Draft Anchorage Freight Mobility Study

ANCHORAGE, AK

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Anchorage Metropolitan Area Transportation Solutions

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PLACEHOLDER

Acronyms and Abbreviations

3C	Comprehensive, Cooperative, and Continuing
AADT	Annual Average Daily Traffic
AADTT	Annual Average Daily Truck Traffic
AAFES	Army and Air Force Exchange Service
ADA	Americans with Disabilities Act
AMATS	Anchorage Metropolitan Area Transportation Solutions
APMP	Anchorage Port Modernization Project
ARDSA	Anchorage Roads and Drainage Service Area
ARFF	Aircraft Rescue and Fire Fighting
ARRC	Alaska Railroad Corporation
CBD	Central Business District
CBERRRSA	Chugiak, Birchwood, Eagle River Rural Road Service Area
CMP	Congestion Management Process
DOT	U.S. Department of Transportation
DOT&PF	Alaska Department of Transportation and Public Facilities
EAFB	Elmendorf Air Force Base
EPM	Electrical Preventative Maintenance
FAA	Federal Aviation Administration
FAC	Freight Advisory Committee
FAF-4	Freight Analysis Framework, Version 4
FARS	Fatality Analysis Reporting System
FAST	Fixing America's Surface Transportation Act
FASTLANE	Fostering Advancements in Shipping and Transportation for the Long-Term Achievement of National Efficiencies
FHWA	Federal Highway Administration
FMS	Freight Mobility Study
FRSA	Federal Railroad Safety Act
GO	General Obligation
HPMS	Highway Performance Monitoring System
HSIP	Highway Safety Improvement Program
JBER	Joint Base Elmendorf-Richardson
KISS	Keeping It Short and Simple
MOA	Municipality of Anchorage
MPO	Metropolitan Planning Organization
MTP	Metropolitan Transportation Plan
NCFRP	National Cooperative Freight Research Program
NFPA	National Fire Protection Association
NHFN	National Highway Freight Network
NHFP	National Highway Freight Program

NHS	National Highway System
NHTSA	National Highway Traffic Safety Administration
NPRM	Notice of Proposed Rulemaking
P3	Public-private Partnership
PHMSA	Pipeline and Hazardous Materials Safety Administration
POA	Port of Anchorage
RI_{95}	Truck Travel Time Reliability Index
SMART	Specific, Measurable, Attainable, Realistic, and Timely
STRAHNET	Strategic Highway Network
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TAC	Technical Advisory Committee
TAPS	Trans-Alaska Pipeline System
TDM	Transportation Demand Management
TIWC	Transportation Worker Identification Card
TOC	Traffic Operations Center
TOFC	Trailer on Flat Car
TRB	Transportation Research Board
TSA	Transportation Security Administration
TSAIA	Ted Stevens Anchorage International Airport
TTTI	Truck Travel Time Index
VMT	Vehicle Miles Traveled

1. Introduction

Every day, products and goods move into, out of, and around Anchorage. The freight transportation business sector moves goods, employs workers, generates revenue, and consumes materials and services produced by other sectors of the economy. Almost all of the goods purchased by Anchorage residents and the entire region are transported here by some combination of ship, barge, plane, train, and truck. In order to maintain the region's high quality of life and to support long-term economic growth and activity, this goods movement process uses an essential, yet outdated multimodal freight transportation system.

Anchorage's growth and development is shaped by its prime geographic location at the crossroads of important transportation connectors. Originally established as a rail construction port site near Ship Creek, Anchorage quickly grew during the early development of the Alaska Railroad between 1915 and 1923.

Anchorage – "Air Crossroads of the World"

Due to its strategic military location, the U.S. Government established Fort Richardson in 1938 and Elmendorf Air Force Base (EAFB) in 1940. Anchorage's unique position between Asia and Europe made both installations critical outposts for the United States. Military presence and resource development would eventually propel Anchorage into the 21st century, helping grow important water and air transport routes that would connect the city and Alaska to various intra-state and inter-state United States markets.

Further, the construction of the Port of Anchorage's (POA) ocean terminal in 1961 provided important transportation infrastructure for the city and the state. The POA would play a critical role both after the devastating 1964 Good Friday Earthquake as the only surviving marine port in Southcentral Alaska, and during the expansion of the Trans-Alaska Pipeline System (TAPS) when a large influx of pipeline workers moved to Anchorage and other parts of the state, increasing the demand for goods.

Currently, Anchorage relies heavily on highway, barge, rail, and air transportation to move freight. In contrast to many other regions in the United States, there is a higher concentration of air and barge traffic to and from Anchorage and other Alaskan communities due to the lack of road surface developed across the state. Transportation facilities that were built early in the 20th century continue to play an ongoing role in providing services to Alaskan communities and will do so into the future.

Also, as the "air crossroads to the world," approximately 95 percent of the world's industrial population is within 9 hours of Anchorage by air. The city serves as a trans-shipment center between North America, Europe, and Asia. The Ted Stevens Anchorage International Airport (TSAIA) facilities have

grown extensively to accommodate for shipping companies that make critical refueling stops in Anchorage while moving goods across the globe.

As Alaska's largest metropolitan area, Anchorage provides critical services for major international and domestic trade. Anchorage's role in the movement of freight is critical in the city's and region's ability to grow. Future economic development of the city, the region, and the state will remain defined by freight infrastructure and mobility opportunities.

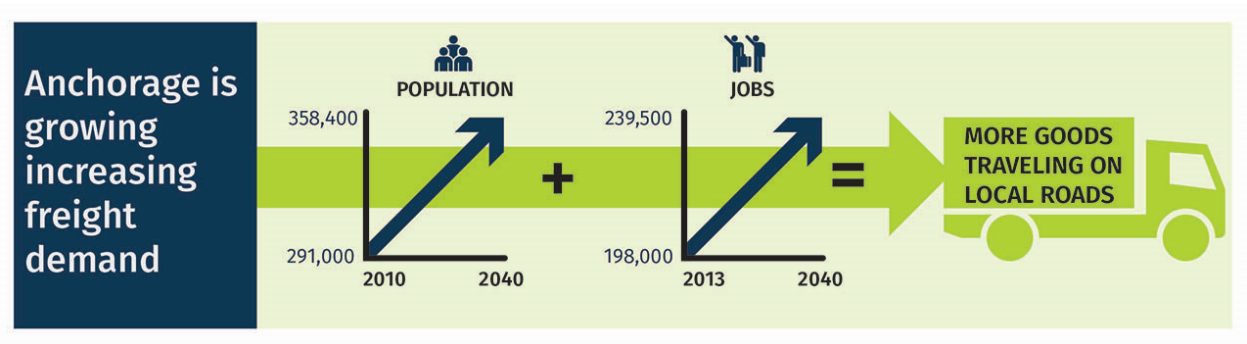
What is Freight Mobility?

Freight mobility refers to moving goods from one place to another by any mode (including truck, plane, train, pipeline, and/or ship). It is the process by which goods move from origins to final destinations.

Why is AMATS developing a FMS?

According to the U.S. Census, Anchorage population has grown from 226,338 in 1990 to 291,826 in 2010, roughly equating to 1.4 percent annual population growth (Figure **1.1**). With this population growth, there was also an increase in local jobs and consumer spending. Evaluating freight movement and mobility is critical to Anchorage's future increased demand for freighting various goods for a growing population. More efficient multimodal transportation mobility and intermodal freight movements and connections will mean consumers will receive goods faster and at potentially lower costs.

Figure 1.1. AMATS Population and Jobs Growth from 2015 to 2040



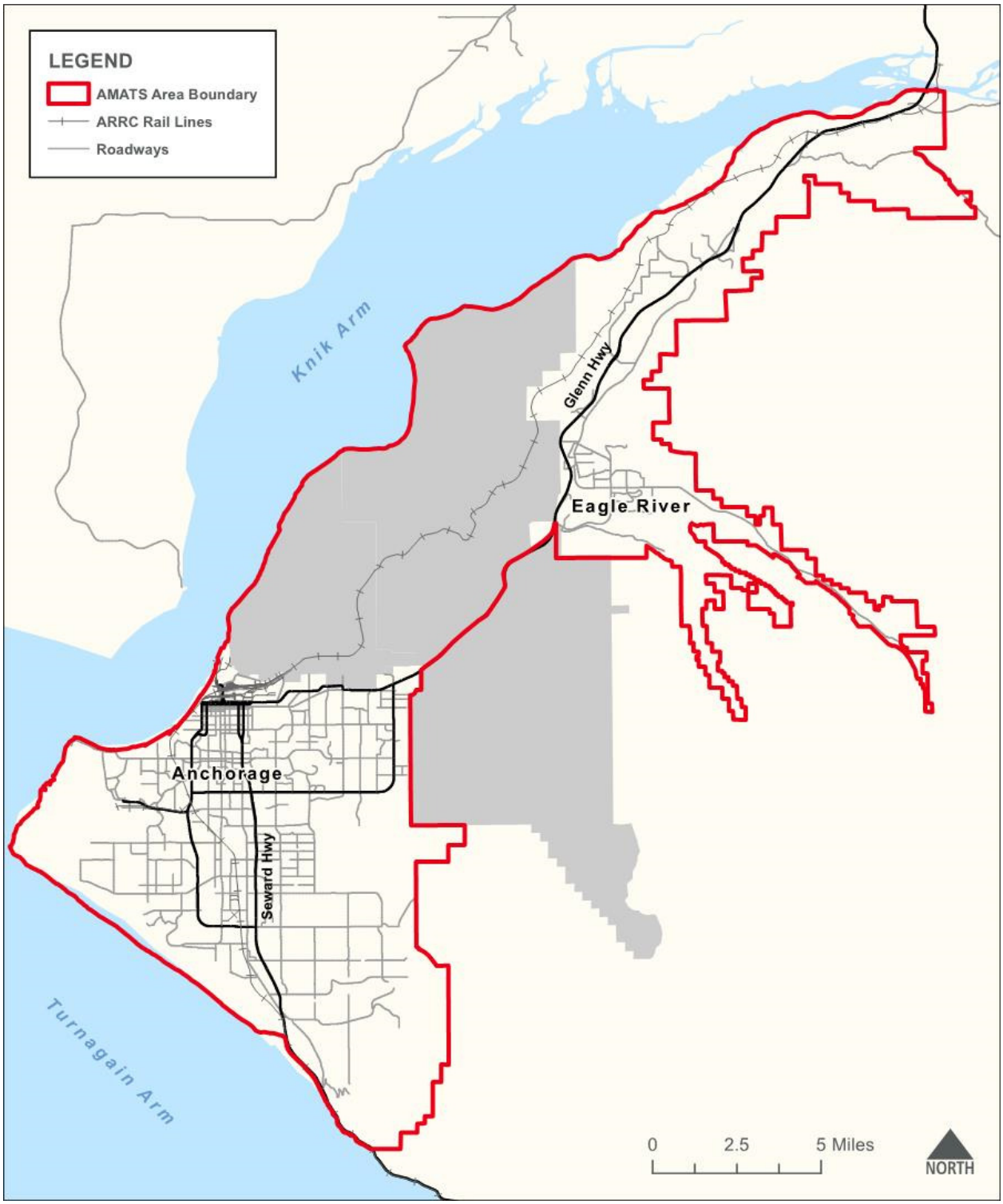
The Anchorage Metropolitan Area Transportation Solutions (AMATS) crafted the Anchorage Freight Mobility Study (FMS) to prepare for future growth within the AMATS area and in surrounding communities that depend on Anchorage's multimodal freight transportation network to deliver important goods. Development of the FMS will allow AMATS to:

- Better understand existing and projected regional freight flows, issues, concerns, and needs;
- Identify relevant infrastructure improvements and policy changes to improve freight mobility in the region; and
- Create a multimodal transportation network that allows freight to operate and move efficiently across and between each mode.

Study Area

The FMS study area includes the AMATS region, including the Anchorage Bowl and the Chugiak-Eagle River area (Figure 1.2).

Figure 1.2. AMATS FMS Study Area



FMS Planning Process

Figure 1.3 illustrates the FMS planning process. Core elements of the FMS are as follows:

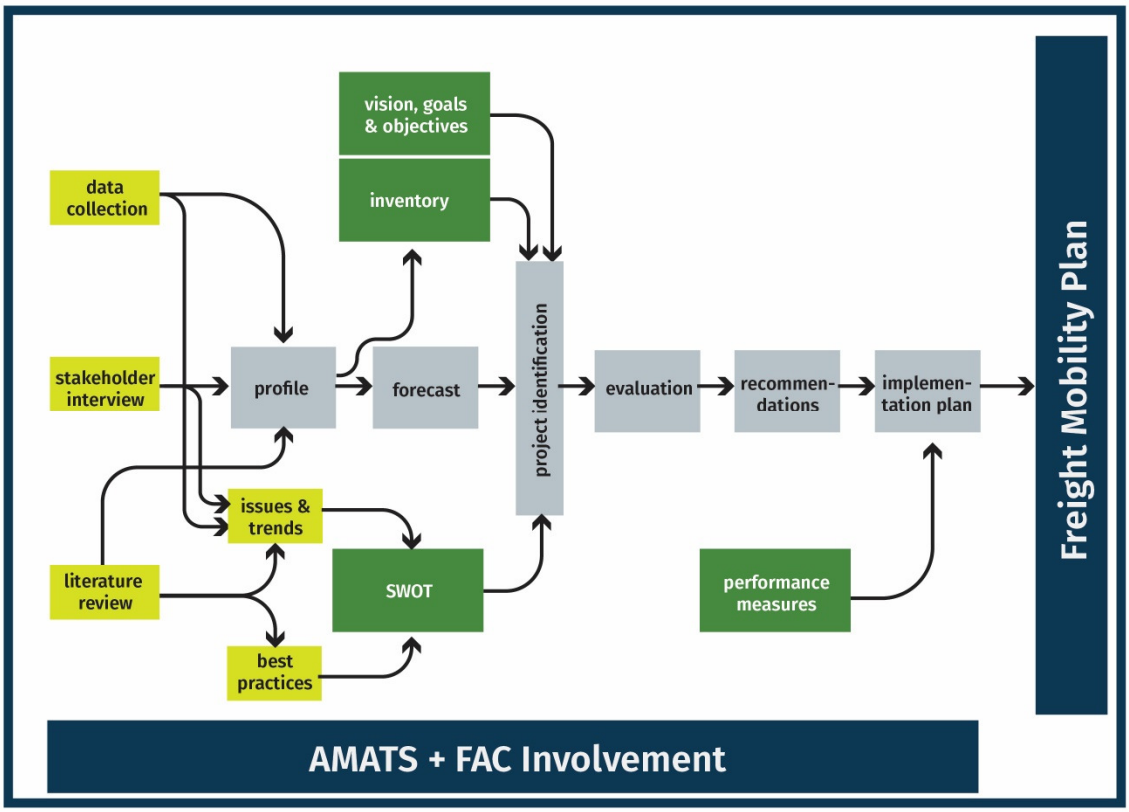
- **Data Collection, Stakeholder Interviews, Literature Review, and Best Practices** were conducted to create the existing and future conditions information used to support the development of the FMS. In addition, an extensive literature review and collection of relevant federal, state, and regional/local freight related projects, studies, and data, including AMATS freight travel demand models and other datasets established existing conditions and future forecasts. Stakeholder interviews of regional organizations actively using the AMATS system to move freight were implemented to help define critical current and future freight transportation issues and needs of transportation system users. Best practices in metropolitan freight transportation were also defined to help inform the development of potential future transportation planning processes and strategies of the FMS.
- **Issues and Trends** of the multimodal freight transportation system were developed using the results of data collection, stakeholder interviews, and literature review to support both existing and future freight transportation systems analysis. This included the development of the **Existing and Future Freight Inventory, Profile, Forecast** as well as the **Strengths, Weaknesses, Opportunities, and Threats (SWOT)** analysis. The freight inventory and profile considered the potential future multimodal transportation system envisioned for the AMATS region.
- **Vision, Goals, and Objectives Statements** were created using the various sources identified above, in combination with AMATS and the Freight Advisory Committee (FAC) input into the planning process. The goals and objectives were developed with an understanding of the freight inventory, profile of existing and future conditions and forecasts, and SWOT analysis.
- Based on the results of the FMS planning processes through each of the above elements—including the definition of the FMS' vision, goal, and objectives statements—AMATs and the FAC defined a process to screen and prioritize the potential future implementation of freight projects and policies for implementation. This process is referred to as **Project and Policy Prioritization**.
- The **Project and Policy Prioritization** analysis was conducted to evaluate and recommend future FMS projects and policies. Working with the FAC, the project team identified possible future project and policy improvements, prioritized recommended projects and policies, and created an **Implementation Plan** for the FMS. **Performance Measures** were defined to identify how the projects and policies will perform once they are implemented in the future.

Each element of the FMS presented above was used to prepare the FMS White Papers, Technical Memoranda, Reports, and analyses were used to develop the core content of the **Draft FMS** presented in this report. These documents included, but are not limited to, the Literature Review; Stakeholder Interview Guide; Best Practices; Existing Conditions; Future Freight Profile and Inventory; Vision, Goals, and Objectives; and Project and Policy Prioritization Screening Process.

AMATS and the FAC were instrumental in developing, assessing, reviewing, and refining the technical analysis and documents as they were developed during the FMS planning process. Each of

these reports is shown in the Technical Appendices associated with the Draft FMS and can be reviewed to understand the full detail of the analysis conducted in support of this study.

Figure 1.3. Summary of Planning Process



Organization of the AMATS FMS Draft Plan

The FMS is organized into 11 chapters:

- **Chapter 1, Introduction,** provides a brief historical context for the FMS study area and an overview of the report.
- **Chapter 2, Stakeholder Involvement Process,** describes the process for gathering comments and input from the public, FAC, government agencies, and freight-oriented businesses to support the FMS.
- **Chapter 3, Vision, Goals, and Objectives,** describes the specific process used to identify the vision, goals, and objectives of the FMS.
- **Chapter 4, Freight Planning Best Practices,** describes existing successful freight planning processes that can be applied to the AMATS FMS.
- **Chapter 5, Freight Profile,** describes AMATS existing freight conditions analysis for all transportation modes, including highway, water, air, rail, truck, and pipe.
- **Chapter 6, Freight Flows,** describes the movement of goods in the context of the state and AMATS region as well as the inter-relationship of various freight transportation modes.

- **Chapter 7, Local and Regional Freight Issues and Trends,** describes Anchorage's economic, employment, and population trends as well as how these trends affect freight supply and demand.
- **Chapter 8, Freight System Strengths, Weaknesses, Opportunities, and Threats (SWOT),** describes this analysis, with the goal of identifying more effective future freight programming for the FMS.
- **Chapter 9, Performance Management Framework and Measures,** describes the performance measures that will be used in the freight planning process to monitor the impacts of the recommended projects after future implementation.
- **Chapter 10, Recommendations,** describes the screening process and criteria for determining immediate, mid-term, and long-term project and policy recommendations for the FMS.
- **Chapter 11, Implementation Strategy,** describes the potential funding sources available for freight-related transportation projects as well as a timeline for implementing the top priority projects.
- **Chapter 12, Next Steps** describes how the plan can be actively used and the potential opportunities for sharing information about freight and goods movement in other planning processes.

2. Stakeholder Involvement Process

Understanding the AMATS region's freight mobility issues and needs was critical in the development of the FMS. To understand these issues and needs, two phases of outreach were conducted with input from the AMATS FAC. The first phase engaged freight stakeholders, and the second phase engaged the freight community and the general public.

Who is a stakeholder?

A stakeholder is an **individual** or **group** of people that is affected by, or who can affect, a project's outcome.

Freight Advisory Committee (FAC)

AMATS convened their existing FAC to provide the AMATS Technical and Policy Committee with insight on freight issues affecting the region. The FAC consists of representatives from TSAIA; POA; Alaska Trucking Association; the Alaska Railroad Corporation (ARRC); Joint Base Elmendorf-Richardson (JBER), Alaska Department of Transportation & Public Facilities (DOT&PF), Commercial Vehicle Enforcement Division; and trucking and other freight related companies. The FAC provides an opportunity for various stakeholders to participate as active listeners and commentators in regional freight planning, and act as personal bridges between the potential projects and policies and their organizations. The FAC met multiple times during the FMS schedule and provided an important forum for developing many of the core elements of the FMS. FAC members provided critical input in helping AMATS maintain strong connections and communications with key freight stakeholders across the region.

Phase 1: Information Gathering/Stakeholder Interviews

To learn more about stakeholder needs throughout the AMATS area, a series of stakeholder interviews were conducted to support the FMS. The stakeholders represented diverse users of the freight network's highway, aviation, marine, and rail services network. These groups use the freight network most frequently and will be the most impacted by any changes to the existing and potential future freight system in the AMATS region. The goal of the stakeholder interviews was to solicit input on existing freight conditions and needed improvements for the future as well as to publicize the development of the FMS.

All stakeholders interviewed during the FMS process represented public and private organizations responsible for moving commodities and goods for transport. The majority of these goods included general merchandise, coal, cement, chemicals, lumber products, and containers. Freight stakeholders believed that oil prices and economic conditions greatly influence freight opportunities in Anchorage and the state.

Stakeholders expressed concern over various safety issues and bottlenecks within the AMATS region. Stakeholders identified specific issues, some of which are presented below, as well as indicated the following types of strategies they thought could help improve the existing freight network within the AMATS region:

- Raise awareness about the importance of moving freight safely and efficiently;
- Identify more efficient transportation routes:

    - Ensure freight can move more efficiently into and out of key areas (e.g., POA, shopping centers, etc.)
    - Improve intermodal connectivity, especially better access to the POA and TSAIA
    - Improve last mile connectors to commercial/industrial destinations, as well as residential areas
    - Reduce congestion by identifying freight strategies to help facilitate these improvements;
- Consider formal, designated freight corridors and ensure they are designed for freight by accommodating trucks and/or providing separation of freight from other users;
- Develop a better understanding of the interaction between land use and freight movement by maintaining industrial/commercial zones near the TSAIA and POA as well as ensuring preservation of these land uses (i.e., do not convert to other uses such as residential zoning); and
- Work toward resolving existing and potential land use conflicts such as developing noise compatible land uses near industrial areas, preserving right-of-way, and changing land uses to be compatible with freight movement.

