance Responsibilities within the Study Area



Source: MOA n.d.

Figure 22. Sidewalk Winter Maintenance



Source: MOA n.d.

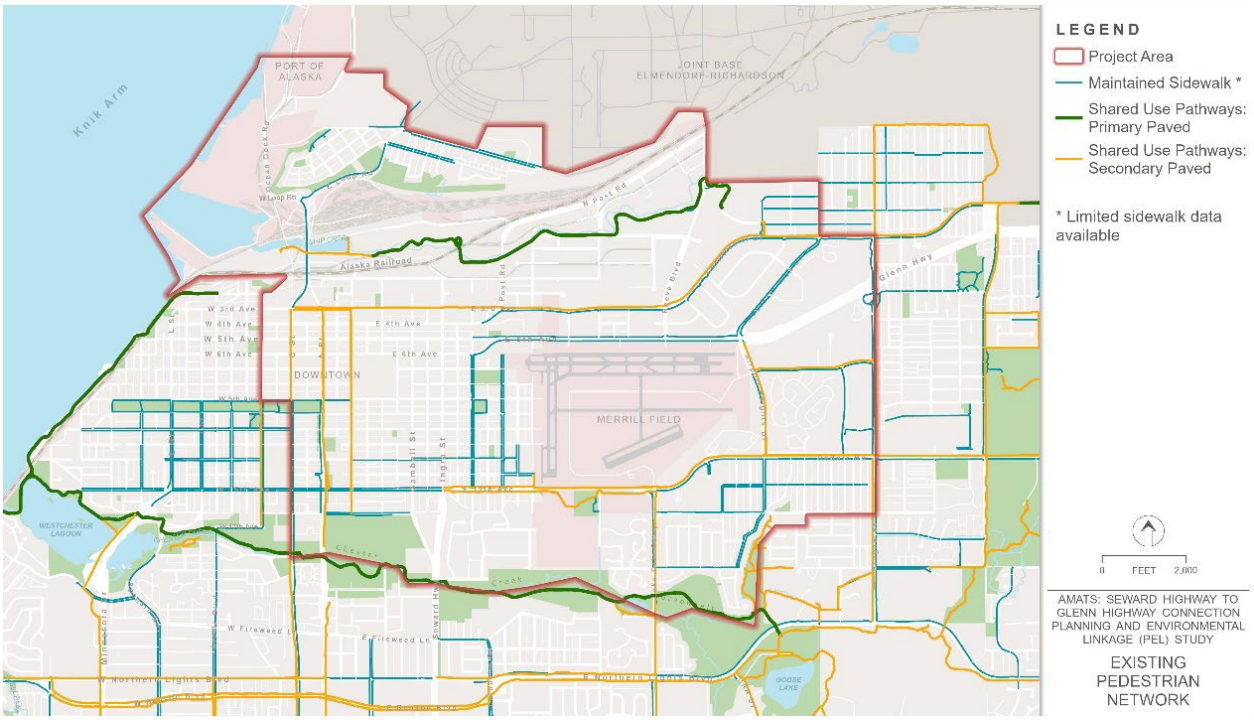
Pedestrian Network

The existing pedestrian network is primarily sidewalks and shared-use pathways. Sidewalks and/or sidepaths are available along many of the major arterials throughout the MOA and help provide connections to the existing shared-use pathway network and destinations such as employment centers and shopping areas, and provide access into neighborhoods across Anchorage. Pedestrians are also served by the network of shared-use pathways in all seasons. Figure 23 shows the portions of the network owned by DOT&PF and MOA in the Anchorage Bowl; network portions that are owned by other entities are not included.

Bicycle Network

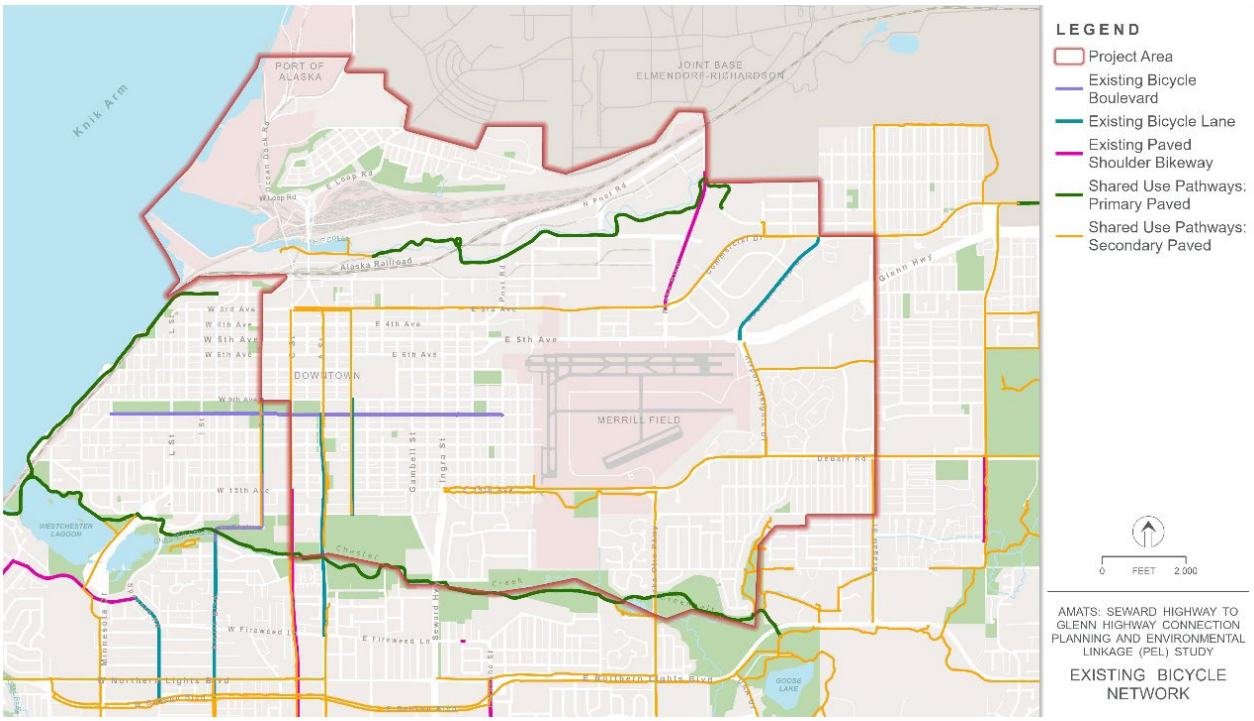
The existing bicycle network consists of a variety of shared-use pathways, bicycle pathways, and sidewalks as well as bicycle lanes and boulevards. The existing bicycle network is shown in Figure 24.

Figure 23. Existing Pedestrian Network



Source: MOA n.d.