Interviewed participants identified the Anchorage Port Modernization Project (APMP) as the main priority project in the AMATS region. Other major projects identified included improving access to major industrial and commercial areas such as the Tikahtnu Commons Shopping Center, POA, TSAIA's North and South airparks, and the industrial zone surrounding 92nd Avenue.

Phase 2: Public Review of the draft FMS

Comments received during the public review of this Draft FMS Report will be used to develop a Final FMS that will be submitted to the AMATS Technical and Policy Committees for review and adoption.

3. Vision, Goals, and Objectives

To provide a clear direction for the FMS, a vision statement, with associated goals and objectives, was developed. The vision, goals, and objectives were created based on input from the AMATS FAC, best practices, and literature review of regional plans and studies. The stakeholder interview process also provided additional direction from various freight user groups to support the development of vision, goals, and objectives.

Vision Statement

The vision statement provides a definitive direction for the FMS and provides an aspirational description of what the plan aims to accomplish over the long term. Effective vision statements define the core ideals of any given project's purpose. This statement also provides guidance about what freight mobility in Anchorage should look like in the future and provides the long-term perspective needed to make decisions on freight related issues as they arise.

The FMS vision statement is as follows:

> ***"Anchorage has a highly mobile, safe, and efficient freight delivery system that provides safe, cost effective, sustainable, secure, and reliable freight mobility; and supports job creation, economic growth, and promotes improved quality of life for the area's residents."***

This vision is accomplished by implementing the plan's goals and objectives. While the vision describes the end result, the goals and objectives are intended to work together to describe how to achieve the vision. Goals provide the FMS with more specific elements of the overall vision; describe what the region wants to achieve with the plan; and provide ways to measure the expectations of the plan related to time, quantity, or quality. Goals are generally agreeable to most people. Objectives are used to quantify and clarify the goals and represent specific actions to be taken to achieve the goals.

AMATS and the FAC identified the goals and objectives of the FMS, and linked them with the goals and objectives of the Interim 2035 AMATS Metropolitan Transportation Plan (MTP). The FMS goals, and associated objectives for each goal, are presented below.

Objectives should be:

- Realistic and achievable
- As simple and understandable as possible
- Measurable
- Practical and applicable

Goal 1 - Provide a freight transportation system that moves goods safely and securely throughout the community; improves access; provides mobility; and supports a thriving, sustainable, broad-based economy.

Objectives for Goal 1:

- Minimize conflicts between freight and passenger vehicles and non-motorized travelers to reduce vehicle, pedestrian, and bicyclist crashes and reduce and/or eliminate road versus rail conflicts.
- Identify short-term and low cost freight infrastructure improvement strategies.
- Monitor system performance and make progress toward meeting performance targets.
- Optimize the transportation system to meet the needs of the POA, TSAIA, ARRC, JBER, employment centers, and industrial and commercial areas.
- Develop alternative multimodal access strategies to support major freight hubs and improve first/last mile connectivity between freight modes and major generators.
- Define transportation links with freight investment(s) and economic activity.
- Promote better integration of transportation and land use, and target redevelopment/development in locations that are well-located and well-served by freight infrastructure.
- Promote development of an effective roadway network that meets capacity needs and is designed to enhance freight mobility while reducing infrastructure impediments and bottlenecks.
- Provide transportation choices and improve system connectivity for all freight modes while improving intermodal system linkages and interactions between modes.

Goal 2 - Develop an efficient freight transportation network that considers the cost of building, operating, and maintaining the system; the equity of all users; public health impacts; community values; and social justice.

Objectives for Goal 2:

- Consider the life-cycle costs and return on investment of projects when evaluating and selecting them.
- Identify policies and initiatives to support an efficient freight network and corridor(s)
- Minimize adverse impacts on the community, such as neighborhood through-traffic movements; noise, air, and light pollution; and impacts to the natural environment such as water resources, fish habitat, watersheds and wetlands, and parklands.
- Design and landscape roads to maintain and enhance the attractiveness of neighborhoods, open spaces, and commercial corridors and centers.
- Use context-sensitive design strategies, especially to support the development of mixed-use centers (e.g., town centers, employment centers, and redevelopment areas) and transit-supportive corridors with more pedestrian-, bicycle-, and transit-oriented street environments while recognizing the need to move freight into and throughout the community.

Goal 3 - Incorporate technology and best management practices that allow for improved freight movement in the Anchorage region.

Objectives for Goal 3:

- Develop a multimodal freight system that incorporates advanced technology.

- Incorporate freight technology trends into the region's transportation planning process.
- Use technology, when appropriate, to develop an efficient multimodal system.
- Integrate/implement Intelligent Transportation Systems while partnering with federal, state, municipal, and local agencies to optimize technologies.

Goal 4 - Integrate freight needs and financing into transportation project prioritization processes for the region.

Objectives for Goal 4:

- Develop a reliable funding source for multimodal freight projects.
- Refine freight project prioritization process.
- Increase consideration of freight infrastructure needs in the MTP project prioritization process.
- Improve forecasting techniques and long-term needs assessment.
- Consider all potential funding mechanisms and increase use of innovative funding strategies.
- Educate key stakeholders and the public about the cost and benefit to constructing and maintaining freight infrastructure.
- Collaborate and coordinate with key stakeholders regarding project planning and delivery.
- Invest in freight projects that enhance global competitiveness, freight mobility and reliability, and economic activity.
- Improve project delivery and implementation processes and scheduling.

Goal 5 - Develop a multimodal freight system that includes effective public and stakeholder partnerships to leverage opportunities and resources.

Objectives for Goal 5:

- Continue working with the FAC to help define freight-oriented policy.
- Provide additional opportunities for collaboration and information sharing with the private sector/businesses (freight community).
- Advocate for establishing and supporting public-private partnerships where they make sense.
- Continue to improve interagency relationships to better coordinate freight system regulation.
- Encourage development and sharing of freight expertise and knowledge within and across all agencies and among elected officials.

Relationship between FMS and MTP Goals

The AMATS MTP is one of the primary tools that will be used to implement the project and policy recommendations presented in the FMS. The FMS goals and objectives are intended to align with the Interim 2035 MTP, so that AMATS and its partners will be able to work with and integrate both plans to develop a long-term, multimodal transportation system that meets the needs of all users, including freight users, in the region. Table 3.1 shows the relationship of the FMS goals to the 2035 MTP goals most recently confirmed in the Interim 2035 MTP by AMATS in early 2016.

Table 3.1. Relationship between the FMS and Interim 2035 MTP Goals

		AMATS FMS Goals				
		Goal 1 - : Provide a freight transportation system that moves goods safely and securely throughout the community; improves access; provides mobility; and supports a thriving, sustainable, broad-based economy.	Goal 2 - Develop an efficient freight transportation network that considers the cost of building, operating, and maintaining the system; the equity of all users; public health impacts; community values; and social justice	Goal 3 - Incorporate technology and best management practices that allow for improved freight movement in the Anchorage region.	Goal 4 - Integrate freight needs and financing into transportati on project prioritization processes for the region.	Goal 5 - Develop a multimodal freight system that includes effective public and stakeholder partnerships to leverage opportunities and resources.
Interim 2035 Goals	Goal 1 - Ensure development of a balanced transportation network for people, goods, and services that provides an acceptable level of service, maximizes safety, minimizes environmental impacts, provides a variety of transportation choices, and supports planned land use patterns.	X	X	X		
	Goal 2 - Provide a transportation system that moves people and goods safely and securely throughout the community.	X		X		
	Goal 3 - Develop an attractive and efficient transportation network that considers the cost of building, operating, and maintaining the system; the equity of all users; public health impacts; community values; and social justice.	X	X			
	Goal 4 - Develop a transportation system that supports a thriving, sustainable, broad-based economy by locating and using transportation infrastructure and facilities to enhance community development.		X			
	Goal 5 - Establish community connectivity with safe, convenient, year-round automobile and non automobile travel routes within and between neighborhoods, commercial centers, and public facilities.			X	X	
	Goal 6 - Improve access to goods, jobs, services, housing, and other destinations while providing mobility for people and goods in a safe, affordable, efficient, and convenient manner.				X	X
	Goal 7 - Provide a transportation system that provides viable transportation choices among various modes.		X	X		X

4. Freight Planning Best Practices

Best practices are used in freight transportation planning and policy in the United States to help identify strategies and policies designed to move freight as efficiently as possible in and around metropolitan areas. A series of "best practices," defined in transportation research for metropolitan freight planning, were identified and used in the FMS planning process. Metropolitan freight planning best practices reviewed and assessed for incorporation and use in the FMS are presented in Figure 4.1, with each described in detail below.

Figure 4.1. Metropolitan Freight Planning Best Practices Concepts

The guidelines for best practices included the following concepts, in no particular order of importance:

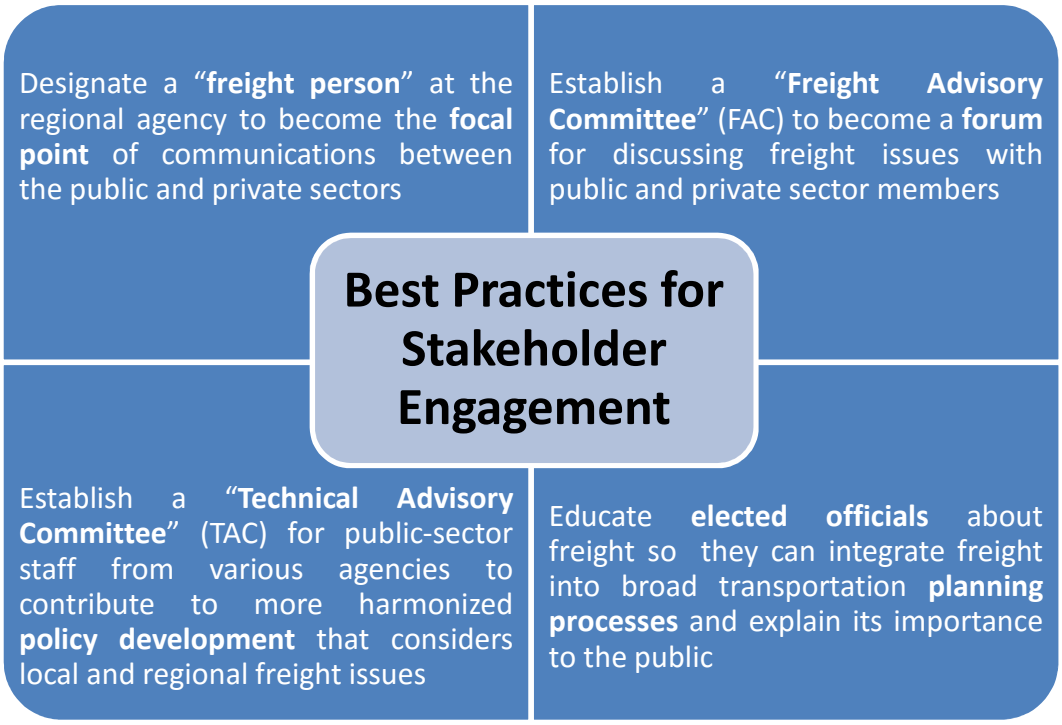
- Use innovative stakeholder engagement;
- Engage the private sector;
- Define freight issues and challenges;
- Identify root causes of freight problems;
- Manage and address land use compatibilities;
- Use pilot schemes to test solutions;
- Include Transportation Demand Management (TDM) in the freight planning process; and
- Use performance measures.

Each of these guidelines are further discussed below, including how they were used to support the FMS.

Use Innovative Stakeholder Engagement

Forming partnerships with freight stakeholders in the private and public sectors and involving them in the metropolitan planning process is a proactive method for addressing goods movement issues (Figure 4.2). Many of these partnerships have been defined across different levels of government and include neighboring jurisdictions. This includes partnerships among governments—municipal, regional, state, and federal—and inter-organizational partnerships that work toward common goals. Collaboration between different groups is essential to achieving planning and implementation goals.

Figure 4.2. Stakeholder Engagement Process Guidelines for Freight Planning



The development of consensus with stakeholders and gaining support is critical to the success of metropolitan freight planning initiatives. The more involvement and consensus-building occurs at the development stages of a freight planning program such as the AMATS FMS, the less likely it will be for conflict to occur in the future. For example, when freight stakeholders are negatively impacted or inconvenienced by the freight planning process, early engagement can help them understand the purpose and benefits to their operations. The AMATS FAC, which includes members of the public and private sectors, has been closely involved in the development of the FMS, providing input and recommendations throughout the planning process. Stakeholders, through the use of in-person interviews, were also brought into the FMS planning process to provide input on how the existing freight network is working, what inefficiencies may be occurring, and what additional opportunities could occur to improve the current system.

Engage the Private Sector

It is important to engage the private sector in the freight planning process because they are involved in different aspects of freight acquisition and distribution in any given region. Engaging the private sector in freight planning includes considering all types of business sizes (small, medium, large) as well as a range of vehicle types (e.g., delivery vans, small trucks, and large trucks) and various freight modes (e.g., truck, rail, and air). The objectives of the private sector involved in metropolitan freight planning are different from those of the public sector because private companies are interested in maximizing profits, while public agencies are interested in increasing economic benefits for society as a whole (and their regions) and reducing negative externalities.

By increasing freight mobility issues for the private sector, the general public will benefit from improved efficiencies and increased economic activity. While not typically involved in transportation policy development, private sector organizations and companies are increasingly more engaged in the region because they offer innovative ideas and solutions for freight delivery and can recognize regulations that have a detrimental impact on their operations. Because private companies are actively involved in moving and receiving freight on a day-to-day basis, they are also able to pinpoint key infrastructure bottlenecks and other road impediments that occur on the network.

As presented in Chapter 2, a series of stakeholder interviews were conducted to support the AMATS FMS in identifying the concerns and needs of various regional freight stakeholders, both public and private sector. The interviews provided great insight into existing freight challenges and conditions in the AMATS region while helping to determine local freight operator issues and requirements to implement a more efficient freight system. The process allowed private trucking companies and organizations an opportunity to provide input in the freight planning process for the FMS and learn more about potential opportunities to communicate with the FAC and AMATS about freight system decisions and routes.

Define Freight Issues and Challenges

Stakeholders and AMATS FAC members helped to define the key freight issues and challenges facing the region. There are many competing issues and if the focus on the freight planning process is too broad, then an overly complicated planning process will result and potentially spread agency resources too thin. If the focus is too narrow, then some important items could be left out of the planning process. By defining specific freight issues and challenges, the FMS can help increase the visibility of these problems and guide the direction of freight planning in the process. Creating a "Freight

Steps to Defining Freight Issues:

- Create potential short-, medium-, and long-term project and policy portfolios;
- Determine a prioritization process; and
- Evaluate potential funding sources.

Portfolio" with a short-, medium-, and long-term inventory of specific problems and associated solutions (e.g., strategies, projects, and policies) will help with funding projects and incrementally draft policies that may be used to push for change.

Also, this prioritization process may determine which portions of the freight system are most critical to freight mobility and the region's economic competitiveness. As identified during the development of the FMS, freight issues and challenges were validated by using existing literature, data, and stakeholder interviews as well as documenting the AMATS FAC concerns. Identifying and defining these issues, synthesized in Chapter 5, guided the future recommendations for projects and policies in the FMS planning process.

Identify Root Causes of Freight Problems

To notice and understand the reason for freight issues and problems, as well as address the root causes of these problems, is a critical factor in the development of freight plans. For example, truck idling is often caused by the inability or unwillingness of businesses (receivers) to accept deliveries. This type of truck idling in the vicinity of large buildings is frequently aggravated by delivery-time restrictions that shorten the period when deliveries can be made (Transportation Research Board [TRB], 2015:7). These constraints and restrictions result in roadway bottlenecks, delays, and congestion, as well as increased emissions. Therefore, grasping the freight impacts of congestion on roadways that can be traced to delivery truck idling (as the root cause) is a key policy discussion in the freight planning process. This example, among many others, requires further evaluation and examination to assist agencies outline freight issues and the potential mitigation strategies to address those issues.

As shown in Figure 4.3, a variety of work can be conducted to identify important root causes in regional freight issues. Because individuals and groups interact with and use the freight system differently, stakeholder outreach is critical. Continued and ongoing stakeholder outreach is valuable because it provides additional information on the freight system characteristics important to users and supplements the data collection process. Agency participation also helps identify freight problems and issues and is important for agencies to work with each other, stakeholders, and the public to come up with solutions to freight problems. Assessment of the stakeholder outreach information, agency input, and the data collected can then be linked to identify the root causes of any current and on-going freight problems.

In the AMATS FMS planning process, some root causes for freight issues have been identified by system users. The FMS stakeholder interviews provided specific background information that helped determine root causes. For example, the Municipality of Anchorage's (MOA) noise ordinance may conflict with traffic management. Gravel operations must be finished by 10pm, resulting in ARRC blocking C Street near 68th Avenue during heavy commuter periods so gravel operations can be completed by 10pm to comply with local ordinances.

The identification process aids in establishing the root cause to any given problem or impact. As a result, the issue can also support and provide a wide range of potential solutions.

Figure 4.3. Tasks Involved in Determining Root Causes to Freight Issues

Manage and Address Land Use Compatibilities

Logistics-oriented facilities require large land areas and access to the freight transportation network. Various agencies in the United States and Canada have developed land use and development regulations and guidance that support appropriate buffer zones between logistics-intensive land uses and other, incompatible land uses (to these logistics-oriented facilities) such as residential or commercial mixed-use. These agencies also have facilitated the development of clustering logistics-oriented businesses to optimize the use of appropriate transportation facilities. Ensuring that policies are in place to cluster freight transportation facilities will help increase efficiency of the freight transportation system while limiting the disturbances to other land uses.

Stakeholders have stressed the importance of preserving commercial and industrial areas in Anchorage that are accessible between major freight generators such as TSAIA and POA. Other encroaching land uses can result in potential land use conflicts such as noise compatibility and right-of-way issues while also increasing the potential for safety problems (e.g., slowing down ARRC freight trains allows pedestrians to cross tracks).

Use Pilot Schemes to Test Solutions

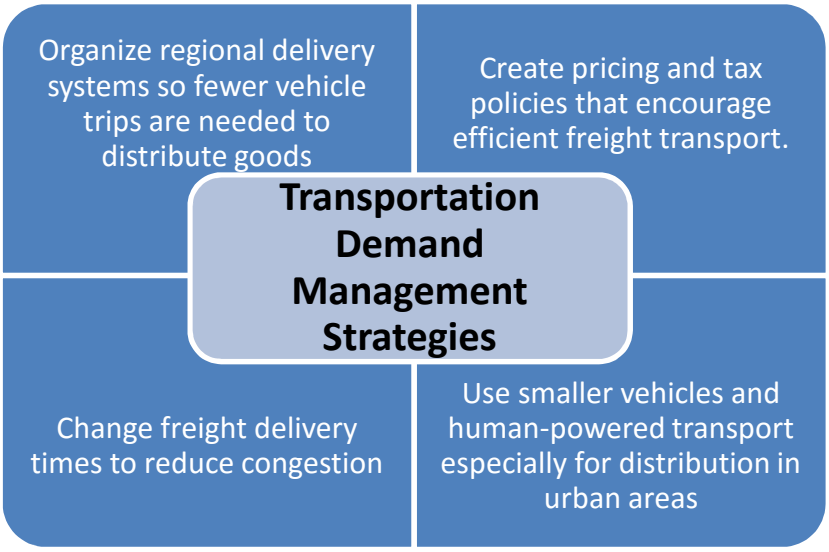
Public-sector changes that could affect freight activity should be implemented if there is certainty that the benefits outweigh negative costs. Implementing a pilot project would allow public agencies to adjust (or cancel) the initiative based on stakeholder impact and other data analysis. The potential of pilot schemes will be determined once the freight project and policy recommendations are implemented through the FMS planning process. Examples of potential pilot projects include a cargo bicycle delivery program and an off hours freight delivery program.

Include Transportation Demand Management (TDM) in the Freight Planning Process

TDM is typically associated with addressing policy objectives such as energy conservation, environmental protection, shifting commuters to alternative modes (e.g., transit, rideshare, and walking), and passenger travel congestion reduction. TDM policies have historically focused on personal travel, including "smarter" or "more efficient" transportation system projects specific to commuter ridesharing, telecommuting, and trip reductions. Increasingly, however, public agencies at the federal, state, and local levels are trying to apply TDM to goods movement and freight policy.

During the development of the AMATS FMS, freight stakeholders and the public expressed the need for specific freight route designations/corridors within the region and the development of policies to ensure that these routes increase the not only the efficiency of freight transportation, but also enhance public safety. Other quality of life issues such as reducing the amount of time freight vehicles spend idling and emitting pollutants at intersections, especially during heavy commuter periods can also be improved through such policies. Figure 4.4 illustrates various TDM policies that have been implemented to support metropolitan freight transportation systems.

Figure 4.4. Example Transportation Demand Management Strategies used in Metropolitan Freight Planning



Use Performance Measures

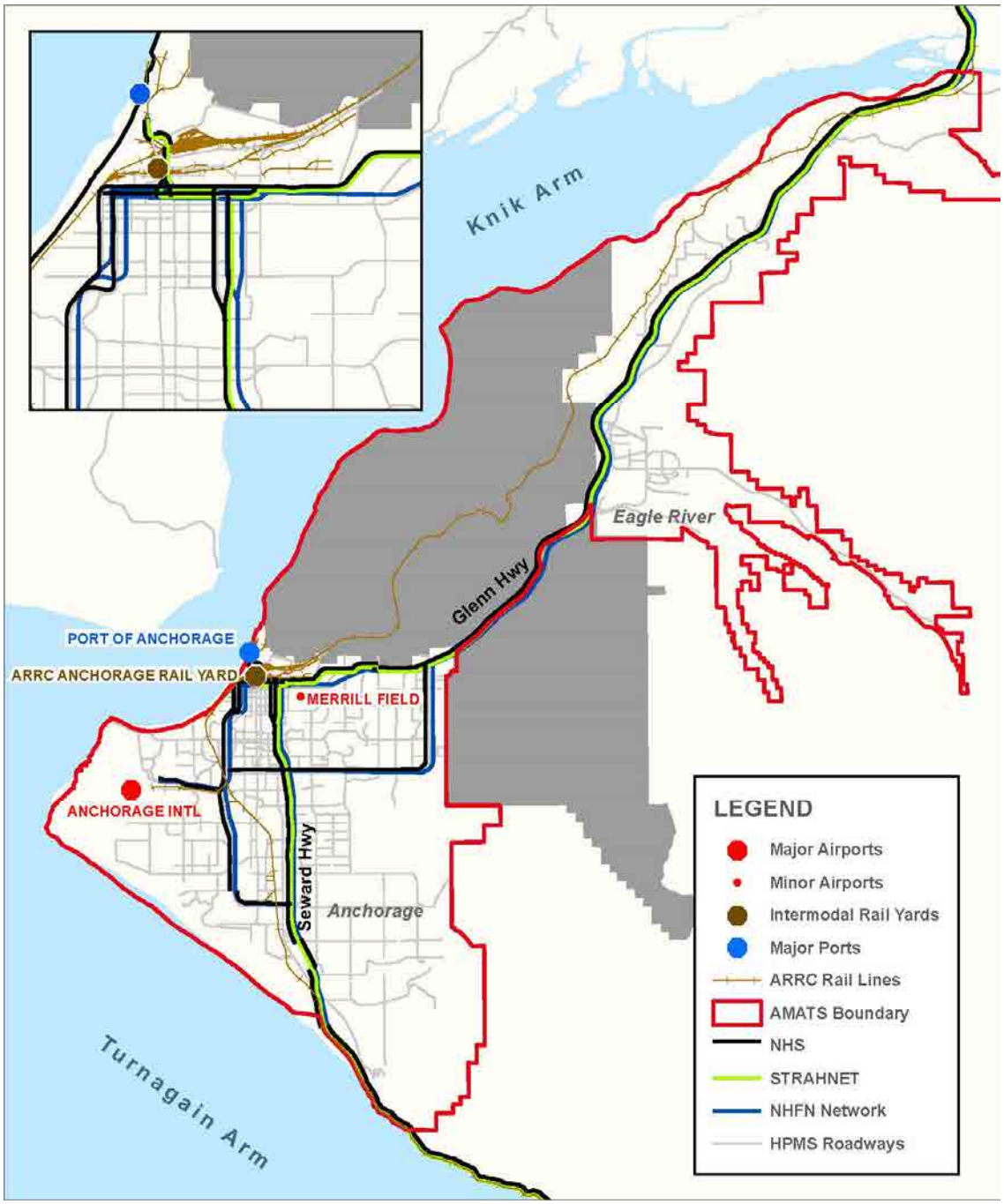
Performance measures have become part of the standard planning process for states and regions in the United States, and have been growing in use over the past two decades or more. Measures are developed to gauge the degree to which goals and objectives are achieved, and are linked directly to the vision, goals, and objectives on long-range transportation planning and metropolitan freight planning. MAP-21 (and now the Fixing America's Surface Transportation, or "FAST," Act) requires undertaking systematic performance measurements to determine the impacts of the strategies, programs, and funding used to address freight issues in the planning process. Performance measures (e.g., safety,

parking, use of alternative fuels, and reliability) should be directly related to a single objective, easily quantifiable, and able to measure the entire range of levels of achievement (e.g., using a scale, not just "achieved" or "not achieved"). Performance measures are significant to the freight planning process because they can evaluate how future conditions might affect system performance, and provide early warning signs of freight problems that may need to be addressed and planned for in the future. In the development of the AMATS FMS, the project team reviewed literature and gathered data from local agencies and stakeholders to determine freight performance measures for application. Detailed performance measures and supporting data identified to support the AMATS FMS are presented later in Chapter 6.

5. Freight Profile

The existing AMATS freight transportation system consists of multimodal systems that incorporate highways, air, ARRC, and POA, as illustrated in Figure 5.1.

Figure 5.1. AMATS 2015 Multimodal Freight Transportation Network



HPMS = Highway Performance Monitoring System; NHFN = National Highway Freight Network; NHS = National Highway System; STRAHNET = Strategic Highway Network

Over time and in response to many regional demands, including a steady population growth, the Anchorage freight transportation network has expanded. Also, with a heavy concentration of transport-dependent industries that rely on Anchorage's freight network to move bulk goods such as crude petroleum, heavy equipment, and seafood an efficient and interconnected freight network has been developed and implemented. In order to continue to evolve into the future to support Anchorage's long-term economic well-being, the freight network must respond to these and any market changes. See Chapter 7 of this report for a detailed discussion of Anchorage's population, employment, and industry trends. The following section presents the existing (2015) and anticipated 2035 freight networks (including potential freight system improvements) by mode as well as the system's relation to the AMATS economy.

Highway

Although water and air cargo largely dominate Anchorage's freight movements, truck movements are critical to the region's supply chain. The 2035 AMATS MTP indicated that high levels of truck traffic are expected to use the arterial street system in Anchorage into the future. In 2040, TSAIA, POA, and JBER are expected to be the top three locations for truck trips in the region with 1,869, 930, and 850 daily truck trips respectively. Truck traffic percentages have been relatively stable over the past two decades, with the following major freight-oriented roadways in the AMATS region:

- Glenn Highway;
- Seward Highway;
- Minnesota Drive;
- International Airport Road;
- Tudor Road;
- Spenard Road;
- Industrial Street;
- Postmark Drive;
- C Street; and
- Northern Lights Boulevard.

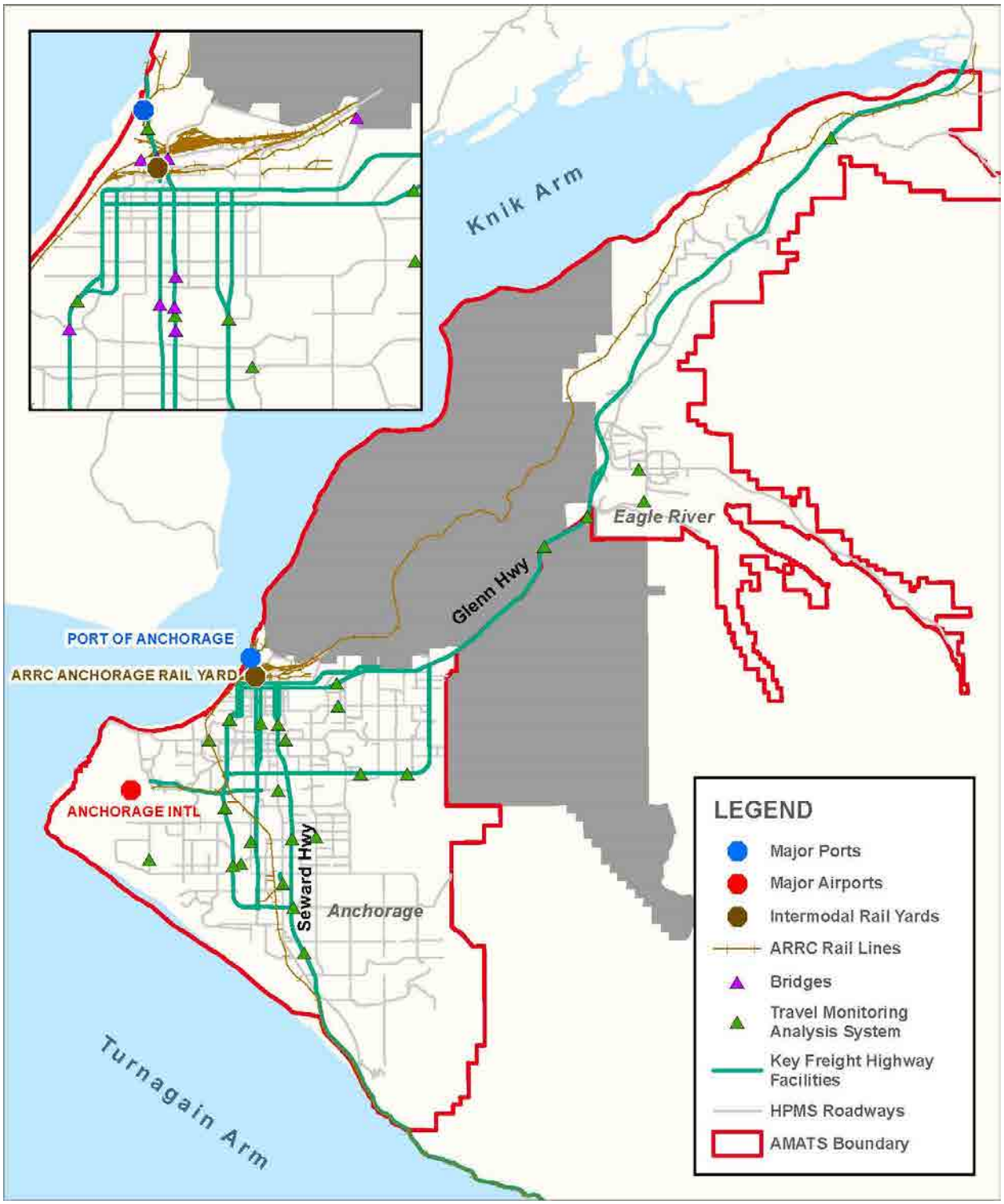
Figure 5.2 illustrates the existing 2015 highway and roadway facilities in the AMATS region that are heavily used by truck traffic.

The POA generates significant amounts of truck traffic that use downtown streets due to the limited and lack of access to the highway system. Freight traffic problems and issues result at the C Street/Port and Ocean Dock Road intersection because it is the single, primary access point for trucks traveling to and from the Port. Roads critical to the distribution of goods to and from the POA include the Glenn Highway, Seward Highway, International Airport Road, Minnesota Drive, C Street, and Tudor Road as well as Reeve Boulevard, Post Road, and Whitney Road. Ships arrive at the Port on Sundays and

Tuesdays, rendering these days of the week as some of the heaviest for truck traffic in the AMATS region.

In general, trucks use Postmark Drive to access TSAIA cargo facilities. Other common truck routes to and from TSAIA include Minnesota Drive, Raspberry Road, Jewel Lake Road, Northern Lights Boulevard, and Spenard Road.

Figure 5.2. 2015 AMATS Primary Highway Facilities Moving Trucks



The 2035 AMATS MTP documented the lack of alternative routing to the Glenn Highway when traffic incidents or accidents occur. Non-recurring delay caused by incidents/accidents on the highway/roadway network is an ongoing concern for trucks moving through the region. However, there

remains a need for a parallel or redundant highway facility that provides an alternative to the Glenn Highway and a contingency plan for incident management in the event of a major emergency. The use of military frontage roads is an applicable implementation strategy to provide this redundancy, and there are agreements in place with JBER to use their road system should they be needed.

Air

Alaska's transportation system is unique in the United States because the state lacks an extensive highway/roadway system and relies more heavily on air traffic to move goods and passengers than the Lower 48 States. Figure 5.1 shows the primary airport facilities in the AMATS region.

TSAIA, the primary airport facility in the AMATS region, is a 4,612-acre complex owned and operated by the State of Alaska. The facility employs over 15,500 people in Anchorage and has three runways as well as a variety of surrounding industrial parcels that benefit from very good airport access. The North Airpark has sufficient storage and movement space to accommodate current levels of freight-oriented air and truck traffic. More than 265 businesses/agencies currently lease space at TSAIA. The existing facility also offers potential for onsite industrial development to facilitate easy transfer to planes.

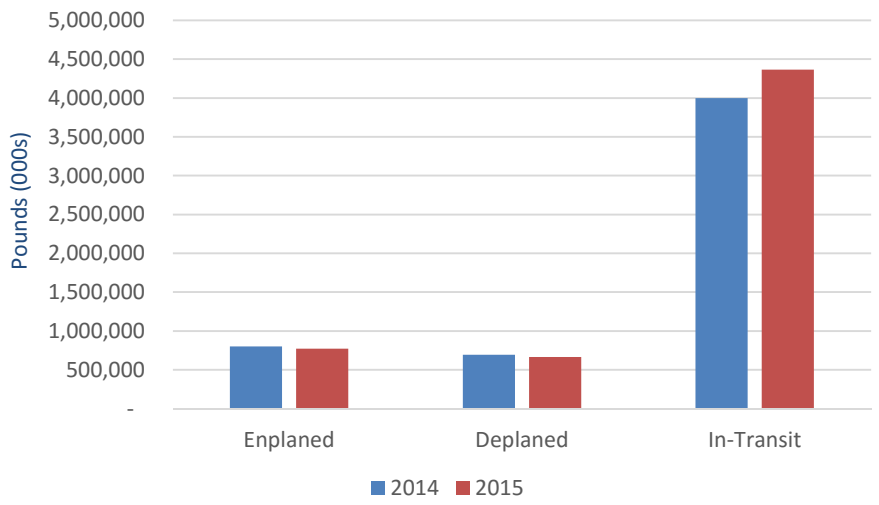
TSAIA is also a critical through-point/fueling station and crew stop for international air traffic. Approximately three-quarters of TSAIA cargo includes in-transit international movements, meaning that carriers stop through TSAIA to refuel while on international trips. The facility pumps over 2 million gallons of fuel onsite each day (DOT&PF, 2015). TSAIA ranks fifth in international airports for worldwide cargo throughput, and imports from Asia account for a significant amount of this inbound cargo (MOA and URS Corporation, 2012). In 2014, TSAIA ranked second in the nation for all-cargo weight landed (Federal Aviation Administration [FAA], 2015. Table 5.1 illustrates the number of cargo flights and shows these shares by direction.

Table 5.1. TSAIA Air Cargo by International and Domestic Share, 2015

Direction	International	Domestic	Total	International % of Total	Domestic % of Total
Enplaned	1,864	769,522	771,385	0%	13%
Deplaned	2,927	661,767	664,695	0%	11%
In-Transit	4,310,040	54,450	4,364,490	74%	1%
Total	4,314,831	1,485,739	5,800,570	--	--

Approximately 10 percent of freight entering the Anchorage region arrives via TSAIA. Air cargo inbound to TSAIA is often "express" cargo, indicating high-priority commodities such as electronics and pharmaceuticals. Commodities that arrive at TSAIA commonly move via truck to distribution centers on dedicated truck routes. Most of the remaining cargo includes domestic movements, either loading or unloading at TSAIA. Major cargo carriers at TSAIA include UPS and FedEx. For in-transit cargo, Polar Air Cargo Worldwide, Inc., and Cathay Pacific Airways move the most freight by weight through TSAIA (Figure 5.3).

Figure 5.3. Cargo Movements by Direction at TSAIA, 2014-2015



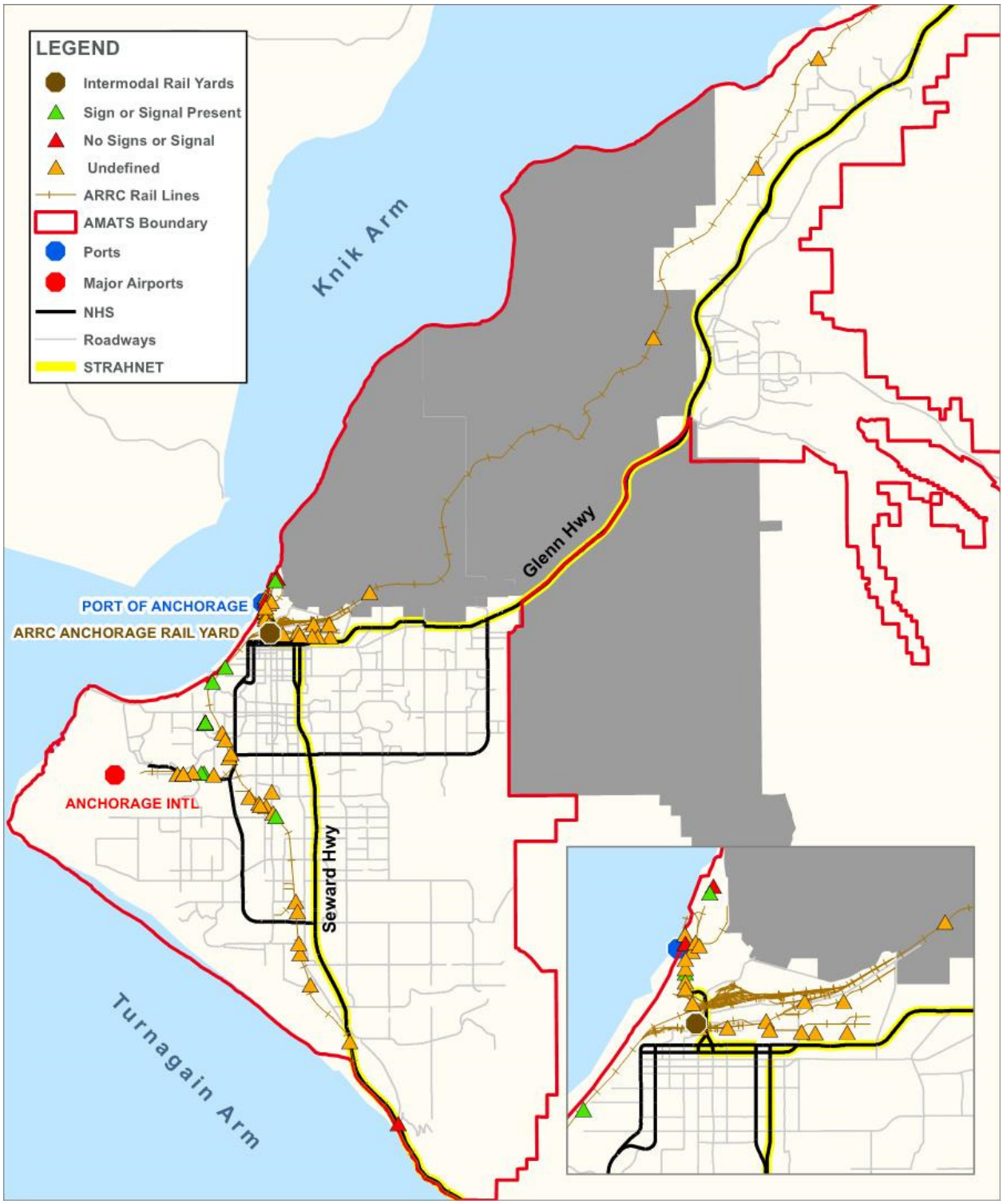
In addition to TSAIA, Merrill Field is a regional airport located just south of the POA and ARRC Rail Yard in downtown Anchorage. Due to its smaller size, Merrill Field has limited freight air traffic, with FAA reporting less than 1,000 cargo tons moving through the airport each year.

Rail

ARRC is the only railroad provider in Anchorage (Figure 5.4) and operates more than 650 miles of passenger and freight rail throughout the state. In 2015, ARRC reported that more than 10,000 loads of container freight were moved in and out of Anchorage. This volume moves through Whittier Harbor. The AMATS 2035 MTP states that the majority of commodities moved via rail consisted of 'gravel,' 'coal,' 'petroleum,' 'military shipments,' and 'general cargo containers.' For example, of the 5.5 million tons of freight moved in Alaska in 2009, 3.9 million tons were 'gravel' or 'coal.' ARRC reported that the main rail traffic in Anchorage included petroleum trains between Fairbanks and Anchorage (a 356-mile distance) and gravel trains between the Matanuska-Susitna Valley and Anchorage (a 40-mile distance). Export coal primary moves via ARRC lines between Healy, Seward, and Fairbanks (ARRC, 2015). In 2015, the ARRC moved approximately 4,285

million tons of freight of which 381 million tons were petroleum, 900 million tons were coal, and 123 million tons were intermodal (HDR, Inc. with CDM Smith, 2015).

Figure 5.4. Alaska Railroad Facilities in AMATS Region



ARRC also owns and operates a rail yard in West Anchorage to the northeast of TSAIA that functions as a distribution hub to other modes and facilities, including the POA and TSAIA. This facility offers connectivity between truck, rail, and water cargo. The rail yard connects to Seward in the south and

Fairbanks in the north via Class II railroad lines. ARRC does not connect to any other rail lines in North America except by rail barge.

Figure 5.4 also illustrates all ARRC crossings within the AMATS study area. ARRC tracks include 63 at-grade rail crossings in Anchorage. The majority of these crossings exist near the POA in Ship Creek, adjacent to TSAIA facilities, and along the industrial land use areas located in the middle of and in South Anchorage (Arctic Boulevard, Dimond Boulevard). Eleven crossings do not have sign or signal controls, eight crossings have signals or signage, and the remaining crossings are unspecified. There is no publicly available data to assess existing conditions and the level of safety of the ARRC's tracks, facilities, and bridges. ARRC deals with the common issue of property owners building too close to the ARRC right-of-way as well as the rail tracks. To increase awareness of the importance of right-of-way for rail-side protection, ARRC installed six-foot-tall blue posts in 200-foot increments to delineate the right-of-way boundary throughout Anchorage, from Potter to Elmendorf, in 2011.