Figure 24. Existing Bicycle Network

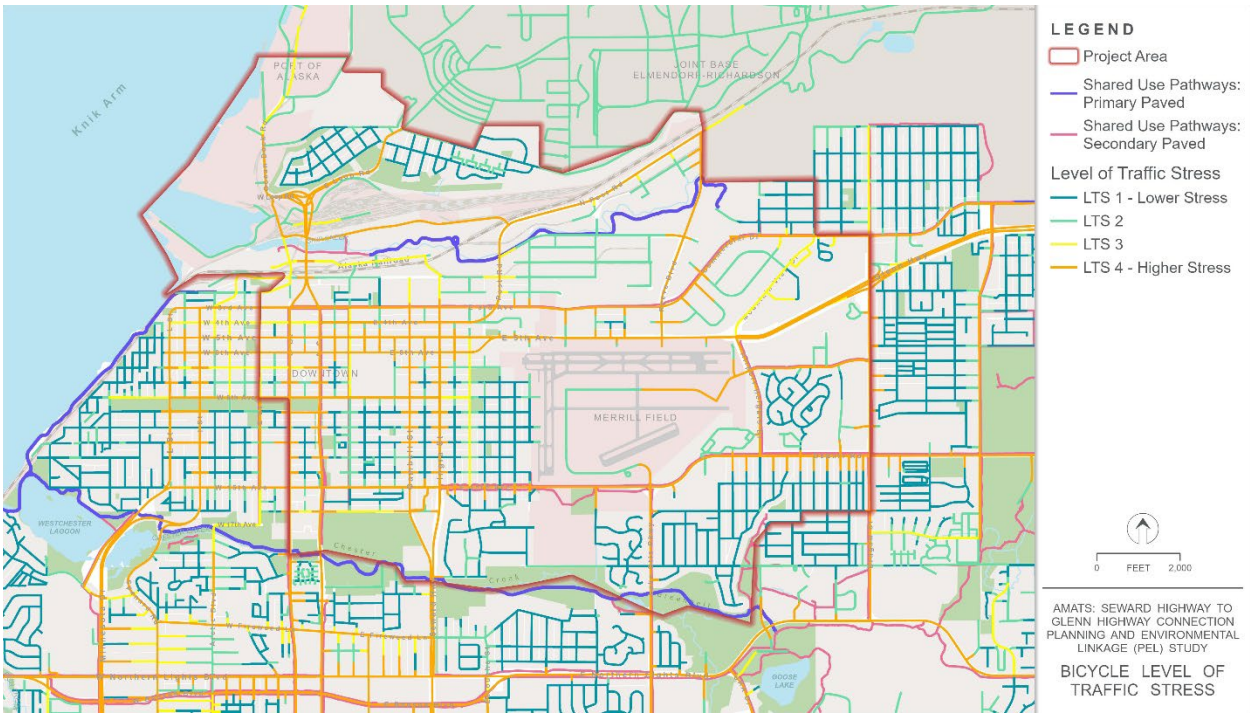


Source: MOA n.d.

Bicycle Level of Traffic Stress

The bicycle Level of Traffic Stress (LTS) is a way to assess the comfort and connectivity of a bicycle network. It considers the impacts of posted speed limits, street width, and the presence and character of bicycle lanes. The AMATS *Non-Motorized Plan* (AMATS 2021) assessed LTS for the AMATS area; the results are shown in Figure 25. Roads in the study area that have higher LTS include Gambell Street, Ingra Street, and 5th Avenue.

Figure 25. Bicycle Level of Traffic Street



Source: MOA n.d.

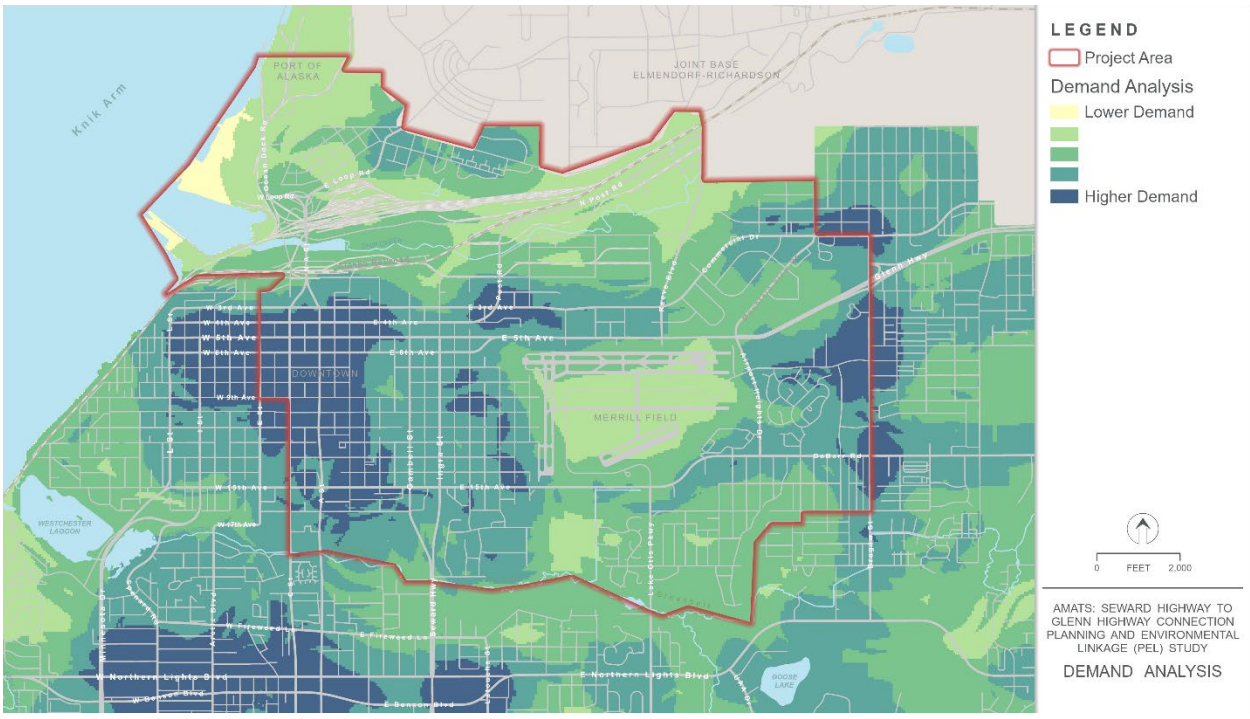
Demand Analysis

The AMATS *Non-Motorized Plan* (AMATS 2021) also assessed the potential demand for walking and biking through an evaluation of where people live, work, play, shop, access transit, and attend school. The results of this analysis are shown in Figure 26. A substantial portion of the study area, especially in the Fairview, Mountain View, and Downtown areas, have high demand. According to the AMATS *Non-Motorized Plan* (AMATS 2021), many of the areas with highest demand are also areas with higher LTS.

Equity Analysis

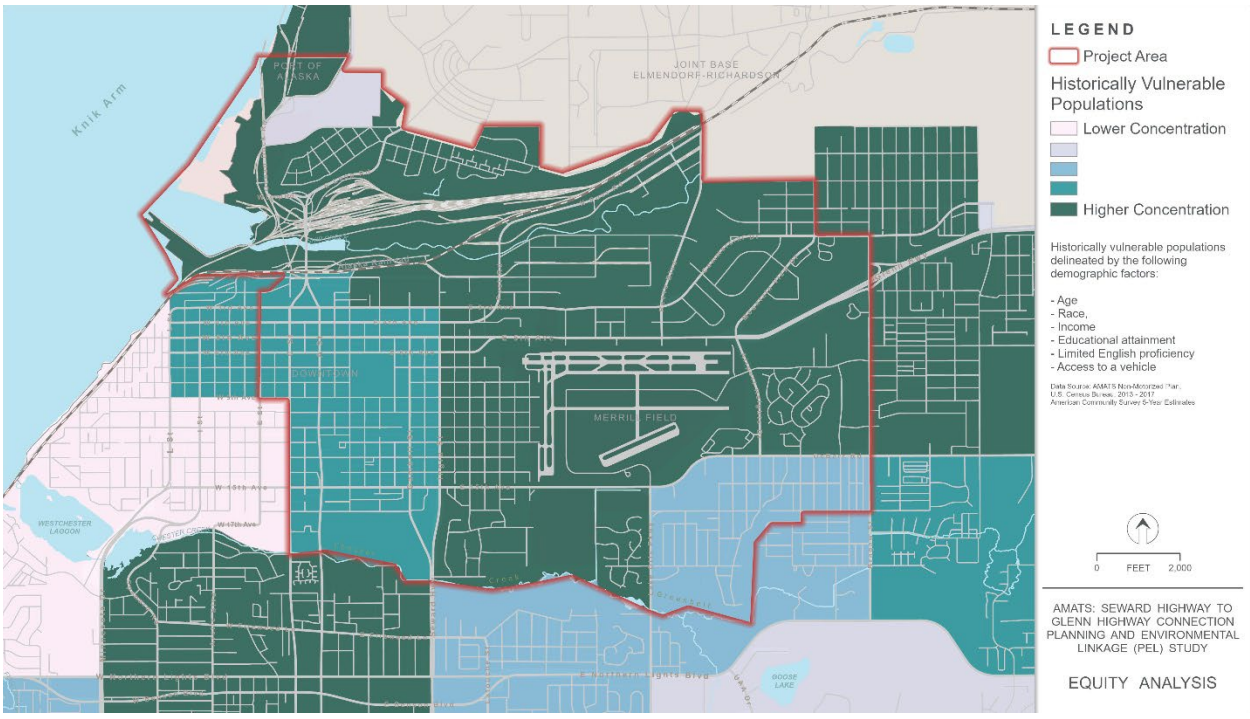
The AMATS *Non-Motorized Plan* (AMATS 2021) developed an equity analysis that considered demographic factors (age, race, income, educational attainment, limited English proficiency, access to a vehicle) that, when these factors were combined, indicated where there are concentrations of historically vulnerable populations. The results are shown in Figure 27. The areas around Merrill Field, Ship Creek, Mountain View, and Government Hill have some of the highest concentrations of historically vulnerable populations.

Figure 26. Non-Motorized Demand Analysis



Source: MOA n.d.

Figure 27. Equity Analysis

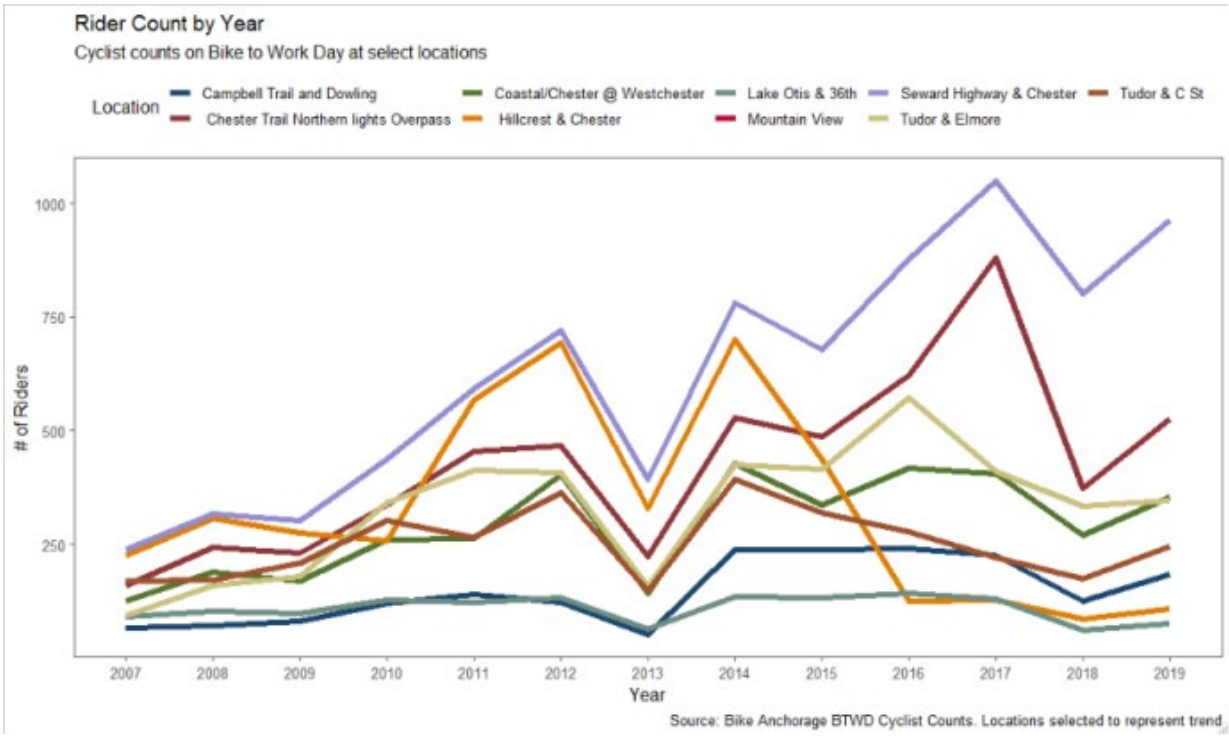


Source: MOA n.d.

Bike to Work

The MOA administers an annual survey on Bike to Work Day to better understand cycling in Anchorage. This data helps to understand the overall popularity of bike commuting rather than how actual counts of issues such as traffic, weather, and road construction can affect the individual numbers. Figure 28 shows the rider count on Bike to Work Day at selected locations. The Seward Highway and Chester Creek locations show an overall growth trend. The Mountain View location also shows an overall growth trend but has more variability.