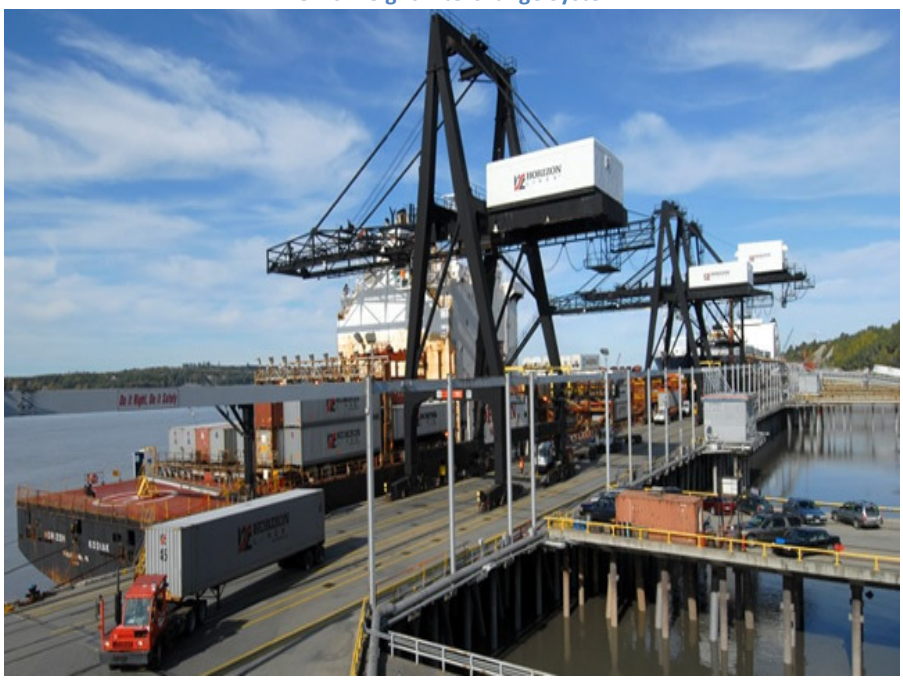
Waterborne Freight and Cargo

Waterborne freight is an essential component of Anchorage's economy and multimodal freight transportation network. The POA is the primary shipping port and accounts for the majority of freight shipped to and from Anchorage by water. Waterborne freight is also the primary mode for transporting goods to many coastal communities throughout the state that are inaccessible by roadway. The POA is a critical transportation hub for Anchorage and the rest of the state, with goods arriving for transport to other coastal communities.

The POA is the only major port that exists in the AMATS FMS study area. The MOA owns the POA, which is a self-supporting enterprise department that operates using revenue and grant funding. The POA is a major transportation infrastructure asset to the regional economy. Fifty-five percent of the waterborne freight, and 90 percent of all refined petroleum products that enter the State through Alaska's Railbelt region, arrive via the POA. Fifty percent of all waterborne freight that enters Alaska crosses the POA docks annually, as does 32 percent of all refined petroleum used state-wide. Approximately 12 percent of the freight that arrives through the POA moves north to Fairbanks via rail, and another 12 to 15 percent of the total moves via truck to other destinations outside Anchorage. The POA also plays an instrumental role in the distribution of cargo to rural communities throughout the state. Over 350 communities rely on cargo shipped to the POA, which is then distributed via barge to those communities that lack highway and railway connections.

The existing facilities at the POA include three general cargo terminals; two bulk petroleum product terminals; cement off-loading facilities; an on-dock public transportation shed; rail mounted electric container cranes; a bulk petroleum valve yard; and intermodal exchange infrastructure to transition goods to rail, road, and air modes. Current on-site issues noted by the POA include annual dock pile repairs, issues with storm drain integrity, lack of emergency back-up power, and outstanding erosion at the Ship Creek Boat Launch. The 55-year-old POA has been undergoing a modernization effort (referred to as the APMP) with a variety of improvement projects that will update and modernize the facility to current maritime commerce standards, provide seismic resilience, and ensure a capability to parallel the region's expected population growth.

POA's Freight Interchange System



Source: http://www.portofanc.com/wp-content/uploads/sunny_day.jpg

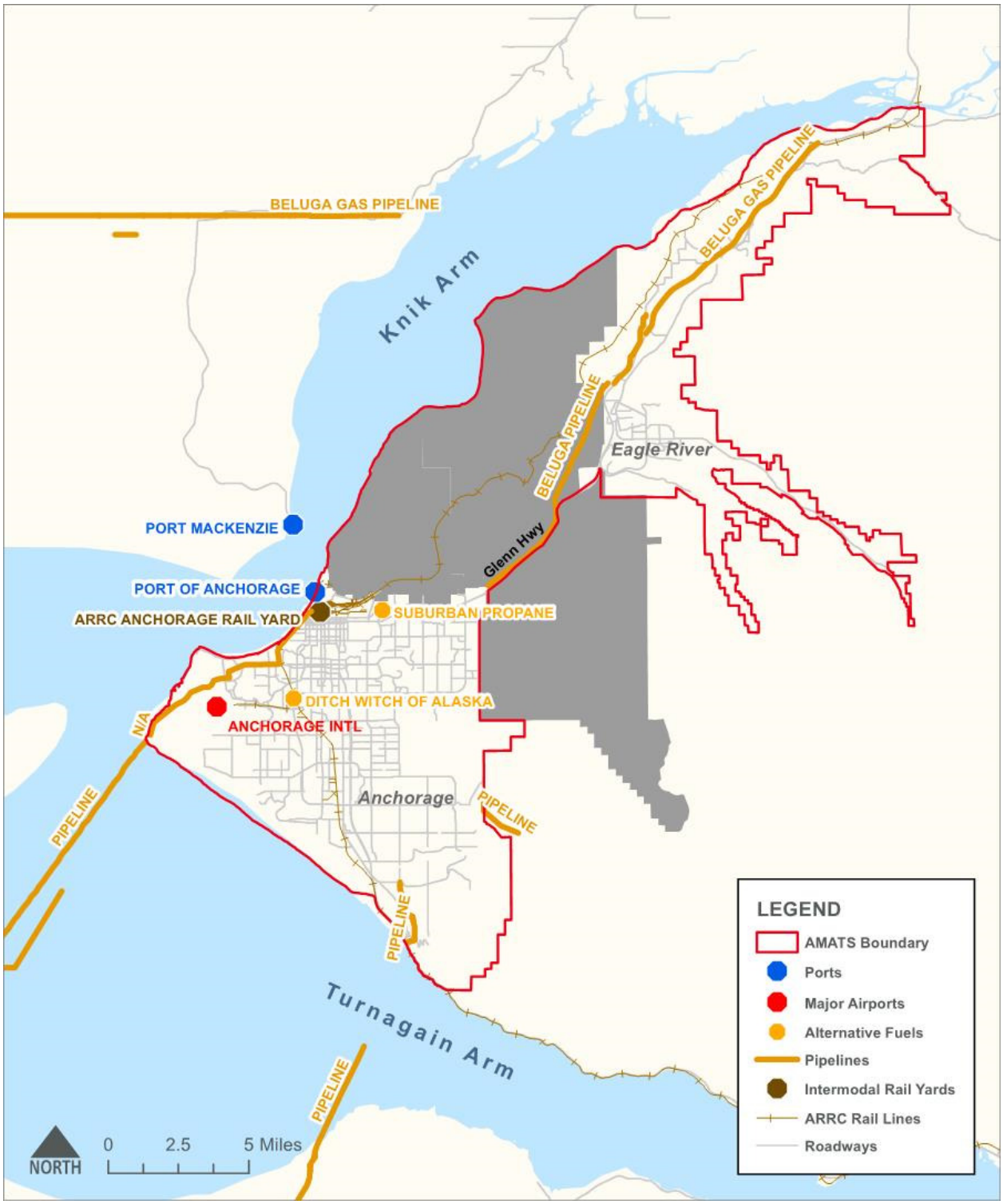
Port MacKenzie is located across the Knik Arm from Anchorage and is operated by the Matanuska-Susitna Borough. Although Port MacKenzie is not within the boundaries of the FMS study area, the potential construction of the Knik Arm Crossing would support improved freight mobility on the highway system by providing road and bridge access to Port MacKenzie and potentially reduce truck traffic movements on the Glenn Highway, the only existing route between the MOA and communities north of Anchorage. The Knik Arm Crossing project would also potentially create a northbound connecting roadway (e.g., bridge) between the POA and Port MacKenzie.

Pipeline

The AMATS study area has two major pipeline facilities (Figure 5.5). The Nikiski Alaska Pipeline carries liquefied natural gas from the ARRC Anchorage Rail Yard to the west. The Beluga Gas Pipeline is the second major pipeline carrying natural gas through JBER to the Knik River, parallel to the Glenn Highway. Other pipelines in the Anchorage area include a Tesoro pipeline that connects Tesoro's Nikiski refinery to TSAIA and POA, a pipeline between the POA and TSAIA, and a JP-8 fuel pipeline between the POA and JBER. There have been no reports of significant pipeline incidents in the past decade (Pipeline and Hazardous Materials Safety Administration [PHMSA], 2016). Pipeline infrastructure in the AMATS FMS

study area is currently sufficient, and there are no major capacity or safety concerns anticipated over the next two decades.

Figure 5.5. AMATS Study Area Pipeline Facilities

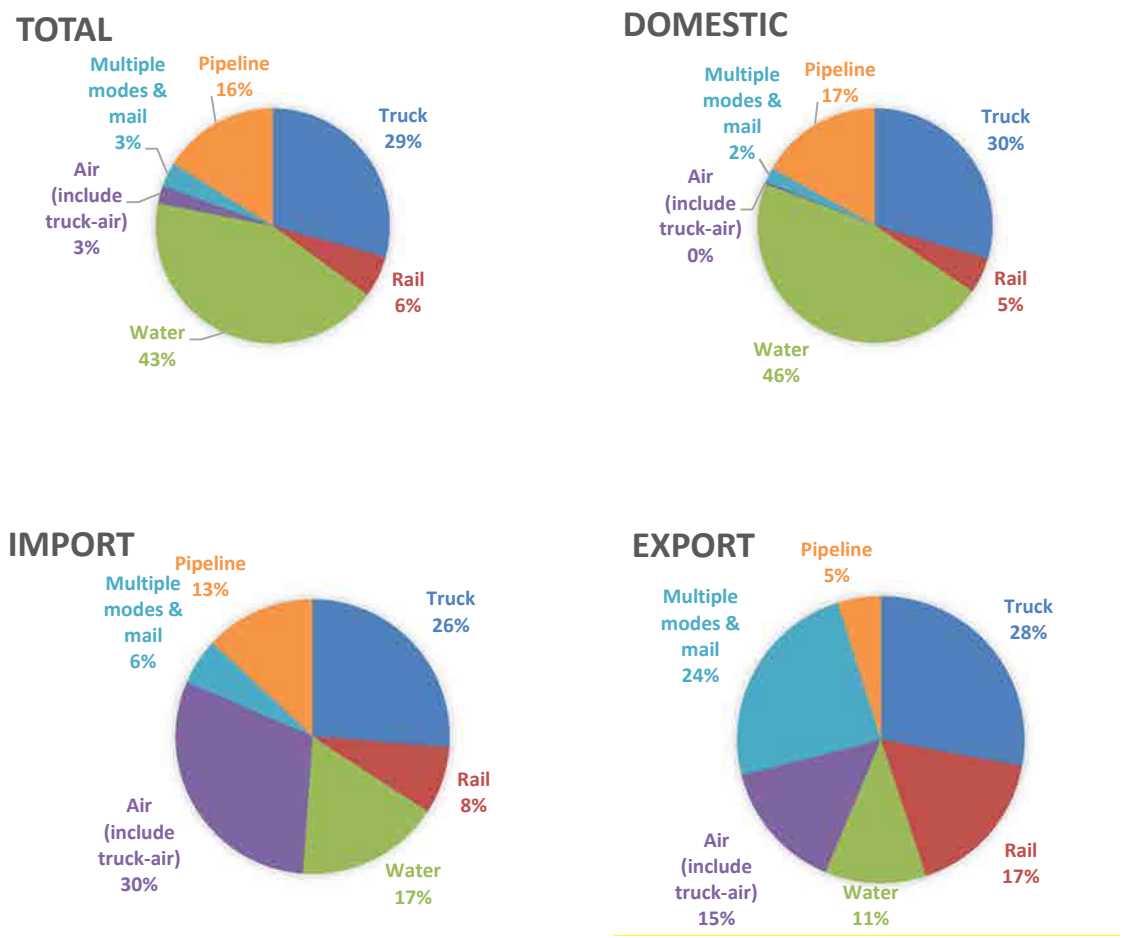


6. Freight Flows

Freight or commodity flows were used to examine the level of demand upon various multimodal freight transportation network elements. Freight flows provide insights about key trade and market relationships for a state or region. One primary source of freight flow information used in this analysis was the Federal Highway Administration's (FHWA) Freight Analysis Framework, version 4 (FAF-4). This data is derived from the Commodity Flow Survey conducted every 5 years by the U.S. Census Bureau and Federal Bureau of Transportation Statistics.

Freight is currently shipped to and from Anchorage via water, air, highway, rail, and pipeline. In total, transport by water dominates the freight movements to and from Anchorage as well as to and from the State of Alaska. As shown in Figure 6.1, nearly half of the total goods traveling to and from the state are transported by water (43 percent), with other total goods movements include 29 percent by truck, 16 percent by pipeline, 6 percent by rail, 3 percent by air, and 3 percent by multiple modes/mail.

Figure 6.1. Alaska's 2012 Statewide Commodity Flows by Mode – Domestic/Import/Export



For the import of goods, the goods movements by mode include 30 percent by air, 26 percent by truck, 17 percent by water, 13 percent by pipeline, 8 percent by rail, and 6 percent by multiple modes/mail. Exported goods moved include 28 percent by truck, 24 percent by multiple modes/mail, 17 percent by rail, 15 percent by air, 11 percent by water, and 5 percent by pipeline. Most goods are imported via air-truck combination (30 percent) or truck (26 percent), while state exports largely rely on truck and multiple modes to get goods out of Alaska. Air comprises the highest share of total imports (30 percent), while trucking provides the highest percentage of total exports. Table 6.1 shows the specific commodity flows by mode and tonnage. These total, import, and export movements of goods are similar to the movements into and out of the AMATS region. For example, the POA handles the majority of water freight for the state before this freight is transferred using other transportation methods to reach the freight's final destination.

Table 6.1. 2012 Alaska Statewide Commodity Flows by Mode (Thousands of Tons)

Trade	Mode	Within AK	From AK	To AK	Total	Mode Share
Domestic	Truck	18,154	231	123	18,508	29.5%
	Rail	3,099	3	--	3,102	4.9%
	Water	310	26,555	2,181	29,046	46.3%
	Air (include truck-air)	108	15	68	191	0.3%
	Multiple modes & mail	111	133	991	1,235	2.0%
	Pipeline	8,731	--	1,907	10,638	17.0%
	Total	**30,513**	**26,937**	**5,270**	**62,720**	**100%**
Imports	Truck	800	25	13	838	26.2%
	Rail	236	1	19	256	8.0%
	Water	488	1	55	544	17.0%
	Air (include truck-air)	349	603	21	973	30.4%
	Multiple modes & mail	9	6	160	175	5.5%
	Pipeline	418	--	--	418	13.0%
	Total	**2,300**	**636**	**268**	**3,204**	**100%**
Exports	Truck	1,022	12	14	1,048	27.9%
	Rail	636	1	1	638	17.0%
	Water	226	71	133	430	11.4%
	Air (include truck-air)	126	29	399	554	14.7%
	Multiple modes & mail	3	84	818	905	24.1%
	Pipeline	183	--	--	183	4.9%
	Total	**2,196**	**197**	**1,365**	**3,758**	**100%**

Most bulk goods require an intermodal freight network to go from its origin to destination point. The majority of consumer goods arrive in Anchorage via the POA. Subsequently, goods are transported from water modes to air, truck, or rail. Having a strong intermodal freight network in Anchorage helps increase efficiency of freight movement while also lowering costs for moving goods for both the public and private sectors. The intermodal freight network is critical for the AMATS region and Alaska, which does not have an extensive road system. Goods are often moved from one transport mode to another because existing infrastructure constraints may make using other transporting methods (e.g., water or air) more efficient.

The efficiency of the freight network relies heavily on the successful changes between various transportation modes. Cargo is often sent to other surrounding communities and may require transfer from one cargo carrier to another via water, or other, modes. Goods transported between the POA and TSAIA via truck or are transferred to railroad. It is important that these transfers be fast and efficient. To help with the movement of freighted goods, shipping containers may have specific dimensional guidelines so that they can be easily moved from barging to rail or trucking methods. Increases in intermodal efficiency saves cargo companies money in the long term, reduces energy costs, and increases profitability for various freight forwarders and their clients.

7. Local and Regional Freight Issues and Trends

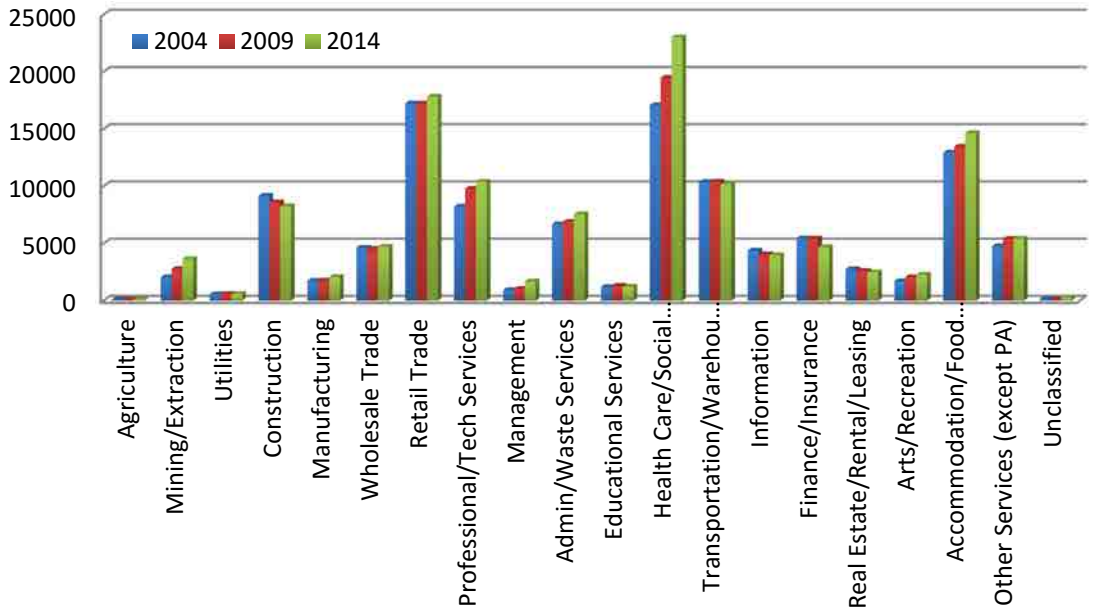
Local and regional freight issues and trends are identified and presented in this section, summarizing local industries, employment, and land uses. Issues and trends for the transportation network related to bottlenecks, levels of service, capacity and well as safety and security for each transportation mode are also presented in this section.

Local Industries and Employment

Freight movement is directly tied to the economic well-being of a given region, and the AMATS region is no exception. Local industries drive the freight market with major impacts on commodity movements within, to, from, and through the AMATS region. According to the 2010 Census, Anchorage has over 291,000 inhabitants and over 107,000 households; it is the largest municipality in Alaska and is a strong economic driver for the state (U.S. Census Bureau, 2016). Major industries in Anchorage between 2004 and 2014 included mining, quarrying, oil/gas extraction as well as transportation and warehousing.

Anchorage employment levels have increased for industries such as health care/social assistance, accommodation/food services, and retail trade between 2004 and 2014 (Figure 16). Table 7.1 shows the steady increase in growth (an expected 21 percent increase in employment regionally) of these employment sectors expected from 2013 to 2040, which will impact the needs of the future multimodal freight transportation system in the AMATS region. For example, retail trade requires facilities and establishments to receive large shipments of commodities for distribution.

Figure 7.1. Anchorage Employment Levels for 2004, 2009, and 2014



Source: Bureau of Labor Statistics Quarterly Census of Employment and Wages, n.d.

Table 7.1. AMATS Region Employment Growth Estimates by Industry, 2013-2040

Employment Category	2013	2040	%Change
Natural Resources Employment (NAICS 11, 21)	4,651	5,182	11%
Wholesale Trade, Manufacturing and Utilities Employment (NAICS 22,31,32,33,42)	8,415	10,434	24%
Construction Employment (NAICS 23)	13,306	14,723	11%
Retail Trade Employment (NAICS 44, 45)	23,315	28,372	22%
Transportation & Warehousing Employment (NAICS 48, 49)	12,983	15,146	17%
FIRE, Professional Services and Other Employment (NAICS 51-56, 81)	61,014	72,562	19%
Educational Services Employment (NAICS 61)	2,784	4,121	48%
Health Care & Social Assistance Employment (NAICS 62)	25,928	36,402	40%
Accommodation, Food Services, & Entertainment Employment (NAICS 71, 72)	20,063	26,648	33%
Government Employment (NAICS 92)	25,599	25,890	1%
Total Employment	**198,058**	**239,541**	**21%**

Source: Bureau of Labor Statistics Quarterly Census of Employment and Wages, n.d.

As shown in Table 7.1, employment sectors with the highest anticipated growth rates to 2040 include education; health care; and accommodations, food services, and entertainment. The overall regional growth rate is expected to grow at approximately 21 percent. Moderate growth in each of these sectors will greatly impact the future of freight movement and demand in the region.

Land Uses

The AMATS FMS study area comprises many different land uses that determined freight movements and transportation system accessibility. Freight-generating land uses are typically found in parts of the city zoned as industrial or commercial. Figure 7.2 and Figure 7.3 illustrate land uses in the Anchorage Bowl and Chugiak-Eagle River, respectively. The far northeast region in the Anchorage Bowl shows industrial areas located within vacant parcels (Figure 7.2). Other industrial facilities are located adjacent to the Old Glenn Highway. The Anchorage Regional Landfill encompasses a large industrial parcel in the southern portion of the Chugiak-Eagle River area near the JBER (Figure 7.3). This facility is the only major landfill in the AMATS region and has the potential to attract significant truckloads of scrap and waste. There are currently significant levels of industrial activity along the ARRC rail line as well as adjacent to TSAIA. Figure 7.4 illustrates the Anchorage Bowl Comprehensive Plan's Land Use Policy Map[1].