Figure 28. Bike to Work Day – Rider Counts by Year

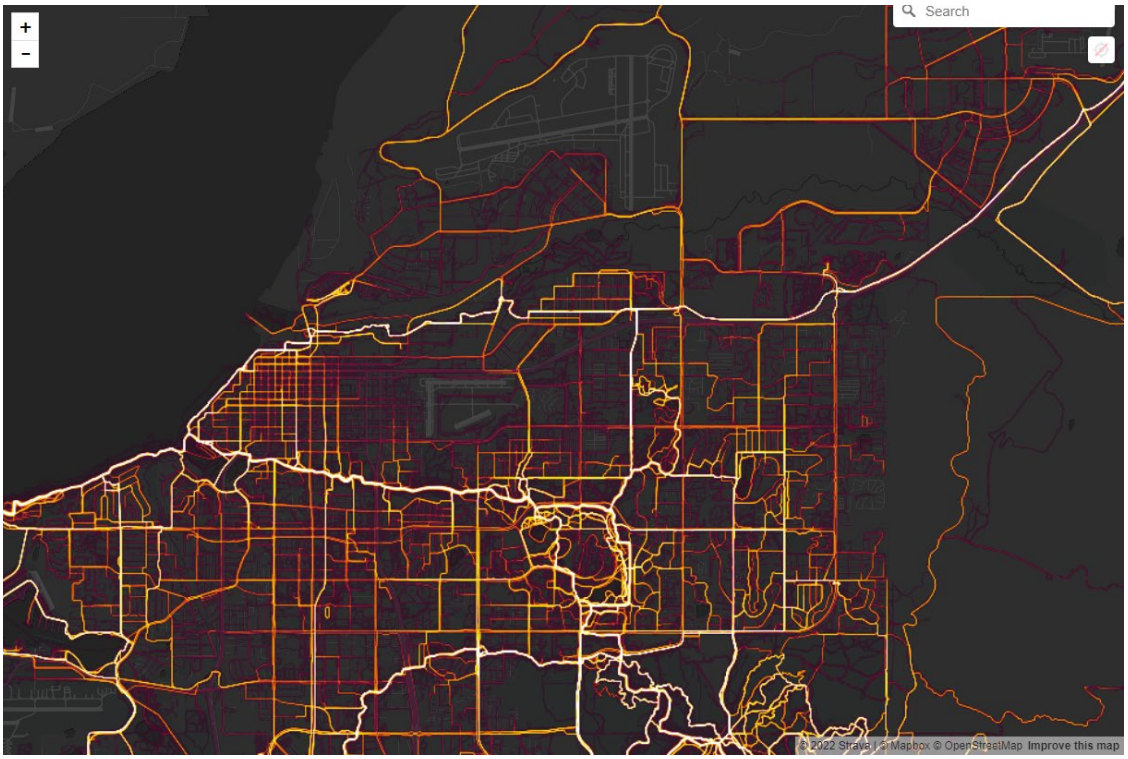


Source: Berry 2019

Fitness Tracker Users

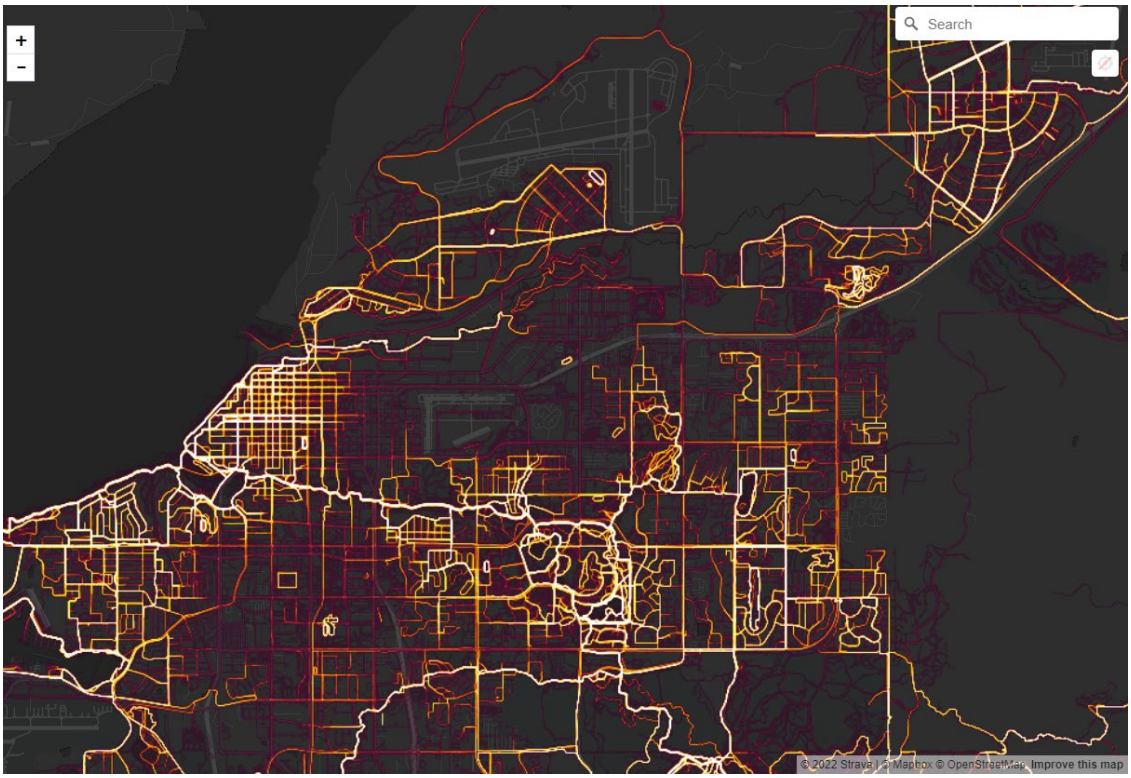
Strava is a fitness-tracking and social media app designed to allow users to track their fitness activities. Strava produces heat maps that show the most active areas for Strava users over the past year. These heat maps reflect aggregated, public activities that were recorded by Strava users. Figure 29 shows the Strava heat map produced by bicyclists in the area, while Figure 30 shows the heat map produced by runners/walkers. Lighter colors indicate more users than darker colors on the maps. The Chester Creek, Coastal, and Ship Creek Trails appear most heavily used by Strava users for bicycling. For runners/walkers, the same trails appear heavily used, along with the sidewalks along the Delaney Park Strip, bordering Downtown Anchorage.

Figure 29. Strava Heat Map, Bicycle



Source: Strava n.d.

Figure 30. Strava Heat Map, Run/Walk



Source: Strava n.d.

8.3 System Performance: Relevance to Purpose and Need

The wide variety and high concentration of different modal users show the conflicting functions of the Glenn and Seward Highway corridor through the study area. The corridor is a heavily used freight connection to and from the POA serving both local and regional destinations. It is designated as a freight route. Concurrently, the study area is also heavily used by mass transit riders and non-motorized users. The Transit Center is located Downtown, and ridership is high though the study area. Bicyclists and pedestrians, both for recreational and transportation purposes, use the corridor. Residents in Fairview tend to have lower incomes and make a greater percentage of their trips using non-motorized modes or transit than other areas of Anchorage. These varying modal users along the corridor where the Glenn Highway meets the Seward Highway create potential conflicts, as multiple travel functions and modes exist on the same roadways, reducing mobility and accessibility and affecting safety for all user groups. The problems discussed in this section have been included in the purpose and need statement and evaluation criteria have been proposed to try to measure how alternatives will solve these problems. The PEL Study will describe how each alternative interfaces with and complement airports, rail and port facilities, mass transit services, and the needs of non-motorized travelers.

9. Safety

9.1 FHWA Purpose and Need Guidance

“Explain if the proposed action is necessary to correct an existing or potential safety hazard. In addition, explain if the existing accident rate is excessively high and why, and how the proposed action will improve safety.”

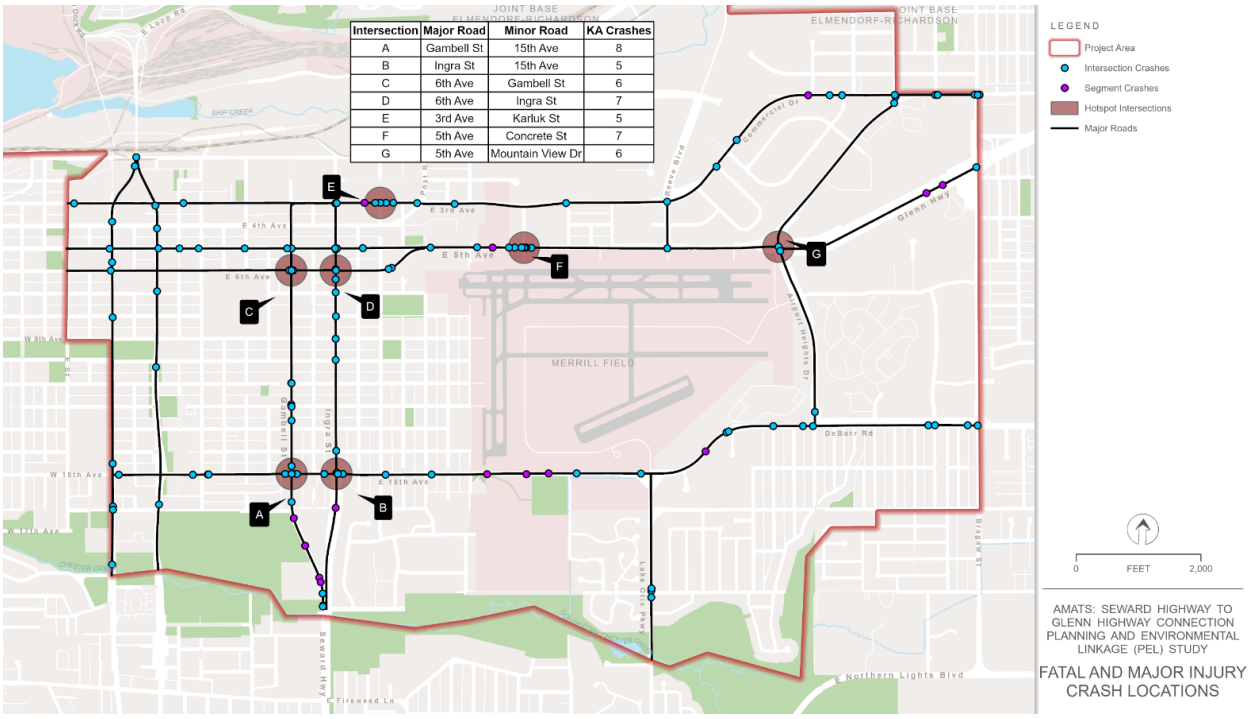
9.2 System Analysis

9.2.1 Traffic Safety

Figure 31 shows the location of the 155 fatal and major injury crashes on the arterial roads selected for analysis[3] in the project area between 2008 and 2017 (the previous 10 years of available crash data from DOT&PF). In the study area, 19 fatal and 136 major injury crashes occurred between 2008 and 2017. Of these 155 fatal and major injury crashes, 141 (91 percent) occurred primarily at intersections. Based on this information, seven hotspot intersections are identified in Figure 31. A hotspot intersection is an intersection with five or more fatal and major injury crashes occurring within the 10-year study period. The intersection with the highest number of fatal and major injury crashes (eight) is 15th Avenue and Gambell Street. This was followed by 6th Avenue and Ingra Street, and 5th Avenue and Concrete Street, which each had seven crashes.

[3] The Seward and Glenn Highways (including 5th and 6th Avenues and Gambell and Ingra Streets) and parallel/connecting arterial roads within the study area were identified for analysis.

Figure 31. Fatal and Major Injury Crashes, 2008–2017



Note: KA stands for fatal and serious injury crashes based on the KABCO scale for crash severity.
Source: DOT&PF n.d.

9.2.2 Non-Motorized Safety

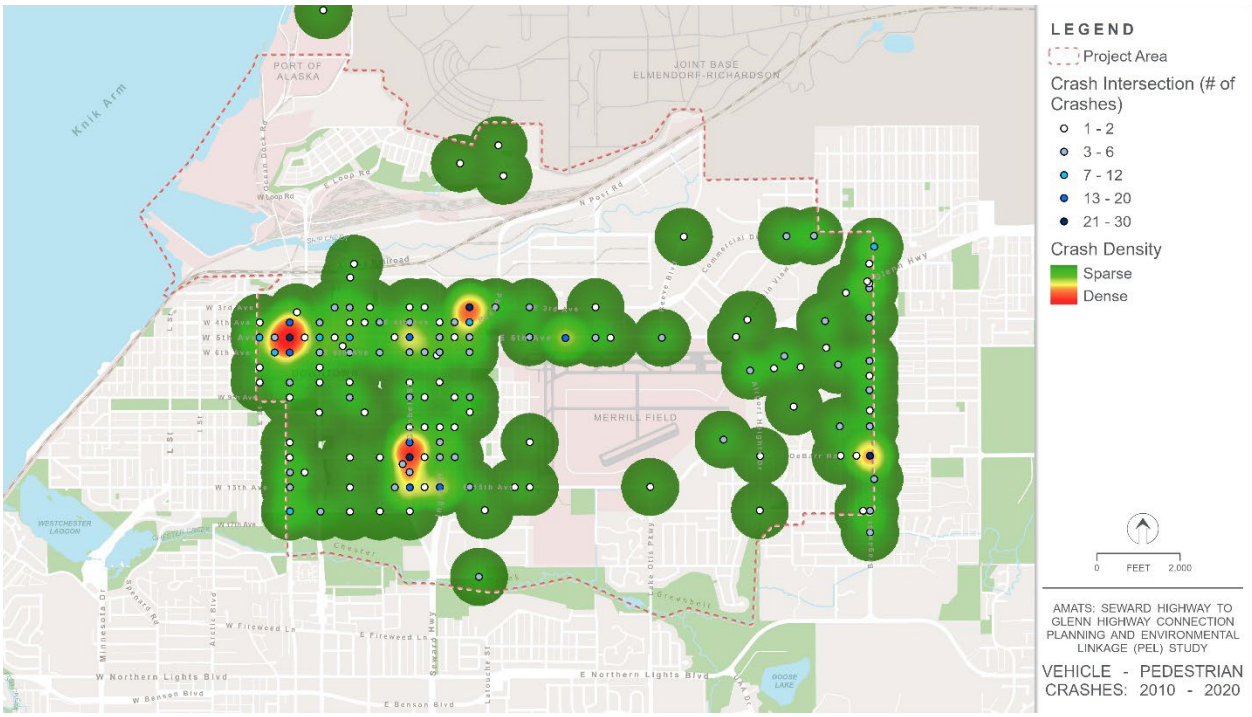
The MOA Traffic Department provided non-motorized crash data between 2010 and 2020. This data was analyzed to produce figures that show the vehicle/pedestrian crash volume and density (Figure 32) and the vehicle/bicyclist crash volume and density (Figure 33).

Figure 32 shows the following high-density vehicle/pedestrian crash locations in the study area: 15th Avenue/Ingra Street; 12th–15th Avenues along Gambell Street; 5th Avenue/Gambell Street; 3rd–4th Avenues/Karluk Street; 3rd, 4th, and 5th Avenues/C Street, and Airport Heights Drive/DeBarr Road.

Figure 32 shows the following high-density vehicle/bicycle crash locations in the study area: 15th Avenue/Ingra Street; 15th Avenue/Gambell Street; 6th Avenue/Ingra Street; 6th Avenue/Karluk Street; 6th Avenue/Concrete Street; and Airport Heights Drive/DeBarr Road.