Clustering industrial land uses in the future will potentially help municipalities in the AMATS region increase the efficiency of freight transportation. The proximity of TSAIA, POA, and ARRC facilities to each other provides this efficiency and helps facilitate efficient shipping and receiving times for freight-oriented businesses and lowers vehicle miles of travel on roadways between facilities and distribution centers. Industrial land uses also provide direct employment as well as indirect employment driven by the economic activity of the jobs.

[1] The Municipality of Anchorage is currently updating the Land Use Plan Map. The map is an amendment to the **Anchorage 2020: Anchorage Bowl Comprehensive Plan** that helps achieve its goals over the next 20 years.

Figure 7.2. Land Use in the Anchorage Bowl

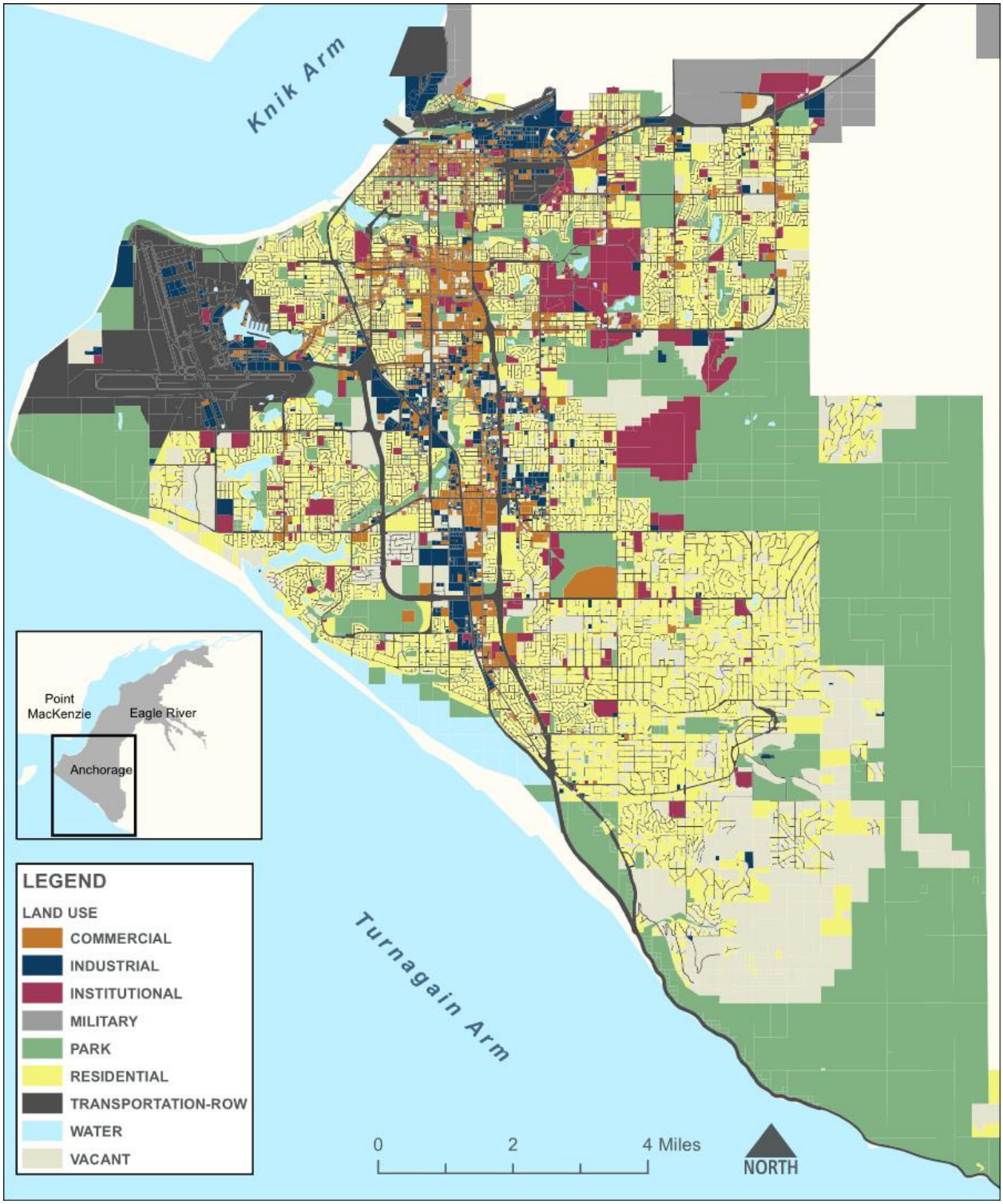


Figure 7.3. Land Use in Chugiak-Eagle River

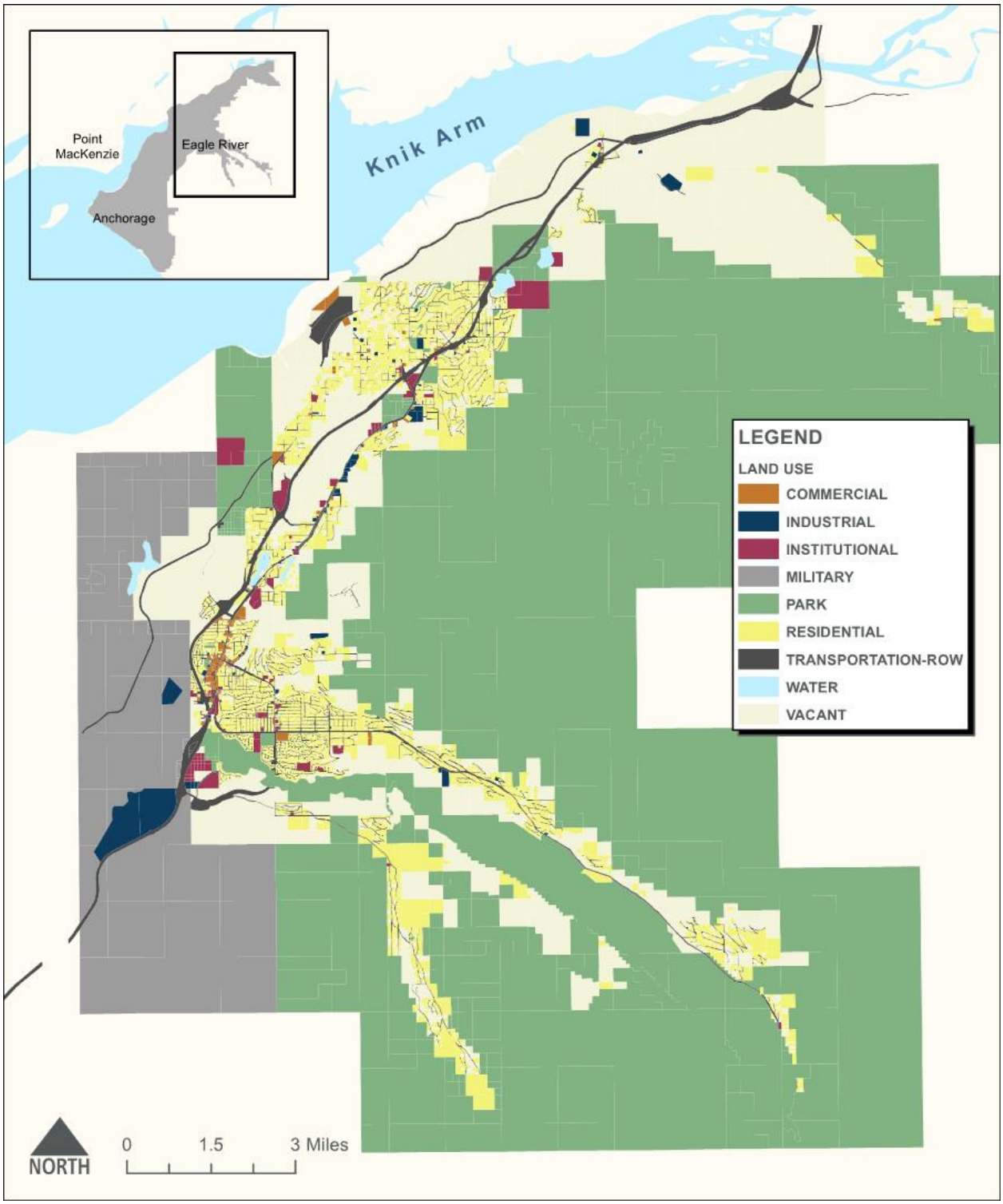
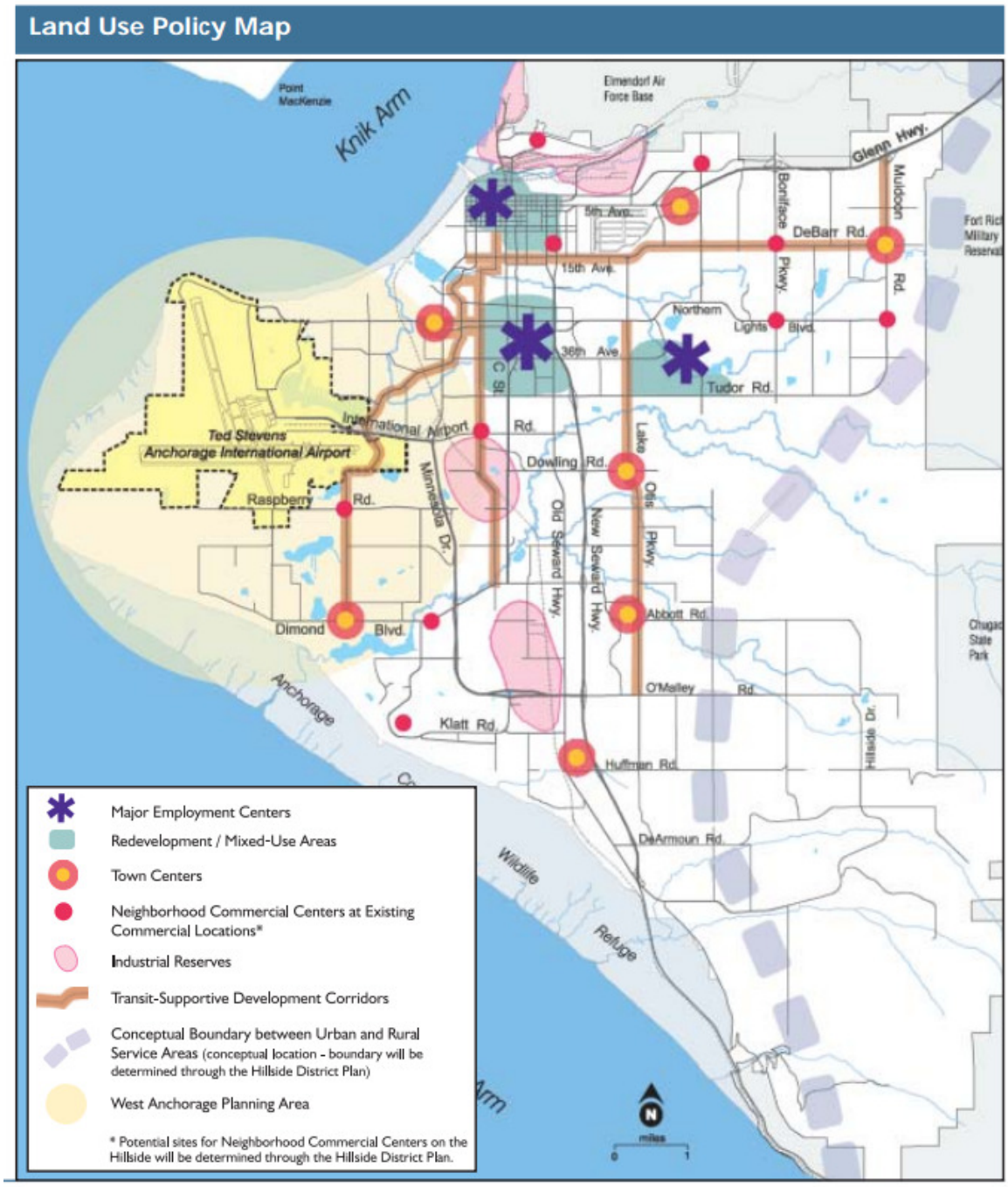


Figure 7.4. Land Use Policy Map, Anchorage 2020: Anchorage Bowl Comprehensive Plan



Source: MOA, 2001:50[2]

[2] This map is in the process of being updated by the MOA. A newer version of Anchorage's land use policy map may be available after the adoption of this document.

Bottlenecks, Level of Service, and Capacity

Bottlenecks can occur anywhere on the freight system, including congestion choke points along heavily-traveled corridors, intermodal transfer locations, or last-mile of delivery. Bottlenecks may be the result of limited transportation capacity on the freight system and may also stem from operational issues unrelated to infrastructure. Because they constrain on-time delivery, bottlenecks of any type present major threats to the efficiency and resiliency of the multimodal freight transportation system. At the POA, for example, current bottlenecks result from infrastructure-related deficiencies. The ongoing APMP will address various infrastructure needs and provide solutions to the current problems. Existing and potential future bottleneck and capacity issues are presented below for each transportation mode in the AMATS region.

Water

Although the POA plays a critical role in providing goods for Anchorage and the rest of the state, it needs a number of critical future projects to ensure resiliency, reduce bottlenecks and to advance operations to current industry standards and efficiencies. Current bottlenecks and capacity issues within the POA are a result of existing infrastructure-related deficiencies. The POA suffers from severely corroding wharf piles that are over 40 years old. The POA has recently expanded their petroleum storage capacity to 3.4 million barrels to address a need for additional storage. Approximately one-third of all refined petroleum products used in Alaska come through the POA's valve yard and over the dock (McDowell Group, 2016:9). The majority of the POA's marine terminal infrastructure has not been updated since it opened in 1961. This weakness in the freight transportation system can have significant repercussions should an emergency (i.e., earthquakes, or extreme weather changes) impact these facilities.

Most of the infrastructure age and maintenance issues that can cause freight delays and bottlenecks will be addressed through the APMP. This modernization effort will help improve resiliency of port operations in the event of threatening hazards and will optimize the facilities so that the POA can accommodate future growth and market needs for the entire state. The APMP will also reinforce safety and reliability, and ensure cost-effective operations with energy-savings technology. The modernization effort will support larger container vessels with new ship-to-shore cranes. Improvements will include increased intermodal access that will also help to prevent delays moving freight into and out of the POA.

Air

TSAIA is undergoing a variety of improvements to address current bottlenecks and operational issues. These include utility repairs, improved access to hangers, airfield taxi area widening, airfield pavement reconstruction, and parking area reconstruction. Improvements made to airfield taxi and runway pavements are being designed to address dimensional concerns and to meet Aircraft Design group VI Standards. In terms of intermodal movements at TSAIA, the *Air Cargo Related Economic Development Opportunity Assessment* (GLDPartners, 2014) identified limited direct cargo movements between air and rail modes within Alaska. This report cited air connectivity to other modes as of great concern for future freight movements in the state and the AMATS region, as increased connectivity would allow for more efficient freight movement (GLDPartners, 2014).

Highway

During the freight stakeholder interview process conducted in support of the AMATS FMS, stakeholders raised a number of important issues, including roadway bottlenecks, poor signal timing, challenging intersection geometry, undersized loading areas, insufficient visibility at intersections due to vegetation growth or changes in roadway elevation, and narrow travel lanes. Through the stakeholder engagement process, potential improvements were identified for regional roadway and intersection locations to potentially increase the efficiency for freight movements, improve safety, and reduce congestion on the transportation system. These improvement areas/issues are discussed below.

Traffic Signal Issues

- Raspberry Road and Airpark Place;
- C Street and International Airport Road;
- Hoyt Street (Costco access) and Debarr Road;
- Boundary Avenue to Glenn Highway;
- C Street and Ocean Dock Road; and
- King Street and Dimond Boulevard.

Grade-Separated Road/Rail Crossing Issues

- C Street and 68th Street Rail Crossing.

Port Access Issues

- C Street and POA – 3rd and 4th Avenues.

General Issues

Freight stakeholders also identified the following potential improvement projects for consideration:

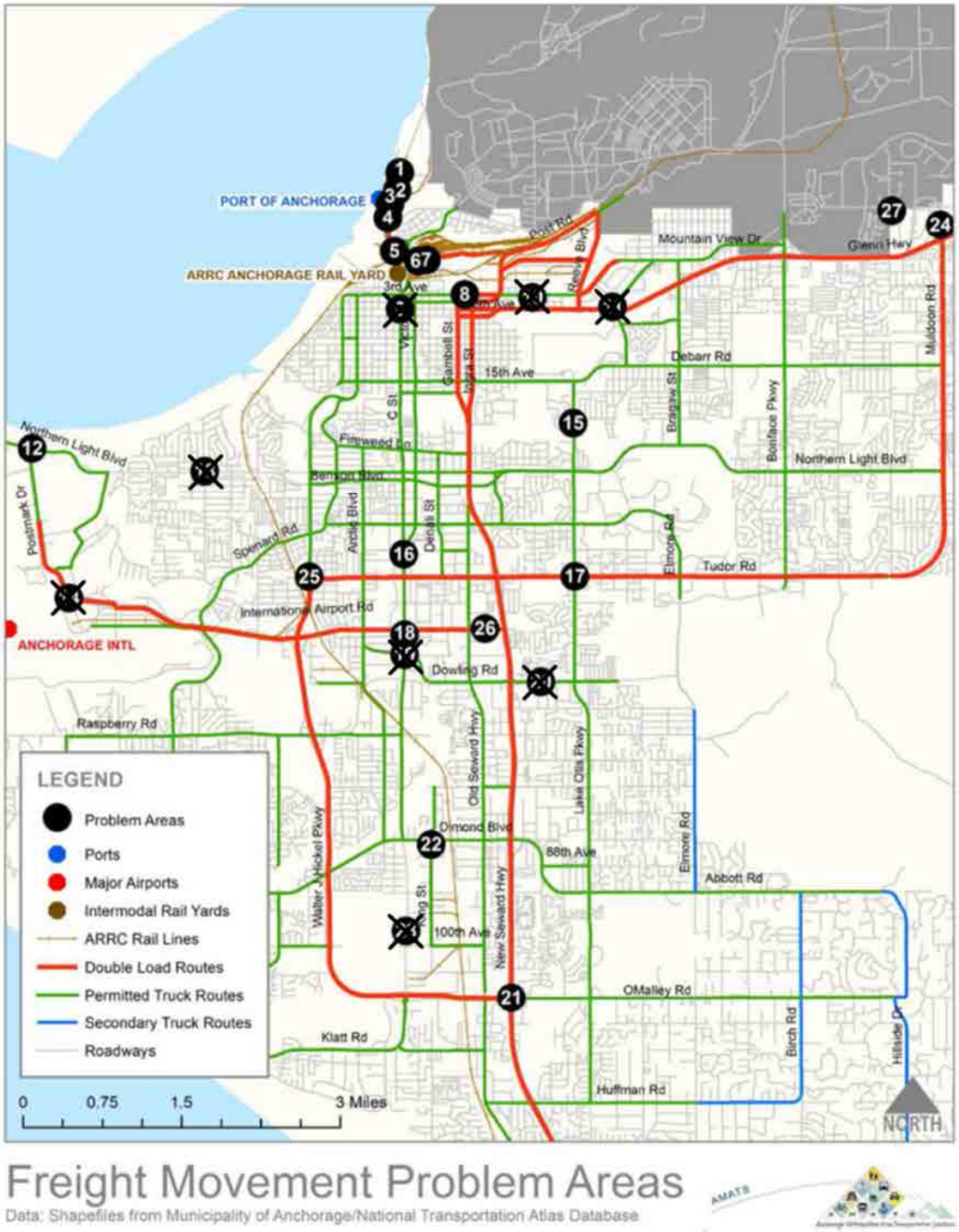
- Develop infrastructure that can accommodate a 53-foot-long trailer. Existing road infrastructure in the AMATS region was built to accommodate 40-foot-long trucks, and designing and implementing future roads for larger vehicles should be considered for future projects.
- Work toward resolving existing and potential land use issues such as noise compatibility near industrial areas.
- Consider designing specifically-used freight corridors and work with freight stakeholders to determine whether to implement certain street-scape methods that are designed to improve safety and efficiency of freight movements (e.g., less trees that block truck traffic views, larger road right-of-ways, and placement of traffic-calming techniques).
- Roadway medians can limit a truck's ability to turn, especially during the winter months.

In addition to the list of stakeholder issues identified above, the MOA identified a series of "problem locations" for freight movement in the Anchorage Bowl in 2009. Of these locations, 19 of the 27 problem locations identified (Figure 7.5) still need to be resolved, including:

1. Ocean Dock Road access and crossing from POA to Terminal Road;
2. Ocean Dock Road and Terminal Road intersection;
3. Ocean Dock Road alignment near POA entrance;

4. North C Street and Ocean Dock Road intersection (multiple railroad crossings);
5. Whitney Road (size, turning movements, no shoulders, trail/pedestrian/fishing concerns);
6. School bus storage area (use not ideally suited, some compatibility concerns);
7. 3rd Avenue and Ingra/Gambell improvements (connects to the Ship Creek/POA area);
8. Industrial area circulation and access concerns;
12. Postmark Drive and Point Woronzof Road/West Northern Lights Boulevard intersection (stop signs, tight intersections, left and right turns);
15. Lake Otis Pkwy: Debarr Road to Northern Lights Boulevard (capacity concerns/4-lane transition to 3 lanes at Chester Creek);
16. C Street: Tudor Road to 36th Avenue, northbound (capacity concerns);
17. Tudor Road at Lake Otis Parkway intersection improvements (capacity congestion);
18. C Street at International Airport Road intersection (turning movements);
21. New Seward Highway at O'Malley Road interchange;
22. King Street at Dimond Boulevard intersection (turning movements);
24. Access off the Glenn Highway from Muldoon Road (capacity development for freight);
25. Tudor Road and Minnesota Drive intersection;
26. International Airport Road extension to the New Seward Highway; and
27. Tikhatnu Commons (Best Buy/Kohl's/Lowes) and Muldoon Post Gate (access improvements).

Figure 7.5. AMATS Freight Movement Problem Areas



Note: Problem areas with an X over the number indicate the problem has been addressed since 2009.

Rail

Rail cargo bottlenecks may be operational or infrastructural. Operational concerns exist at the POA and other intermodal centers in the region, where cargo movement relies on tight schedules. For example, the ARRC tracks function as the loading area when freight exits the POA via rail. This loading process creates delays based on scheduling and loading crew member availability. Additionally, ARRC noted that the most significant delays to their operations are related to truck traffic through downtown Anchorage during the commuter rush hour. Currently, delays in truck arrival time affect loading and departure times and are expected to continue into the future. Railroad project improvements and expansions may also impede other freight movements. For example, there are a number of at-grade crossings in the AMATS region that not only affect the safety of the overall transportation system, but also constrain the efficiency of freight rail operations.

Pipeline

There is no current or expected future bottleneck, level of service, and/or capacity issue in the pipeline network.

Safety and Security Issues

Safety and security issues are becoming more prominent in regional freight mobility. Freight involves large-scale shipments using various modes of the region's transportation system. Safety is paramount to ensure that large containers or vessels of costly and/or potentially hazardous materials arrive at their destinations on time and intact. Security is also a major concern as these shipments cross international and state borders, each with different regulations and protocols. Safety and security issues are presented by transportation mode below.

Water

Current security measures at the POA are in full compliance with 2014 Maritime Transportation Security Act standards. The POA implemented a port-wide security plan shortly after 9/11 that remains in place today. The POA has a security screening facility and provides security training for all staff. Additionally, any person entering the POA must present a government photo identification card to enter. Staff members are also required to have a "proximity access card" and "Transportation Worker Identification Card (TWIC)." These access precautions serve to protect the POA on a daily basis.

In addition, the POA has contracted with a local corporation to perform all security services, which averages 20 armed officers. The Department of Homeland Security deemed the POA as a "regionally significant" facility, which includes federal funding for security operations (POA, 2016).

Air

TSAIA maintains compliance with Transportation Security Administration (TSA) standards and has U.S. Customs security on site. TSAIA also has Aircraft Rescue and Fire Fighting (ARFF) services on site per FAA requirements. In the recent past, TSAIA has not had any major facility or security related incidents recorded. Also, TSAIA recently contracted with an energy firm to implement an Electrical Preventative Maintenance (EPM) and National Fire Protection Association (NFPA) 70E Compliance Program. This program includes a review of TSAIA's electrical distribution systems, incident energy analysis, arc flash hazard assessments, schedule maintenance, airport staff training, and energy-related incidents to enhance safety measures at the airport (Lantz, 2015). In the event of a major emergency, JBER's air facilities offer an alternative to TSAIA. For example, during the 1964 earthquake, Elmendorf Airfield continued to move freight while TSAIA was unable to move cargo.

Highway

DOT&PF conducts inspections on commercial vehicles for safety, size, and weight. These inspections occur at weigh stations, selected roadside locations, terminals, and when vehicles are stopped. To keep records of these inspections, the commercial vehicle enforcement officers utilize Aspen inspection reporting software. In addition to inspections, DOT&PF supports a cooperative industry and public education awareness program to ensure that both drivers and other road users understand risks and responsibilities associated with commercial vehicle navigation (DOT&PF, 2013). In terms of vehicle security, systems and technology vary by carrier.

Furthermore, the Fatality Analysis Reporting System (FARS) summarizes motor vehicle crashes resulting in fatal injury data by year. Additionally, the National Highway Traffic Safety Administration (NHTSA)'s Alaska Crash Map shows the geographic locations of these incidents in the region with a user-friendly online interface. This online map was used as the basis for obtaining and linking case numbers to the vehicle type information for this analysis. In 2012 and 2013 respectively, there was one fatality by each year involving trucks. Table 7.2 shows the crash history on the MOA's transportation system from 2009 to 2014 for all vehicles. Source: DOT&PF**, 2016.**

Figure 7.6 identifies all of the commercial vehicle crashes on one map to illustrate consistent areas of crash incidents. Non-federally reportable crashes are the least impactful and generally occur on lower speed roadways. Crashes that result in towing, injuries, or fatalities generally occur on higher speed facilities. Crashes are more prevalent in denser areas.

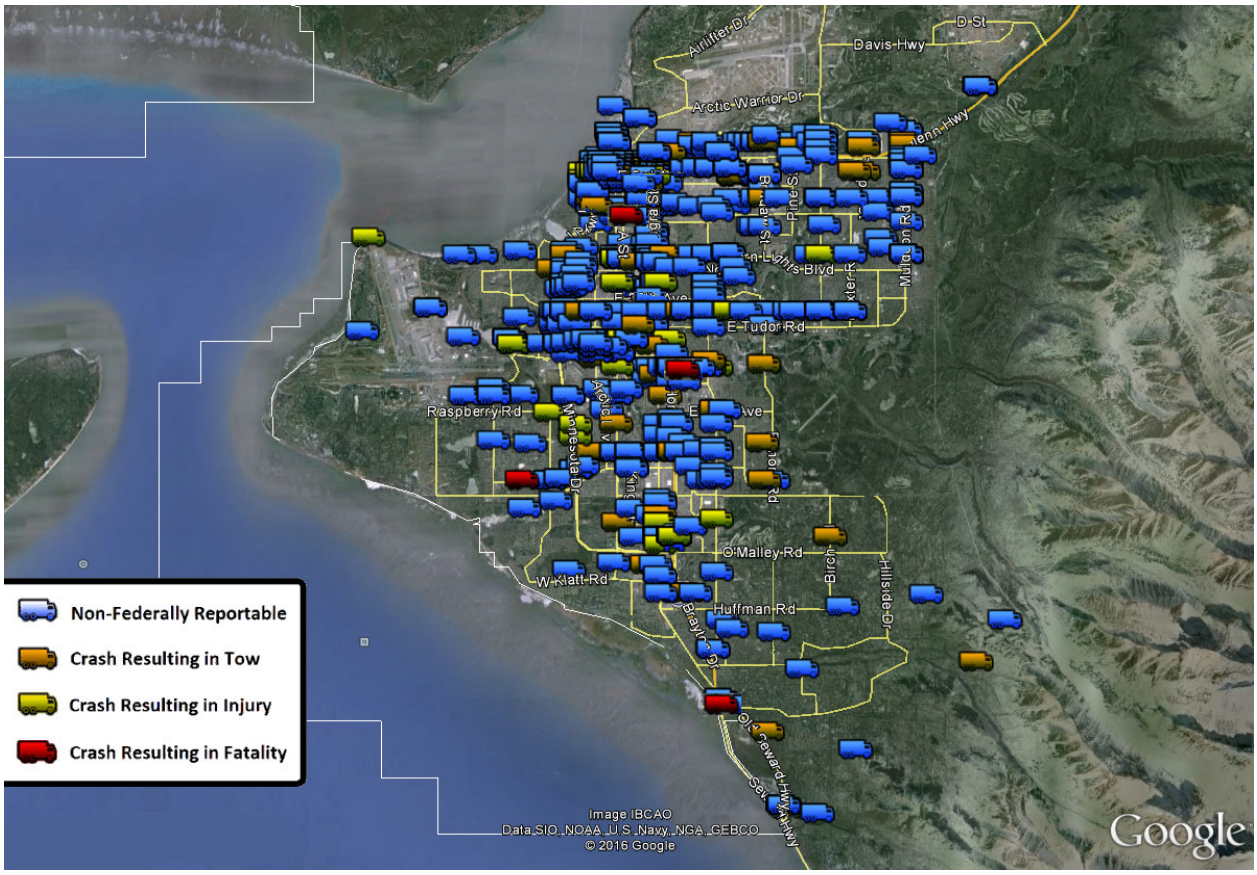
Table 7.2. DOT&PF Crash Data Summaries for the MOA, 2009-2014

Crash Type	2009	2010	2011	2012	2013	2014
Non-federally Reported	119	111	126	37	23	77
Resulted in Tow	14	18	9	7	26	25
Resulting in Injury	8	13	10	4	5	6

Resulting in Fatality	0	0	0	1	1	2
Total	141	142	145	49	55	110

Source: DOT&PF, 2016.

Figure 7.6 Commercial Vehicle Crashes, 2009-2048



Source: DOT&PF, 2016.

Rail

The Federal Railroad Safety Act[3] (FRSA) provides security for national railroad operations by mandating employee protections, regulating hazardous safety/security conditions, providing a process through which to report security problems to the Department of Homeland Security, and enforcing these regulations. This legislation is applicable to all freight carriers throughout the AMATS region.

ARRC reports that their annual movement of materials such as petroleum, gravel, and coal via railcar removes over 300,000 dump and tank trucks from the road each year in Alaska, with an estimated

[3] Federal Railroad Safety Act, 49 USC §20109. http://www.whistleblowers.gov/acts/frsa.html

reduction of vehicle miles traveled of 34.7 million miles. The movement of these goods from truck to rail helps to provide a more secure environment on the region's fixed rail guideway.

The 2035 AMATS MTP identified crossings of concern due to higher traffic volumes in the following locations:

- C Street;
- Arctic Boulevard;
- Dowling Road; and
- International Airport Road/Jewel Lake Road.

To increase awareness of the importance of right-of-way for rail-side protection, ARRC used six-foot-tall blue posts in 200-foot increments to delineate the right-of-way boundary through Anchorage. ARRC installed the markers in 2011, and they run from Potter north to Elmendorf. ARRC is considering expanding the area these markers cover, noting that right-of-way is a common problem where property owners build too close to the track.

Pipeline

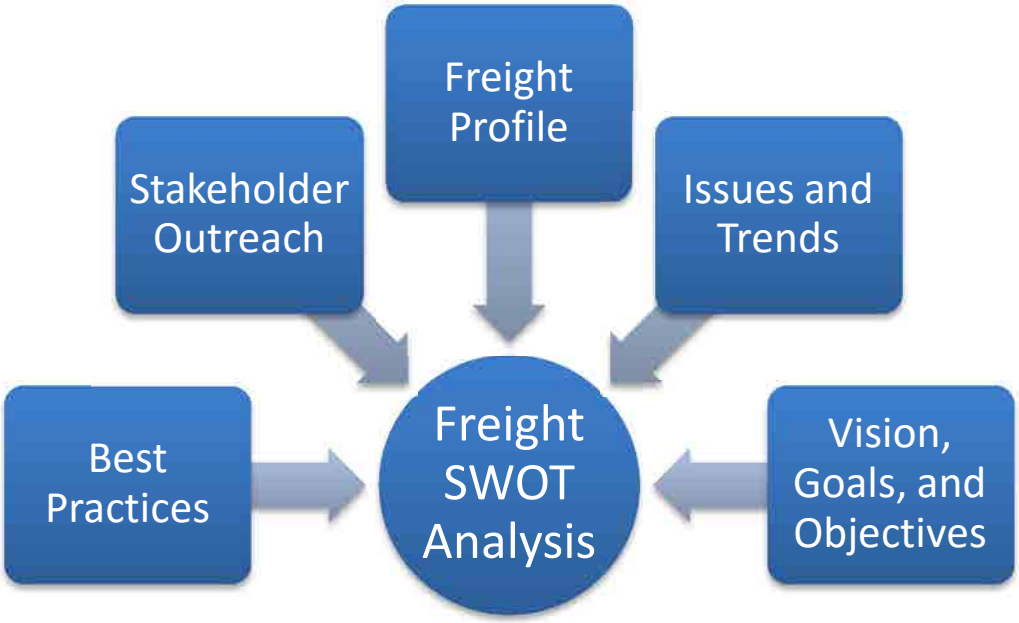
Pipelines require extensive maintenance and security due to the volatile nature of the contents carried. The Pipeline and Hazardous Materials Safety Administration (PHMSA) regulates national pipeline safety and security. PHMSA supports the enforcement of the Pipeline Safety Act of 2011 and the HAZMAT Safety Improvement Act of 2012. PHMSA reports no significant pipeline incidents in the past decade within the Anchorage region (PHSMA, 2016). No extraordinary safety or security concerns related to pipeline infrastructure exist in Anchorage.

8. Freight System Strengths, Weaknesses, Opportunities, and Threats (SWOT)

A SWOT analysis was designed, implemented, and used to help develop the freight analysis framework best able to meet the vision, goals, and objectives of the AMATS FMS. The SWOT analysis was designed to provide for more effective future freight programming and planning in the region.

To complete the SWOT analysis, AMATS conducted a comprehensive series of tasks shown in Figure 8.1. The SWOT analysis incorporated the analysis and findings of work discussed in previous chapters of this study. This analysis fed directly into the SWOT to determine Anchorage's freight-related strengths, weaknesses, opportunities, and threats moving forward into the future. The results of this analysis were used to determine the potential future freight projects and policies to be prioritized in the AMATS FMS for the immediate, mid-, and long-terms (see Chapter 10).

Figure 8.1. Anchorage Freight Mobility SWOT Analysis Elements



The SWOT analysis was used to determine a number of important factors in identifying the potential future projects and policies recommended for implementation in the AMATS FMS. Anchorage, due to its unique geographic location, is a trans-shipment center that will continue to play a very important role in the region's economic future. Although Anchorage is delineated by natural growth boundaries of the Cook Inlet and the Chugach Mountains, there is still an abundance of industrially-zoned land use areas located near TSAIA, along Anchorage's central corridor, and in South Anchorage, with lesser amounts available in the Ship Creek and Eagle River/Chugiak areas.

The freight market and multimodal transportation system in Anchorage is heavily dependent on resource-rich commodities, which can consequentially be seen as both an economic strength and weakness. There is also a growing urban population (21 percent growth by 2040), which provides an

opportunity to define freight improvement strategies. As more employment and industry growth results from the expected population increases, this, in turn, drives up the demand for various goods in the local economy and creates more freight activity.

A potential threat to the AMATS multimodal freight network is the lack of multiple access points and redundancies for specific modes in the region. For example, the POA is suffering from a number of capacity issues and is in the process of "modernizing" its facilities (APMP). Having emergency or backup operations for delivering goods beyond one route will be important into the future, especially when Anchorage and the rest of the state remain remote from other immediate markets. Regular deliveries for fuel, food, and other consumer goods could potentially deteriorate if a major natural disaster occurs in the region.

The themes and issues identified in the SWOT analysis are highlighted in Table 8.1.

Table 8.1. AMATS Region's Key Freight-Related Strengths, Weaknesses, Opportunities, and Threats

Strengths	Weaknesses
• Energy-resource driven economy • Workable intermodal freight network between the POA, TSAIA and ARRC • Freight network provided for local, regional, state, and international level for the trans-shipment of goods • Actively-involved FAC	• Lack of efficient freight-connecting routes between the Port and TSAIA • Poor connections between Glenn Highway and Seward Highway which causes bottlenecks • Volatility and changing trends in energy markets • Natural growth boundaries for Anchorage Bowl
Opportunities	**Threats**
• Freight stakeholder involvement in the long-range freight planning process • Increased role of TSAIA in international trans-shipment markets • Outreach and education to increase public awareness of transportation and industrial-related jobs and businesses to the economy • Growing urban population with diverse need for commodities • POA Modernization efforts can increase freight intake • Abundance of industrially-zone land uses	• Oil and gas boom/bust economy • Land use conflicts between industrial right-of-way and neighboring uses. • Rail ROW issues through major road sections • Lack of redundancy in intermodal freight networks which can be threatened by potential natural hazards (i.e., POA and TSAIA, singular road access in and out of Anchorage) • Lack of funding to complete APMP before either an actual disaster event occurs, or age drives infrastructure out of service.

9. Performance Management Framework and Measures

Transportation planning, policy, and programming decision-making processes involve a number of steps, one of which is defining performance analysis frameworks to assess future planned changes or activities of any given system. This analysis, often referred to as Performance-based planning or Performance measurement, has become an integral part of state and metropolitan transportation system planning over the past two decades or more. For many years, AMATS has been actively engaged in developing these types of processes in support of the MTP and the recently completed CMP and Status of the System Report. AMATS' previous efforts to design and apply performance measures and analysis processes were used to inform the framework developed for the FMS, with the AMATS FMS Vision, Goals, and Objectives used as the framework's foundation.

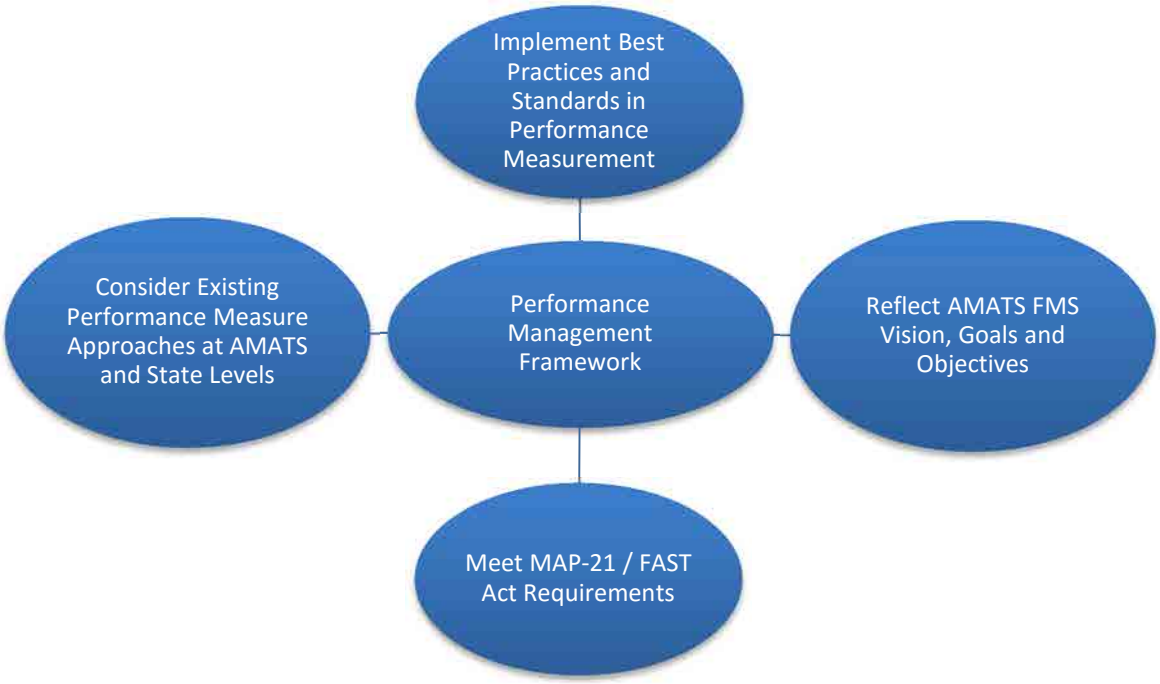
In support of the FMS, AMATS developed this framework to monitor the performance of FMS freight-related goals and objectives that also closely align with the Interim 2035 MTP's freight-related goals and objectives. The framework was also designed to meet federal guidance set forth in MAP-21 and the FAST Act. A key feature of MAP-21 was the establishment of performance and outcome-based programs, with the objective being for regions to invest in projects that collectively make progress towards national goals. The FAST Act, established in December 2015, suggests that key sections pertaining to performance measurement have not materially changed from MAP-21. Among other system elements, the final performance measure Notice of Proposed Rulemaking (NPRM; published April 22, 2016) also suggested a series of recommended measures for the performance of freight movements on the Interstate system.

The establishment of this process will help determine whether freight projects and policies developed as a result of the AMATS FMS will be successful once implemented and help AMATS quantify the success of any given freight project on the overall transportation system. Measures built into the framework are intended to monitor and identify improved transportation system performance resulting from implemented projects and document the level of accomplishment to the goals and objectives established for the FMS. Importantly, this process is also intended to create accountability for projects and help determine the components of a successful project. By developing a proper framework and measures, the AMATS FAC and other AMATS committees and groups will be able to determine whether freight policies or programs need additional modifications and improvements once they are implemented and operating. Continuous follow-up by AMATS and the FAC will be important to this program's implementation success.

Performance Management Framework

The framework was designed to assess performance and implementation of the recommendations of the FMS to reflect and take into consideration the factors shown in Figure 9.1, each of which is presented below.

Figure 9.1. Components of FMS Performance Management Framework



Implement Best Practices and Standards in Performance Measurement

A number of best practices were identified and used by AMATS to support the design of the performance framework and associated measures, including:

- **Do not re-invent the wheel.** AMATS, and its FAC, built the FMS process using already available performance frameworks, measures, and associated data sets.
- **SMART and KISS Principles.** AMATS chose performance measures that were Specific, Measurable, Attainable, Realistic, and Timely (SMART) to provide meaningful assessments with data that could be collected regularly over time. Performance measures were developed to be in the spirit of Keeping It Short and Simple (KISS).
- **Focus Performance Measures on Relevant Topics.** AMATS developed measures illustrative of the performance specific to the freight industry and were developed to reflect areas that AMATS and its partners could influence over time.
- **Understand the role and distinguish between Freight Indicators and Freight Performance Measures.** Freight indicators were used to provide an indication of economic activity in the AMATS freight sector (e.g., truck movements) and were not used to measure the system's performance. AMATS developed measures to inform decision-making and adjust investments related to transportation system performance.
- **Harness and Use Big Data, Carefully**. The use of big data sources, while not used in the development of the measures presented later in this section, will be considered by AMATS to support this process as data comes on-line and becomes available to the agency.
- **Consider Reporting Requirements and Benefits of Publishing Performance Measurement Results to Stakeholders.** AMATS will consider the use of future reporting processes (e.g.,

Dashboards) as they have with the Congestion Management Plan and other plans to present FMS performance measures for display to agency decision-makers and stakeholders.