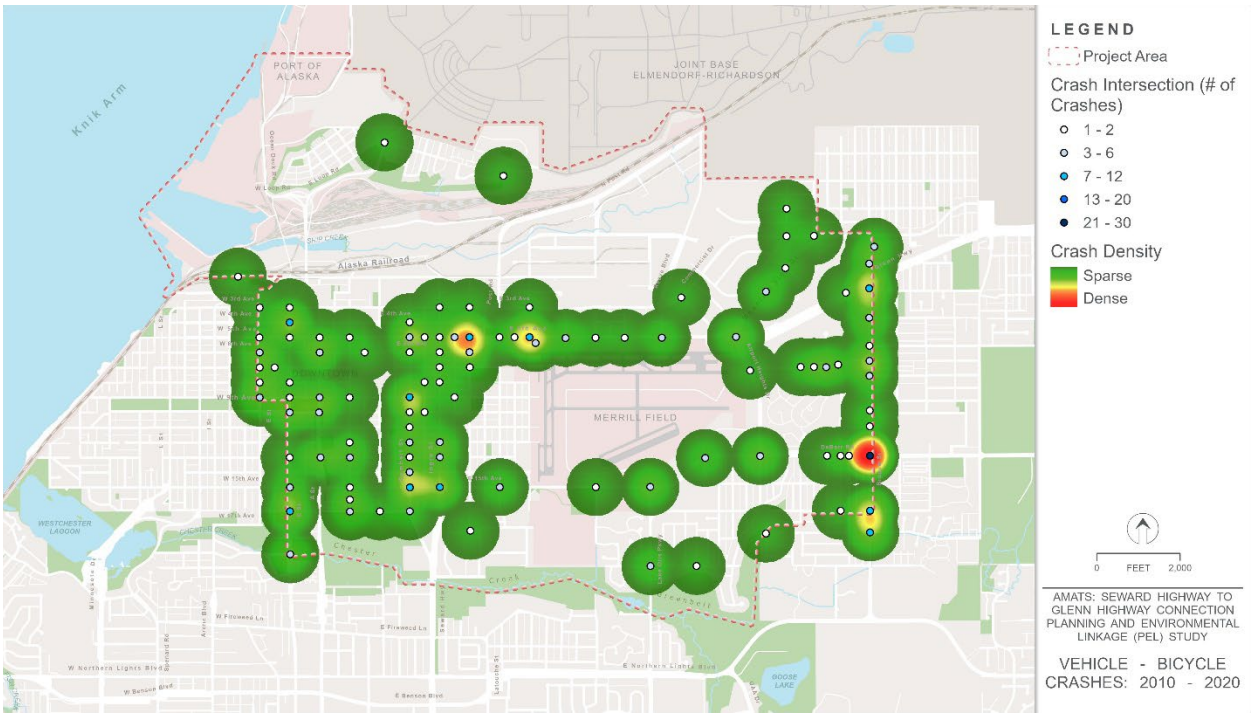
While these intersections had the highest crash density, the maps show that crashes along each of the NHS routes (see Figure 2) in the study area are more prevalent. This is likely due to the higher traffic volumes and speeds on these facilities. The crash data also closely aligns with the public input related to the location of non-motorized issues and concerns (see Figure 15).

Figure 32. Vehicle/Pedestrian Crash Density, 2010 to 2020



Source: MOA 2022

Figure 33. Vehicle/Bicyclist Crash Density, 2010 to 2020



Source: MOA 2022

9.3 System Performance: Relevance to Purpose and Need

Crashes for vehicles and pedestrians and bicyclists are elevated at several study area intersections.

In the study area, 19 fatal and 136 major injury crashes occurred between 2008 and 2017. The intersection with the highest number of fatal and major injury crashes (eight) is 15th Avenue and Gambell Street. The next highest are 6th Avenue and Ingra Street, and 5th Avenue and Concrete Street, which each experienced seven crashes. The segment with the highest crash rate is Ingra Street between 5th and 6th Avenues (145.7 fatal and major injury crashes per million VMT). The intersections at the start and end of this segment (Ingra Street/5th Avenue and Ingra Street/6th Avenue) have some of the highest numbers of crashes in the study area. While two intersections on the Glenn Highway/5th Avenue have a high crash frequency, the crash rates along this corridor do not exceed the statewide average. This is due to the high traffic volumes along this corridor.

Fairview residents have expressed concerns about pedestrian and non-motorized user safety when traveling adjacent to and across several high-traffic volume roadways within this study area, including Gambell Street, Ingra Street, 5th Avenue, and 6th Avenue. Data on crash density between vehicles and pedestrian and bicyclists within the study area shows several intersections with elevated crash density and numbers along these roadways. Based on these data, improving safety for non-motorized users should be included in the purpose and need statement.

10. Roadway Deficiencies

10.1 FHWA Purpose and Need Guidance

“Explain if and how the proposed action is necessary to correct existing roadway deficiencies (e.g., substandard geometrics, load limits on structures, inadequate cross-section, high maintenance costs, etc.). In addition, explain how the proposed action will correct these deficiencies.”

10.2 System Analysis

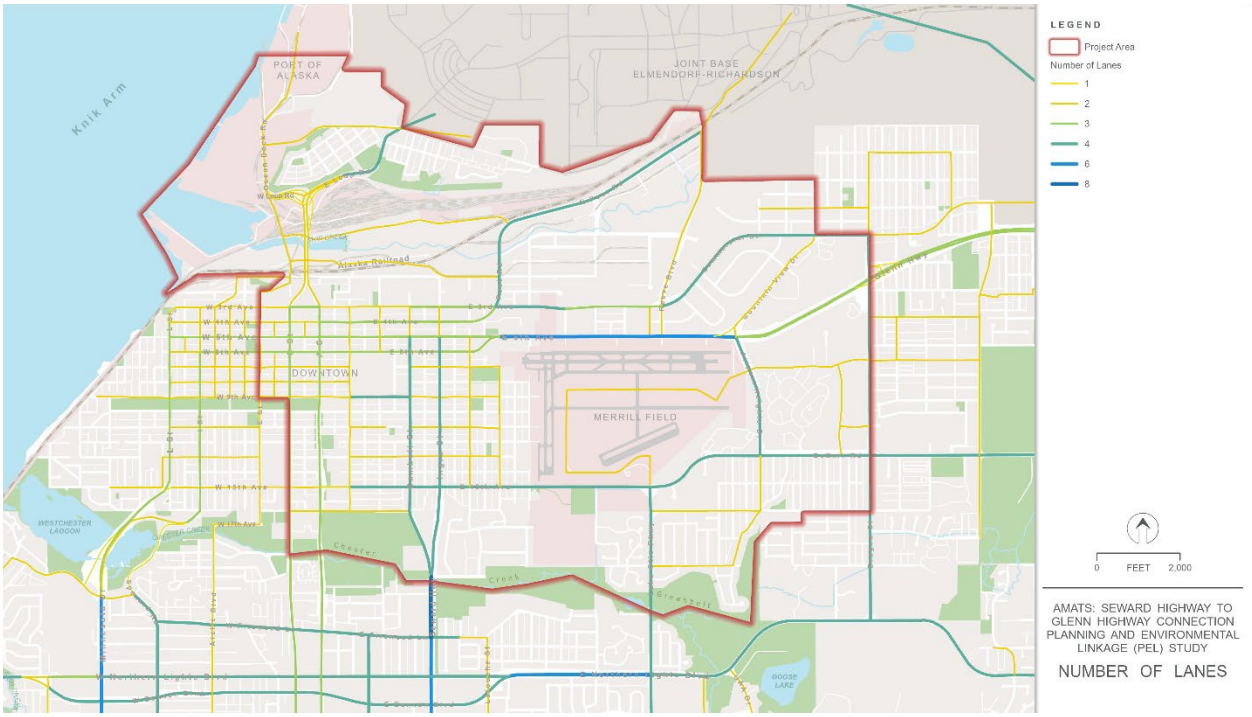
Roadway or facility deficiencies are physical characteristics of a facility that are functioning below the desired performance, including substandard geometrics, load limits on structures, inadequate cross-sections, and/or high maintenance costs. Needs associated with poor performance of roadways and bridges are typically identified through the pavement and bridge management systems. Design manuals and guidelines are used to determine if a facility meets current standards and policies.

Roadway characteristics refer to the roadway’s physical attributes.

10.2.1 Lane Configurations

Figure 34 shows the lane configurations of the roadways in the study area that affect traffic movement. The roadways that are colored white in Figure 34 are considered local or neighborhood roads and do not significantly affect traffic flows; they are predominately one lane in each travel direction.

Figure 34. Number of Lanes

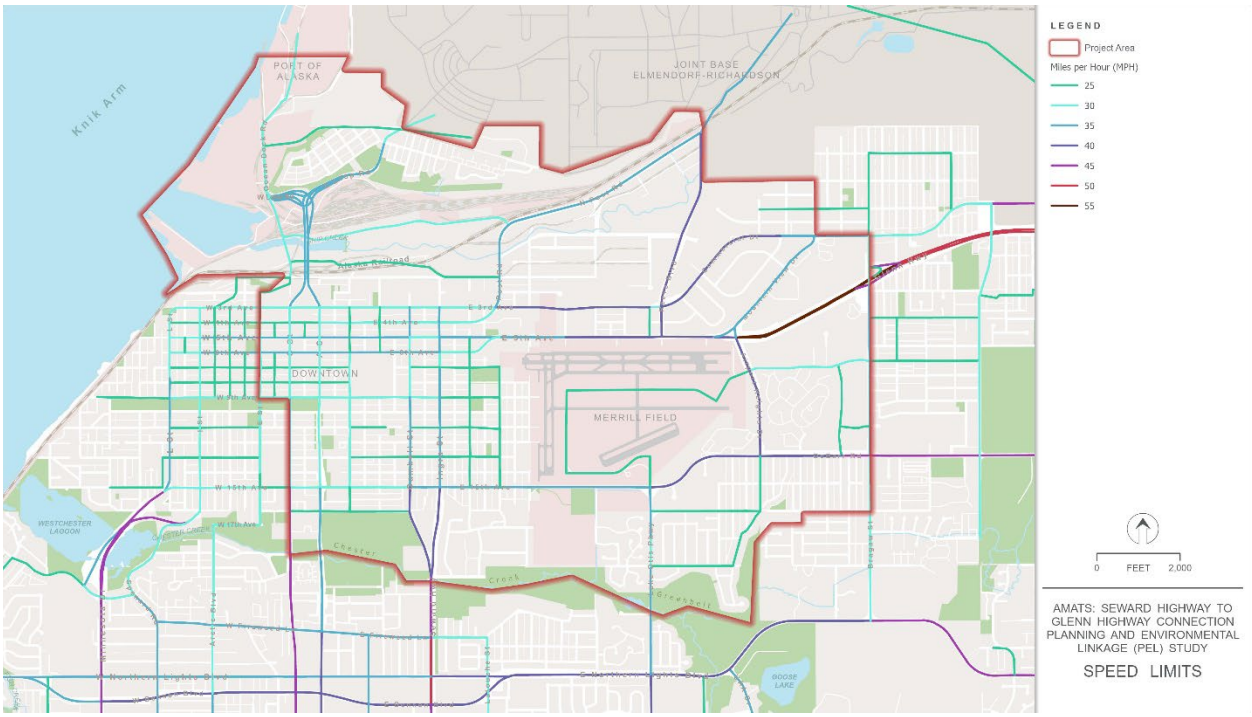


Source: RSG 2022

10.2.2 Speed Limits

Posted speed limits for roads within the study area are shown in Figure 35. The highest posted travel speed is on the Glenn Highway, where it enters the study area (55 miles per hour [mph]) approaching the Airport Heights Drive intersection. The speed limits vary throughout the Seward-Glenn Highway corridor, ranging from 25 mph westbound around the 5th Avenue/Gambell Street couplet to 45 mph on the Seward Highway as the couplets join.

Figure 35. Posted Speed Limit



Source: RSG 2022

10.2.3 Pavement Conditions

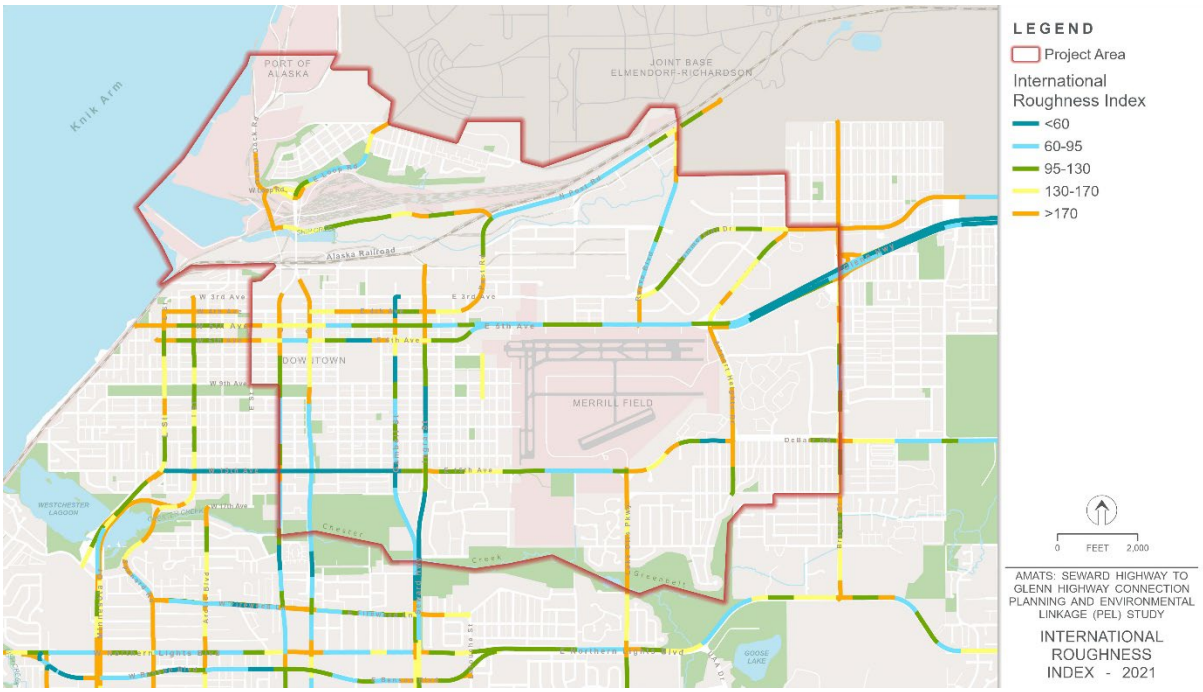
DOT&&PF uses several measures to rate the condition of highway pavement, including the International Roughness Index (IRI), rutting, and cracking.