Reflect AMATS FMS Vision, Goals and, Objectives

The vision, goals, and objectives for the AMATS FMS are used as the starting point for developing the freight-specific performance measures and freight elements of the updated MTP.

Consider Existing Performance Measure Approaches at AMATS and State Levels

The AMATS FMS performance framework was developed taking into consideration key AMATS and statewide processes already in-place or underway. These included relevant measures established in the AMATS 2035 MTP, the Anchorage CMP, and DOT&PF's *Let's Keep Alaska Moving Plan 2036* (anticipated for release later in 2016).

Meet MAP-21 / FAST Act Requirements

The AMATS FMS performance framework considered the performance measurement requirements of MAP-21 and the FAST Act, including relevant measures identified for the Highway Safety Improvement Program, National Highway Performance Program (e.g., for pavement and bridge), System Performance Analysis, National Freight Movements, and Congestion Mitigation and Air Quality Program. For example, these measures include safety, injury/fatality, and truck reliability index.

Performance Measures

This section presents the recommended set of performance measures, data, and approaches for measuring, monitoring, and reporting performance of freight-focused activities for the AMATS FMS. The measures presented in Table 9.1reflect the goals and objectives defined for the FMS, MAP-21, Anchorage CMP, and DOT&PF approaches. The measures can also be practically measured, updated, and tracked on an on-going basis and were designed to provide insight about the performance of the freight system specifically, as opposed to the transportation system generally. Brief descriptions of each measure are presented below.

Safety Measure

Truck safety is a concern because of the size, weight, and reduced handling characteristics of trucks compared to automobiles and other vehicles on the road. This safety measure links with the FMS Objective: minimize conflicts between freight and passenger vehicles and non-motorized travelers.

Truck Crash Injury/Fatality Index: Fatality and Serious Injury Crash Rate per 100 Million Vehicle Miles Traveled (VMT)

The recommended performance measures calculates the number of vehicle crashes (fatalities, injuries) involving trucks per 100 million vehicle VMT.[4]

[4] This performance measure uses VMT for *all* vehicles types in its calculation. The project team is not aware of a VMT measurement available exclusively for commercial VMT, which would be a preferable choice.

Table 9.1. AMATS FMS Performance Measures

FMS Objective(s)	Performance Area	Relevant MAP-21 Goal Area(s)	Proposed Performance Measure(s)
Minimize conflicts between freight and passenger vehicles and non-motorized travelers	Safety	Safety	• Truck Crash Injury/Fatality Index: Fatality and Serious Injury Crash Rate of incidents involving Commercial Vehicles per 100 million truck VMT
Optimize the transportation system to meet the needs of the Port of Anchorage, Ted Stevens Anchorage International Airport, the Alaska Railroad, the military bases, employment centers, and industrial and commercial areas	Freight System Optimization	Infrastructure Condition, Congestion Reduction, System Reliability, Freight Movement and Economic Vitality	• Truck Travel Time Index • Truck Travel Reliability Index (RI_{95}) • Annual hours of truck delay • Increase in centerline miles of NHS roads • Percent of the Interstate System Mileage providing for Reliable Truck Travel Time • Percent of the Interstate System mileage uncongested
Reduce energy consumption and air pollution	Environment	Environmental Sustainability	• Annual Hours of Truck Delay

Freight System Optimization Measures

Freight system optimization measures how the overall system is performing, including linkages to major facilities, land uses, and logistics. The optimization measures link to the FMS Objective: Optimize the transportation system to meet the needs of the POA, TSAIA, ARRC, JBER, employment centers, and industrial and commercial areas. In addition, linkages to land uses that affect cost, travel time, and variability of goods movement in the freight network are captured in these measures. Freight system optimization considers the performance of the supply chain as a whole related to travel time and reliability for freight related vehicles. These measures are discussed below.

Truck Mobility (Truck Travel Time Index)

Truck mobility and accessibility improvements will be evaluated using *Truck Travel Time Index (*TTTI), which measures truck related delays primarily due to peak period congestion. TTTI evaluates the difference in travel time between 'free flow' (traffic-free) and congested flow conditions. The TTTI is calculated by dividing Free Flow Tuck Speed by Observed Average Truck Speed during the Peak Period.

Truck Travel Time Reliability (Truck Travel Time Reliability Index)

Truck travel time reliability measures the consistency or dependability in travel times between two points. Unreliable freight transportation requires added supply chain redundancy and cost for businesses. Reliability of freight influences logistics decisions, such as the number and location of

manufacturing plants and distribution centers that affect local, regional, and state economics. Reliability will be measured using non-recurring delay, which refers to unexpected delays caused by closures or restrictions resulting from inclement weather, crashes, and construction activities. Non-recurring delay is measured by Truck Travel Time Reliability Index (RI_{95}). The RI_{95} illustrates the extra "buffer" time needed for on-time delivery while accounting for non-recurring delay. It measures the ratio of total truck travel time needed to ensure on-time delivery 95 percent of the time.

Annual Hours of Truck Delay

Annual hours of truck delay measures the economic cost of congestion on the freight industry. Traffic congestion and delay are characterized by slower speeds, longer trip times, and increased queuing; these factors can significantly affect truck mobility. Annual hours of truck delay captures all of these characteristics and is a primary measure of freight performance. Truck delay is also a good proxy for environmental impact in terms of energy consumption and air pollution, as increased truck delay is associated with additional idling and fuel consumption. As such, this performance measure can also be used to measure progress against the FMS Objective: Reduce energy consumption and air pollution. This measure will be calculated by Congested Travel Time minus Free Flow Travel Time multiplied by Daily Truck Volumes.

Increase in Centerline Miles of NHS Roads (meeting department standards)

Poor pavement conditions can cause damage to trucks and cargo as well as impede traffic flow, contributing to congestion and unreliability. The increase in centerline miles of NHS roadways measure to assess infrastructure conditions is already tracked and reported for NHS facilities by the DOT &PF and will be include in the FMS.

Percent of the Interstate System Mileage providing for Reliable Truck Travel Time and Percent of the Interstate System Mileage Uncongested

The *Truck Travel Time Index,* Truck Travel Time Reliability, and Annual Hours of Truck Delay will be used to calculate both the percentages of interstate system mileage providing reliable truck travel times and uncongested conditions.

Environmental Measures

Data sources are not currently available to provide fuel consumption and/or air pollution levels for truck travel in the AMATS region. Environmental measures links to the FMS Objective: Reduce energy consumption and air pollution.

Annual Hours of Truck Delay

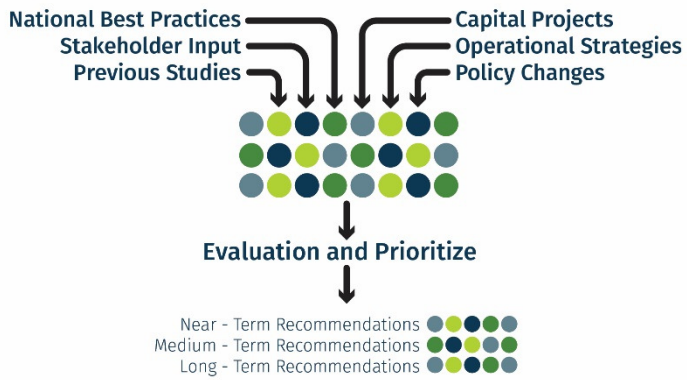
Due to data availability issues, it is recommended that the Annual Hours of Truck Delay be used as a proxy for energy consumption and air pollution. As noted above, truck delays result in higher fuel consumption and associated pollution as a result of idling and unnecessary time on the road, all else being equal.

10. Recommendations

This section presents the freight infrastructure projects and policies recommended for implementation in the AMATS FMS. Freight projects and policies were identified, screened and assessed, and recommended for future implementation based on the analysis and primary inputs prepared as part of the FMS. This analysis was not fiscally constrained. Rather, it was developed to encourage the identification of the freight infrastructure projects and policies that provide the AMATS region with the highest level of increased transportation system performance regardless of cost. This process was also intended to identify the freight projects and policies for screening in the upcoming AMATS MTP, which will be developed using financially constrained methods. It relied on the FMS' literature review of plans, studies, and databases; assessment of local and regional freight issues and trends; and stakeholder interviews; and development of the overall freight profile for the AMATS region, including vision, goals, and objectives; freight system inventories; and SWOT analysis.

Working with AMATS and FAC, a screening process (see **Error! Reference source not found.**) was designed and implemented to determine future potential project and policy recommendations in support of the FMS. Recommendations for immediate, mid-term, and long-term projects and policies were determined based on the goals developed, SWOT analysis, and other freight trends and technical studies.

Figure 10.1. Screening Process



Project and Policy Screening Criteria and Scoring

Freight project and policy descriptions were obtained from various sources in the AMATS FMS planning process, including identified projects and policies contained in the AMATS 2035 MTP, AMATS TIP, other regional and local plans, and new freight projects and policies identified by the FAC and stakeholders. AMATS and the FAC developed the following screening criteria to assess each project and policy implementation potential by immediate (0-10 years), mid-term (11- 15 years), and long-term (16+ years) timing/need.

- Project Readiness – Evaluates the existing project status and how close it is to being implemented. Lower scores are awarded to projects that have yet to be evaluated (e.g., feasibility/planning, environmental, program phases) while higher scores are awarded to projects that are farther along in the environmental clearance and project programming processes.
- Timing of Need – Considers the timing for project/policy completion, depending on whether it is a near, medium or long-term need. Timing would be assessed if a project is needed to meet

existing or future needs. Lower scores are awarded to projects or policies that will be completed to meet medium or long-term needs (11-20 years), while higher scores are awarded to projects that will be completed to meet more immediate needs (within the next 2 to 10 years).

- New or Existing Project/Revision of Existing or New Policy – Measures if the project or policy is new, documented in other plans, or is a refinement of an existing policy or project under development. Lower scores are awarded to projects or policies that are new ideas or concepts that have yet to be fully evaluated, while higher scores are awarded to projects or policies that are actively being implemented.
- Regional Significance – Identifies geographic areas impacted by the project or policy. Lower scores reflect projects or policies that are narrow or localized with limited regional impact, while higher scores are awarded to projects or policies that provide significant regional impact in Southcentral Alaska.
- Number of Freight Modes – Identifies the number of freight modes that would be benefitted by the project or policy. Lower scores are awarded to projects or policies that address the mobility needs of one (or less) freight mode, while higher scores are awarded to projects or policies that address the mobility needs of three or more freight modes.
- Safety – Measures if the project or policy is needed to address a documented safety concern. Lower scores represent projects or policies that are not being implemented to address documented safety needs, while higher score represent projects or policies that are being developed to address documented safety needs.
- Residential Neighborhood Impact – Evaluates the potential of a project or policy to create unwanted neighborhood impacts such as increased noise or traffic levels, etc. Lower scores are awarded to projects or policies that do not reduce or address neighborhood impacts, while the higher scores represent projects or policies that do not cause any impacts or reduce existing impacts.
- Goal 1 - Evaluates if the project/policy is consistent with Goal 1: Provide a freight transportation system that moves goods safely and securely throughout the community; improves access; provides mobility; and supports a thriving, sustainable, broad-based economy.
- Goal 2 - Evaluates if the project/policy is consistent with Goal 2: Develop an efficient freight transportation network that considers the cost of building, operating, and maintaining the system; the equity of all users; public health impacts; community values; and social justice.
- Goal 3 - Evaluates if the project/policy is consistent with Goal 3: Incorporate technology and best management practices that allow for improved freight movement in the Anchorage region.
- Goal 4 - Evaluates if the project/policy is consistent with Goal 4:- Integrate freight needs and financing into transportation project prioritization processes for the region.
- Goal 5 - Evaluates if the project/policy is consistent with Goal 5: Develop a multimodal freight system that includes effective public and stakeholder partnerships to leverage opportunities and resources.

Table 10.1 shows the project and policy screening criteria and scoring process used in the AMATS FMS. The logic used to assess both freight projects and policies contained in the screening process included:

- ○ =1 pts;
- ◒ = 3 pts; and
- ● = 5 pts.

The lowest possible score for projects was 12 and the highest possible score was 60, while policies scored between 11 (lowest) and 55 (highest) because the Project Readiness criterion was not evaluated.

Table 10.1. AMATS FMS Project and Policy Screening Criteria and Values

Criteria	Rational	Potential Benefit		
		Low	Moderate	High
Project Readiness **(Project only)**	Existing status of project	○ (No work started)	◒ (Some work completed)	● (Substantial work completed)
Timing of Need (project needs to be completed in this time frame)	When project is needed to improve the freight mobility system	○ (Long-term need (16+ years))	◒ (Medium-term need [11-15 years])	● (Immediate-term need [within 0-10 years])
New or Existing Project/Revision of Existing or New Policy	Ease of integration	○ (New idea/concept)	◒ (In existing plans or revision of existing policy)	● (Implementation of project or policy actively being worked on)
Regional Significance	Geographic area impacted	○ (Localized improvement such as an intersection improvement)	◒ (AMATS area)	● (Southcentral Alaska and greater)
Number of Freight Modes (road, rail, aviation, port, pipeline)	Number of modes benefited	○ (1 mode)	◒ (2 modes)	● (3 or more modes)

Criteria	Rational	Potential Benefit		
		Low	Moderate	High
Safety	Potential to address documented safety need	○ (No safety need Identified)	◒ (Safety need documented, but project does not address it)	● (Project addresses documented safety need)
Residential Neighborhood Impact	Potential to create unwanted neighborhood impact (noise, traffic, visual, etc.)	○ (Adversely affects neighborhood[s])	◒ (Includes some adverse impacts to neighborhood[s])	● (No/reduced adverse impacts to neighborhood[s])
Goal 1	Consistency with Goal 1	○ (Low consistency)	◒ (Moderate consistency)	● (High consistency)
Goal 2	Consistency with Goal 2	○ (Low consistency)	◒ (Moderate consistency)	● (High consistency)
Goal 3	Consistency with Goal 3	○ (Low consistency)	◒ (Moderate consistency)	● (High consistency)
Goal 4	Consistency with Goal 4	○ (Low consistency)	◒ (Moderate consistency)	● (High consistency)
Goal 5	Consistency with Goal 5	○ (Low consistency)	◒ (Moderate consistency)	● (High consistency)

Recommendations for Immediate, Mid-Term, and Long-Term Implementation

Freight Projects

Using the criteria and scoring process described above, freight projects were assigned scores from high to low based on implementation needs to support the FMS and enhance the AMATS freight transportation network. The distinction between high, medium, and low priority projects for

implementation was based on the total scores computed for each project after screening. In this analysis, the total points possible for each project ranged from 12 to 60, with scores of 34 or less considered low priority projects, 35 to 38 considered medium priority projects, and 39 and above considered high priority projects. Using these scores by implementation priority, the freight projects were allocated by immediate (0-10 years), mid-term (11-15 years), and long-term (16+ years) implementation schedules based on the "Timing of Need" criteria in the screening process. Table 10.2, Table 10.3, and Table 10.4 present the Immediate, Mid-Term, and Long-Term Freight Projects for Implementation by low, medium, and high priority.

Table 10.2. Immediate (0-10 Years) Freight Projects Identified for Implementation

Potential Project	Description	2035 MTP Project Number[1]	Level of Priority	Project Status
Immediate Freight Projects with High Implementation Needs				
Anchorage Port Modernization Project	Complete the APMP		High	Phase I - Permitting
Advanced Yellow Light Warning	Advanced warning that the signal is about to turn yellow along freight routes, including C Street and Minnesota.		High	
Improved TSAIA Access – North	Improve freight access from TSAIA's North Airpark to Minnesota Drive.		High	
Improved TSAIA Access – South	Improve freight access from TSAIA's South Airpark to Minnesota Drive; includes intersection improvements at Raspberry Drive and Sand Lake Road.		High	
Seward Highway - O'Malley Road to Dimond Boulevard	Reconstruct and widen from 4 to 6 lanes; includes reconstruction of Dimond Boulevard interchange.	107	High	Design
Seward Highway Improvements (Midtown Congestion Relief-Seward Highway to Glenn Highway Connection Phase II)	Reconstruct the Seward Highway as a depressed freeway; includes interchanges at Northern Lights and Benson Boulevards and the reconstruction of the Old Seward Highway from 33rd to 20th Avenue.	114	High	
Old Glenn Highway (Artillery Road) Northbound Off-ramp to Eagle River Road (Eagle River)	Eliminates existing weaving section between the existing Old Glenn Highway (Artillery Road) interchange northbound ramp terminal and the Eagle River Road intersection on the Old Glenn Highway; provides additional capacity to a heavy demand movement.	127	High	
Improved Access from the POA	Additional/improved connections to the Ship Creek and POA area.		High	

Potential Project	Description	2035 MTP Project Number[1]	Level of Priority	Project Status
Muldoon Road Interchange	Reconstruct interchange to include ramps and Muldoon Road bridge and improve access to Tikahtnu Commons.	106	High	Under Construction
Immediate Freight Projects with Medium Implementation Needs				
C Street at International Airport Road Intersection	Intersection improvements to address turning movement concerns.		Med	
King Street at Dimond Boulevard Intersection	Intersection improvements to address turning movement concerns.		Med	
Tudor Road/ Minnesota Drive Intersection	This intersection is still an issue. The *West Anchorage District Plan* should help identify some of these problems.		Med	
Postmark Drive and Point Woronzof/ West Northern Lights Boulevard Intersection	Improvements to address stop signs, tight intersections, and left and right turns.		Med	
Signal Timing Modifications	Adjust signal timing on primary freight corridors to better allow the free flow of freight traffic; consider adjusting timing on a daily basis or just on POA days (Sunday and Tuesday).		Med	
Trailer on Flat Car (TOFC) Yard	Develop a TOFC at the POA.		Med	
Northern Lights Boulevard – Postmark Drive to Nathaniel Court	Improve access along Northern Lights Boulevard to TSAIA; rehabilitate pavement and add shoulders where needed; wetland impacts are anticipated.	119	Med	
3rd Avenue Improvements	Reconstruct 3rd Avenue to better accommodate 53-foot-long trailers.		Med	
Midtown Subarea Transportation Plan	Finish the study by identifying needs and multimodal/land use solutions.	138	Med	
Seward Highway/ O'Malley Road Interchanges Study	Reconnaissance study to identify operations, functional design, and phasing of the freeway-to-freeway interchange at Seward Highway and O'Malley Road/Minnesota Drive and an interchange at Old Seward Highway and O'Malley Road.	139	Med	

Potential Project	Description	2035 MTP Project Number[1]	Level of Priority	Project Status
36th Avenue/Seward Highway Interchange (Seward Highway to Glenn Highway Connection Phase I)	Add new facility – interchange at 36th Avenue and Seward Highway, including braided ramps connecting to the Tudor Road interchange.	104	Med	Design
Immediate Freight Projects with Low Implementation Needs				
Eagle River Central Business District (CBD) – Phase II, Study (Eagle River)	Study to identify the recommended long-term solution for the CBD transportation system.	215	Low	
Ingra/Gambell Streets Improvements	Reconstruct Ingra/Gambell Streets to better accommodate 53-foot-long trailers.		Low	
Ocean Dock Road Access and Crossing from POA to Terminal Road	Improve Ocean Dock Road access and crossing from the POA to Terminal Road.		Low	
Ocean Dock Road and Terminal Road Intersection	Improve the Ocean Dock Road and Terminal Road intersection.		Low	
Tudor Road Access Management - Seward Highway to Arctic Boulevard and Seward Highway to Patterson Street	Add access management and turn restrictions; modify local connections to make adjacent property access to other roads; east-west or north-south access in lieu of direct access from Tudor Road wherever practical.	301	Low	
Tudor Road Access Management - Seward Highway to Patterson Street	Add access management and turn restrictions; modify local connections to make adjacent property access to other roads; east-west or north-south access in lieu of direct access from Tudor Road wherever practical.	302	Low	
North Eagle River Interchange Capacity Modifications Study (Eagle River)	Study the need for improvements at ramp terminals.	203	Low	
Whitney Road Upgrade	Upgrade to address size, turning movements, lack of shoulders, and trail and pedestrian/fishing concerns; pavement rehabilitation has been completed.		Low	

Potential Project	Description	2035 MTP Project Number[1]	Level of Priority	Project Status
C Street/Ocean Dock Road Access Ramp	Reconstruct the ramp at Ship Creek.	212	Low	Study
3rd Avenue, 6th Avenue Couplet/E Street Conversion Reconnaissance Study	Evaluate converting the 5th/6th Avenue couplet to a 3rd/6th Avenue couplet to develop 5th Avenue as a two-way street.	136	Low	
Seward Highway – O'Malley Road to Rabbit Creek Road	Construct Americans with Disabilities Act (ADA) ramps for existing pedestrian crossings and extend pedestrian facilities from Rabbit Creek Road to O'Malley Road.	116	Low	

[1] Number applies only to projects currently in the AMATS MTP.