IRI is a way to assess the overall pavement quality. A higher IRI value indicates a rougher road surface. FHWA has set an IRI guideline of 170 inches or less per mile for an acceptable road surface, and 95 inches or less per mile for a surface in good condition (DOT&PF 2012). DOT&PF's goal for new construction is an IRI of less than 60 inches per mile. Figure 36 shows the IRI for roads in the study area.

"Rutting is a longitudinal depression of the pavement structure in the wheel paths that can be caused either by pavement structural deficiency, inadequate compaction of the granular base, or by mix instability" (DOT&PF 2012). Studded tire use and heavy loads are two major contributors to rutting on Alaska roads. DOT&PF's trigger for a rehabilitation project is a rut depth of 0.5 inch. Ruts that are 0.75 inch or greater require immediate rehabilitation (DOT&PF 2012). As shown on Figure 37, most roads in the study area do not appear to have a rutting problem.

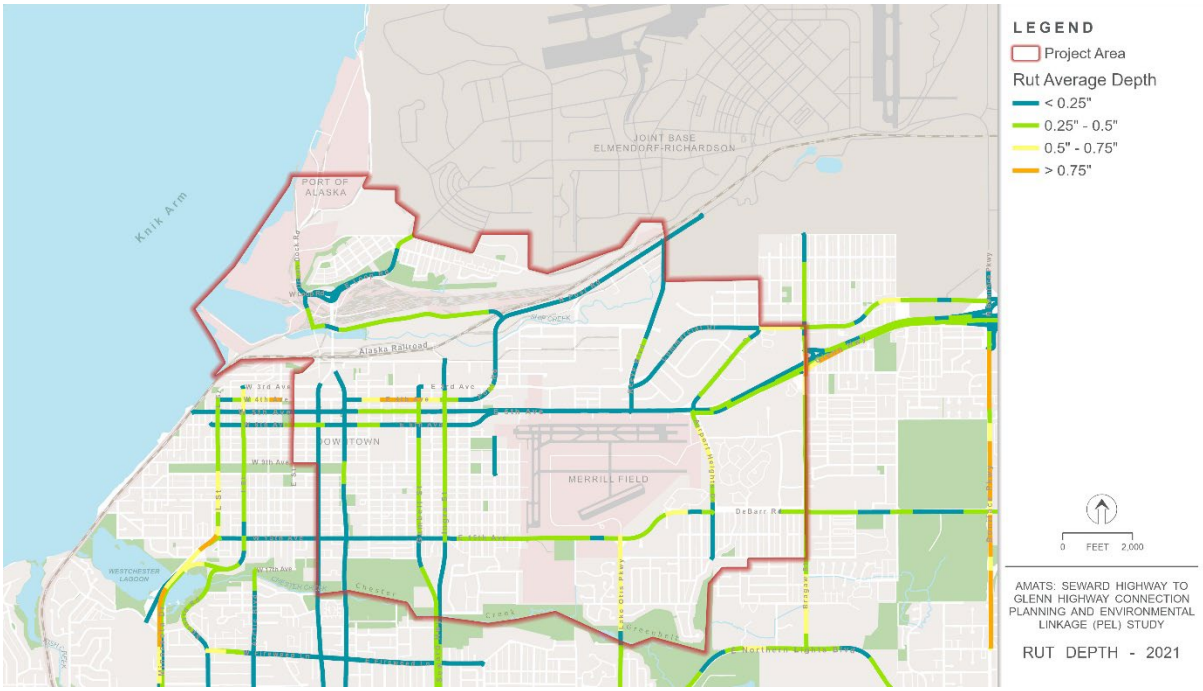
"Cracking is the separation of the pavement surface caused by failure of the asphalt to bind properly, fatigue, temperature changes, turning movement of vehicles, and other factors" (DOT&PF 2012). In general, a cracking percentage below 5 percent is considered good. As shown on Figure 38, roads in the study area do not have unacceptable amounts of cracking.

Figure 36. International Roughness Index, 2021



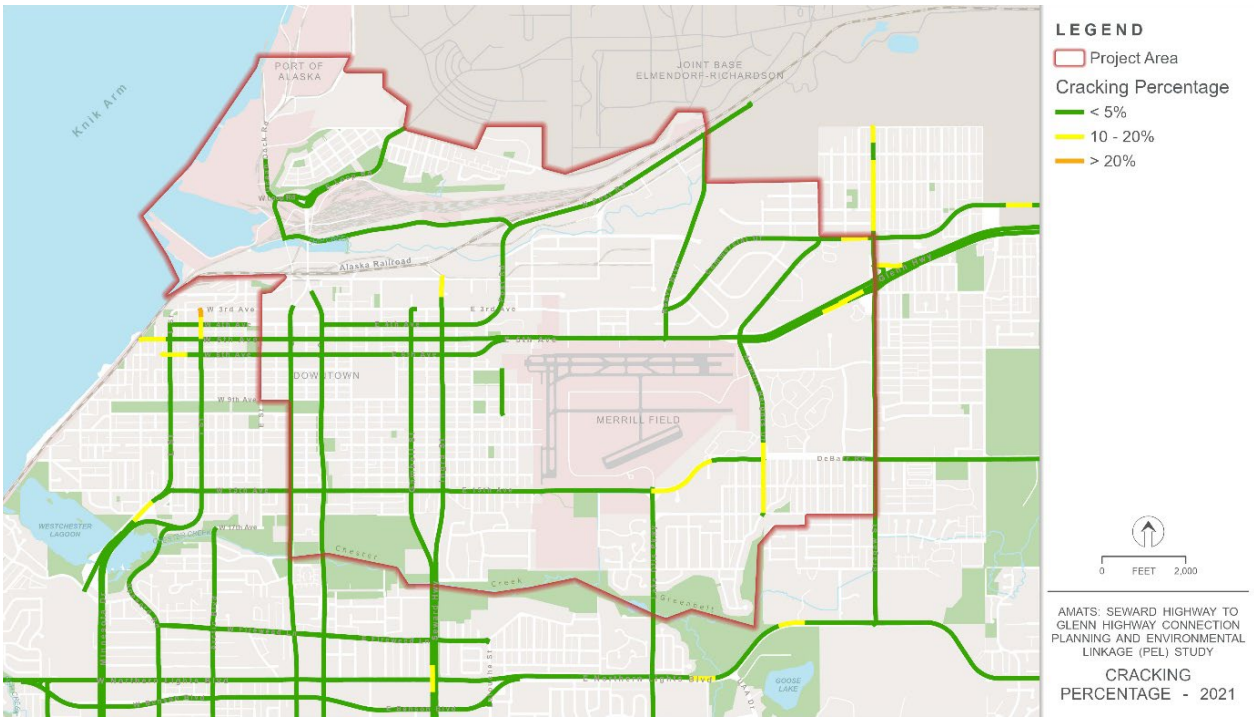
Source: DOT&PF n.d.

Figure 37. Rut Depth, 2021



Source: DOT&PF n.d.

Figure 38. Cracking Percentage, 2021



Source: DOT&PF n.d.

10.3 System Performance: Relevance to Purpose and Need

The recommendation is that the PEL examine travel speed to determine how much of a factor it has been in the accident history on the NHS within the study area. Speed should be examined relative to the compatibility of the local travel patterns and modes. Improvements may be possible to improve roadway design that maintains NHS functionality while improving safety for all modes.

Based on the available data, roadway pavement condition appears satisfactory and is not a factor proposed in the purpose and need.

11. References

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Appendix A:
List of Comments

[Pending]