Table 10.3. Mid-Term (11-15 Years) Freight Projects Identified for Implementation

Potential Project	Description	2035 MTP Project Number[1]	Level of Priority	Project Status
Mid-Term Freight Projects with High Implementation Needs				
Glenn Highway - Hiland Road to Old Glenn Highway (Artillery Road, Eagle River)	Make necessary improvements at Hiland Road and Old Glenn Highway (Artillery Road) interchanges and add a 3rd lane northbound and southbound between Hiland Road and Old Glenn Highway (Artillery Road); bridge improvements at Eagle River interchange, Hiland Road interchange, and 2 Eagle River bridges.	105	High	
Mid-Term Freight Projects with Medium Implementation Needs				
Jewel Lake/ International Airport Road Grade Separation	Construct interchange at International Airport Road and Jewel Lake Road incorporating a grade separation of the railroad; construct a grade separation of International Airport Road near Northwood Street with realignment of the railroad to the south side of International Airport Road.	304	Med	
Minnesota Drive/ Tudor Road Interchange	Extend controlled access from International Airport Road through a grade separated interchange at Tudor Road; widen the arterial to 8 lanes north of Tudor Road to Northern Lights Boulevard.	309	Med	

Potential Project	Description	2035 MTP Project Number[1]	Level of Priority	Project Status
Ocean Dock Road Alignment near POA Entrance	Realign Ocean Dock Road near the POA entrance		Med	
Glenn Highway Operations Analysis – Muldoon Road to Eklutna	Include future interchanges - Old Glenn Highway, Eklutna Village Road, Thunderbird Falls, Mirror Lake, North Peters Creek/Settlers Drive, South Peters Creek/Ski Road, Birchwood Loop Road North, and Birchwood Loop Road South.	137	Med	
Mid-Term Freight Projects with Low Implementation Needs				
Ingra-Gambell Couplet Extension - 3rd Avenue to Whitney Road	Extend Ingra/Gambell Streets to Ship Creek Avenue and Whitney Road.	213	Low	
Yield Signs at Highway On-ramps	Add yield signs at on-ramps on the Glenn and Seward Highways.		Low	
Seward Highway/ O'Malley Road Interchange	Add a freeway style interchange at Seward Highway and O'Malley Road/Minnesota Drive that provides unimpeded traffic flow between Seward Highway and Minnesota Drive.	211	Low	
Glenn Highway/Farm Avenue Partial Interchange	Partial interchange to Farm Avenue off the Glenn Highway (could include an overcrossing to a north-south collector on the west side of the Glenn Highway); includes improvements to Farm Avenue between Glenn Highway and Business Boulevard; recommend including pedestrian facilities.	126	Low	
Seward Highway/ O'Malley Road Interchange	Complete freeway system interchange at Seward Highway and O'Malley Road/Minnesota Drive and an interchange at Old Seward Highway and O'Malley Road.	322	Low	
Overpass on Minnesota Drive	Replace/modify the Minnesota Drive at Hillcrest Drive overpass to allow for additional clearance.		Low	
C Street - Tudor Road to 36th Avenue Northbound	To address capacity concerns.		Low	

Potential Project	Description	2035 MTP Project Number[1]	Level of Priority	Project Status
Lake Otis Parkway - Debarr Road to Northern Lights Boulevard	Capacity concerns/4-lane transition to 3 lanes at Chester Creek.		Low	
Glenn Hwy High Occupancy Vehicle (HOV) Lane - Old Glenn Highway (Artillery Road) interchange to Peters Creek interchange (Voyles Road, Eagle River)	Widen Glenn Highway to add an additional non-HOV lane in each direction; include interchange upgrades at Peters Creek bridge.	204	Low	
Glenn Highway HOV Lane – Boniface Parkway to Old Glenn Highway (Artillery Road) Interchange	Widen with lanes to the outside with 1 lane each direction designated non-HOV, include Ship Creek bridge improvements.	205	Low	
School Bus Storage Area	Address congestion near the school bus storage area.		Low	
[1] Number applies only to projects currently in the AMATS MTP.				

Table 10.4. Long-Term (16+ Years) Freight Projects Identified for Implementation

Potential Project	Description	2035 MTP Project Number[1]	Level of Priority	Project Status
Long-Term Freight Projects with High Implementation Needs				
None Identified				
Long-Term Freight Projects with Medium Implementation Needs				
Seward Highway/92nd Avenue Grade Separation	Add new facility - grade separation and extension of 92nd Avenue from Homer Drive to Brayton Drive; current project includes west side on- and off-ramps from Seward Highway at 92nd Avenue connecting via a newly constructed 92nd Avenue to the Old Seward Highway; new traffic signal at 92nd Avenue and Old Seward Highway; pedestrian, storm drain, and lighting improvements; recommend including bicycle lanes.	117	Med	1st phase under construction

Potential Project	Description	2035 MTP Project Number[1]	Level of Priority	Project Status
Knik Arm Crossing – Phase II	Add new connection from Government Hill tunnel to Ingra-Gambell Couplet over Ship Creek.	218	Med	On hold
Knik Arm Crossing – Phase I	Add new bridge facility access across Knik Arm with associated roads connecting to the Anchorage roadway network.	143	Med	On hold
Postmark Drive/ International Airport Road Grade Separation	Add grade separation of International Airport Road over Postmark Drive.	305	Med	
C Street/68th Avenue At-grade Rail Crossing	Grade separate the C Street/68th Avenue railroad crossing.		Med	
Long-Term Freight Projects with Low Implementation Needs				
Seward Highway to Glenn Highway Connection – Phase III	Construct freeway connection between Seward Highway/20th Avenue and Glenn Highway/Airport Heights Road; includes an interchange at Airport Heights Road freeway access and egress ramps elsewhere along the alignment, depressed sections of freeway that include the construction of bridges and decking above the freeway for cross streets, community amenities, and redevelopment over highway airspace.	201	Low	
Electric Truck Tugs	Replace existing trucks at the POA with electric trucks.		Low	
Industrial Area improvements	To address circulation and access concerns		Low	
[1] Number applies only to projects currently in the AMATS MTP.				

Freight Policies

The freight policies assessed in the AMATS FMS followed the same screening criteria as with the projects, except the project readiness criterion was not included in the analysis. The policy scores ranged from 11 to 55, with low priority policies scoring 43 or less, medium priority policies scoring between 44-48, and high priority policies scoring 49 or higher. Based on implementation priority, policies were allocated by immediate (0-10 years), mid- term (11-15 years), and long-term (16+ years) implementation schedules and the immediate, mid-term, and long-term policy schedules were based on the "Timing of Need" criteria in the screening process.Table 10.5, Table 10.6, and Table 10.7 present the Immediate, Mid-Term, and Long-Term Freight Policies for Implementation by low, medium, and high priority.

Table 10.5. Immediate (0-10 Years) Freight Policies Identified for Implementation

Potential Project	Description	Level of Priority
Immediate Freight Policies with High Implementation Needs		
Ongoing FAC Facilitation and Integration into Freight Planning Activities	Continue the FAC; involve the FAC during the planning/project development process.	High
Formalized FAC Review of Site Plans	Formalize FAC review of site plans/design review.	High
Conduct Periodic Freight Stakeholder Surveys	Obtain input from the freight community through periodic surveys (every 2-3 years) regarding their needs and concerns to help guide AMATS activities.	High
Truck Route Signage	Implement a comprehensive truck route signage program.	High
Public Education	Expand educational efforts to advise motorists and pedestrians regarding safety issues associated with freight movement.	High
Freight Corridor Designation and Design Standards	Standards may include pavement conditions, signage, turning radii, corridor signalization, weight restrictions, trailer access, interaction with bicycle/pedestrian facilities, maintenance (wear and tear), lighting, etc.; create maps of the designated routes.	High
Policy Regarding Use of Traffic Calming Measures on Freight Routes	Develop a policy to ensure traffic calming measures on freight routes are compatible with freight movement.	High
Immediate Freight Policies with Medium Implementation Needs		
Data Collection	Enhance data collection of truck counts, truck weights, truck speeds, commercial vehicle credentials checking/screening.	Mid
Dedicated Intersection Improvement Program	Develop a program to fund freight related intersection improvements similar to the Highway Safety Improvement Program (HSIP).	Mid
Commercial Vehicle Enforcement Efforts	Support commercial vehicle enforcement. Efforts can include assisting with educating law enforcement on how to identify unsafe vehicles; communicating to trucking companies about applicable rules, regulations, and reporting requirements; providing tools, equipment and/or staff as needed by CVE; and communicating to state leadership about the importance of enforcement activities.	Mid

Potential Project	Description	Level of Priority
Government-Private Sector Connections	Identify opportunities to strengthen connections between government and the private sector. These connections can be formalized through cooperative or interagency agreements. Potential opportunities include working together on educational programs, policy development, and infrastructure improvements.	Mid
Immediate Freight Policies with Low Implementation Needs		
Support Workforce Development Programs	Support programs that encourage employment in freight related industries (e.g., new driver training and career fairs)	Low
Facilitated Coordination of Land Use and Freight Planning	Collaborate with municipalities to minimize non-commercial/ industrial land in Ship Creek Valley, designate industrial reserves, protect rail corridors, and avoid noise sensitive land uses near airports; suggest avenues for cross agency/department collaboration to support industrial clusters and freight infrastructure in specific reserves; consider use of ARRC, JBER, and POA (on-port facilities) land for industry areas.	Low
Create Database of Public/Private Stakeholders	Update the electronic database of public and private stakeholders. Use the Annual Freight Forum database as a starting point.	Low
Promote/Incentivize Lower Emission Freight Modes and Technologies	Encourage lower emission modes and technologies to improve air quality.	Low

Table 10.6. Mid-Term (11-15 Years) Freight Policies Identified for Implementation

Potential Project	Description	Level of Priority
Mid-term Freight Policies with High Implementation Needs		
None Identified		
Mid-term Freight Policies with Medium Implementation Needs		
None Identified		
Mid-term Freight Policies with Low Implementation Needs		
Dedicated POA Fund Using Private and Public Funds	Develop a fund that can be used to finance POA improvement.	Low
Policy Regarding Loading Zones	Develop a policy to ensure loading zones can accommodate 53-foot-long trailer.	Low
Identify locations with conflicts between freight and pedestrians/ bicyclists	Identify potential truck conflict locations with bicycles and pedestrians and use engineering, enforcement, and education strategies to minimize these conflicts.	Low

Potential Project	Description	Level of Priority
Evaluate removal of weight restrictions during project development	Evaluate potential for removing seasonal weight restrictions when freight routes are reconstructed.	Low

Table 10.7. Long-Term (16+ Years) Freight Policies Identified for Implementation

Potential Project	Description	Level of Priority
Long-term Freight Policies with High Implementation Needs		
None Identified		
Long-term Freight Policies with Medium Implementation Needs		
None Identified		
Long-term Freight Policies with Low Implementation Needs		
Traffic Operations Center (TOC)	A TOC is needed in Anchorage to support Information Technology Systems.	Low

11. Implementation Strategy

This section presents short- and long-term implementation and funding strategies designed to address the freight needs identified in the FMS. Full implementation of the FMS will take many years given the expected levels of available funding. This implementation section reflects the following elements:

- Funding;
- Education; and
- Planning.

Each element is discussed below.

Funding

This section is presented in four areas: federal, state, local, and other funding.

Federal

At the federal level, the primary source of transportation funding is the Federal Gasoline Tax. Revenue from this tax goes to the Highway Trust Fund, which is a dedicated funding source for the Federal-Aid Highway Program. Other sources include the Federal Vehicle Taxes, Federal Diesel Tax, air passenger excise taxes, aviation fuel taxes, and appropriation from the General Fund. This revenue is then given back to states and other jurisdictions under various FHWA programs.

In December 2015, a new federal transportation funding bill, the FAST Act, was signed into law. The FAST Act recognizes and creates funds for freight improvements. Freight funding under the FAST Act is primarily through two programs:

- **National Highway Freight Program (NHFP):** The FAST Act provides $6.3 billion in formula funds to States over a 5-year period. Eligible projects are those that contribute to efficient freight movements on the National Highway Freight Network and are identified in a freight improvement plan included in a state's freight plan (FHWA, 2016).[5] States can use a maximum of 10 percent of its NHFP apportionment for intermodal or rail freight projects. Alaska has 1,222.23 miles in the National Highway Freight Network, including the Glenn and Seward Highways in Anchorage. Alaska is expected to receive $80 million in funding through this program (Martinson, 2015).
- **Fostering Advancements in Shipping and Transportation for the Long-Term Achievement of National Efficiencies (FASTLANE) Grant Program:** This new competitive grant program will provide $4.5 billion of funding to nationally and regionally significant freight and highway projects over the next 5 years. Funding will be identified *"to complete projects that improve safety and hold the greatest promise to eliminate freight bottlenecks and improve critical freight movements"* (U.S. Department of Transportation [DOT], n.d.). FASTLANE grants can be used for a maximum of 60 percent of total eligible project costs. However, 10 percent of FASTLANE grants are reserved for small projects, with a minimum grant amount of $5 million. In addition,

[5] Required in FY 2018 and beyond.

state Departments of Transportation need to spend at least 25 percent of each fiscal year's FASTLANE grants for project in rural areas (DOT, 2016).[6] States, Metropolitan Planning Organizations (MPOs), local governments, and tribal governments are among those organizations eligible to apply for a grant. Special purpose districts and public authorities (including port authorities), and other parties are eligible to apply for funding to complete projects that improve safety and hold the greatest promise to eliminate freight bottlenecks and improve critical freight movements.

State

The State of Alaska funds transportation improvements through money appropriated by the Alaska Legislature. Historically, State funding has been based on revenue from oil tax. In late 2014, crude oil prices dropped dramatically, resulting in a significant impact on the state's budget. As of August 2016, there is very little state money being spent on transportation improvements and this is likely to be the case for several years. In the future, the state is expected to resume making investments in transportation infrastructure, but the level of funding remains uncertain.

Anchorage also receives a share of the statewide general obligation (GO) bonds. While GO bonds are likely to be issued in the future, it is unknown when the next one will be issued or how funding would be provided to Anchorage.

Local

The MOA issues voter approved bonds to fund transportation improvement and to provide matching funds for federally funded projects within the Anchorage Roads and Drainage Service Area (ARDSA) and the Chugiak, Birchwood, Eagle River Rural Road Service Area (CBERRRSA).

Other

Public-Private Partnership

In recent years, there has been increasing interest in having public agencies and private entities work together to construct and operate critical transportation facilities and services. For example, ARRC, POA, and TSAIA could team with private entities to identify and implement public-private partnership (P3) solutions, as could DOT&PF or AMATS. While not all projects are suitable for P3, AMATS should consider this option for projects when it is practical and mutually beneficial.

Non-Freight Related Improvements

Non-freight related transportation improvements could also benefit freight movement in the AMATS region. AMATS uses an integrated approach to develop projects that address the needs of multiple user groups such as transit, bicycles, pedestrians, and roadways as well as freight. With this approach, AMATS can develop and program projects that primarily benefit other user groups but also have a positive impact on freight, potentially allowing AMATS to develop more efficient and cost effective projects. It may also reduce overall impacts to neighborhoods from transportation improvements.

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[6] According to FHWA, a rural area is an area outside a U.S. Census Bureau designated urbanized area with a population over 200,000.

Education

Education is an important element of freight mobility, especially in terms of workforce and community education. This section presents continuing education programs that could be used to support FMS implementation over time.

Workforce Education Program

Participants in the FMS process have indicated that one of the biggest challenges facing freight mobility in Anchorage is the ability to attract and retain a skilled workforce. Addressing this potential shortage in new truck drivers is critical for the future of freight mobility in Anchorage. Several areas to potentially promote include:

- Career Awareness: Students often make career decisions before they learn about transportation, so they do not consider or prepare for employment in the freight industry.
- Changing demographics: Younger workers have different expectations for work-life balance and flexible work situations. Employers may need to adjust their management approach to retain younger workers in this field.
- Changing technologies: Advances in technology has changed how freight companies operate. The increased use of technology has changed the skills that people need to fill positions. For example, companies may use computerized logistics systems for route planning rather than traditional methods.

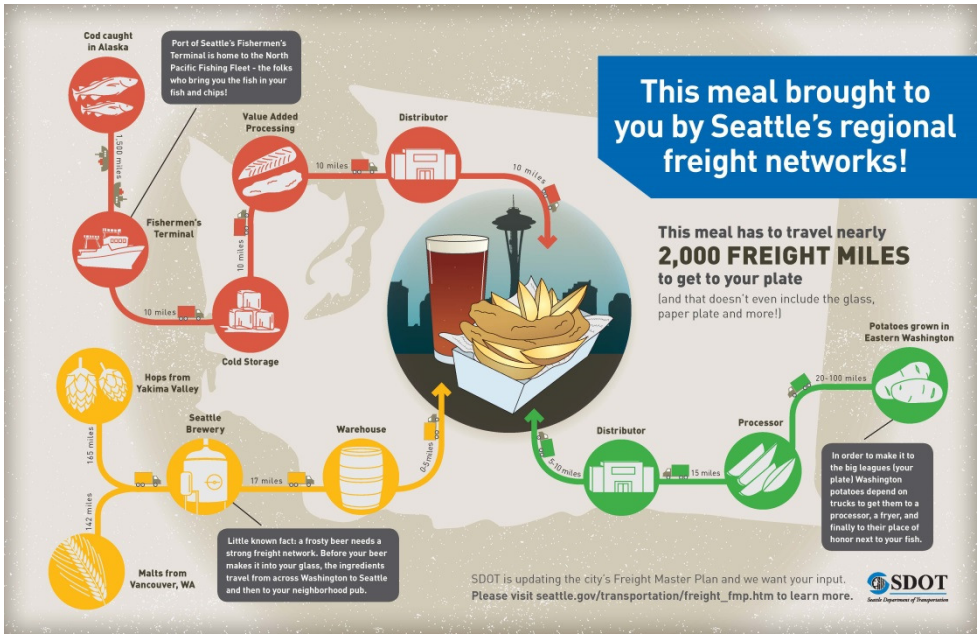
AMATS should continue to work with its partners, such as the Alaska Trucking Association, to pursue opportunities to support workforce education.

Community Education

AMATS should work with partners to provide broad education about the importance of freight and related activities to the Anchorage economy and quality of life. Many people do not understand how the goods they purchase are transported. By better understanding the freight system, people will hopefully support projects and policies designed to make the overall freight system operate more efficiently and safely.

Another component of community education is to educate drivers on how to better share the road with commercial vehicles. Many people do not realize the differences between how a car and large trucks operate. For example, trucks and buses have larger blind spots, need longer stopping distances, need longer time to stop, and may need to swing left to make a right hand turn. Driver education can increase the safety for everyone using the road system. In addition, AMATS could take this opportunity to fully take advantage of advanced technology to make distracted driving less tempting.

Figure 11.1. Infographic used by the City of Seattle to educate residents about freight



Source: City of Seattle

Agency Education

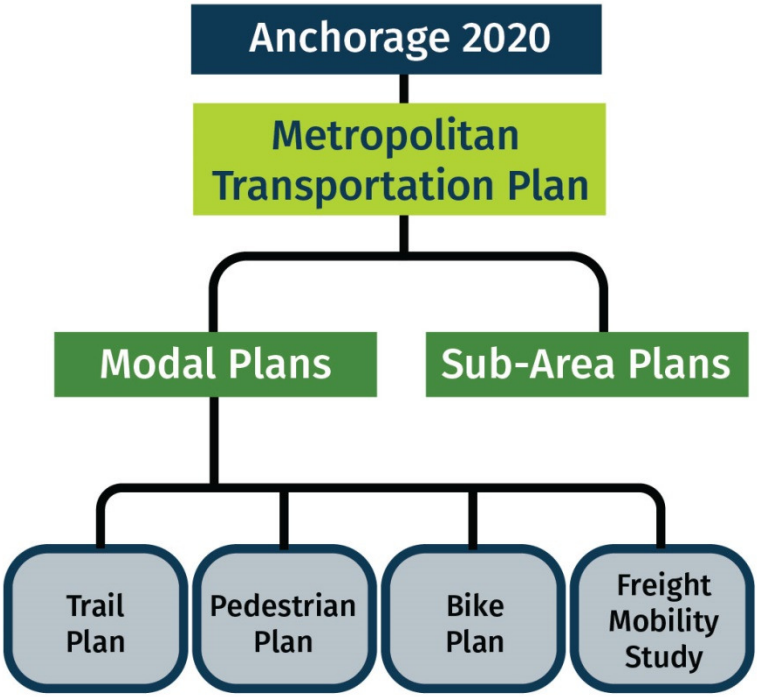
AMATS' FAC, must be actively involved in the implementation of this FMS, and, importantly, the continued education of the MOA, DOT&PF, and other regional public and private stakeholders in the Anchorage freight planning process. The FAC, while formalized for many years within AMATS, should be invited to actively participate in the development of the upcoming MTP Update and to promote the identification, assessment, and potential programming of freight-oriented projects during the MTP planning process. The FAC could be used as a continued forum for freight planning activities and to help identify and educate these stakeholders about the viability and benefits of how improved freight transportation infrastructure will help the agency and its constituents meet the needs for a growing and healthy economy.

Planning

Incorporate FMS into MTP

AMATS uses a Comprehensive, Cooperative, and Continuing (3C) planning process to help meet existing and future transportation needs in Anchorage. As part of the planning process, AMATS will prepare an MTP, starting the update in fall 2016. FMS recommendations should be incorporated into this updated MTP as shown in Figure 11.2.

Figure 11.2. Planning framework



The most simplistic approach to incorporating freight projects will be to build on to or modify the process of selecting multimodal projects. AMATS should be mindful during these processes to evaluate the degree to which they already may incorporate freight considerations. Upon this review, specific sections of the project selection process could be refined to include specific freight project definitions, data, and analysis sections, as well as performance measures to assess the impacts of all types of projects (including freight oriented projects) that benefit economic growth in the AMATS region.

Based on the review of existing evaluation processes, AMATS should identify specific data collection activities. For example, if there are evaluation criteria that use annual average daily traffic (AADT), they could be expanded to include annual average daily truck traffic (AADTT). Once the modifications have been developed, it will be critical that the necessary data be collected to support the changes. The recommended changes and new data requirements should be integrated into AMATS' procedures.

On-going Identification of Freight-Specific Projects and Policies

FMS identified needed freight projects covering a 20-year period, from 2016 to 2036. As needs and conditions change, there could be other projects and policies that are needed to improve freight mobility. AMATS, and its FAC, need to be aware of these changes and identify additional projects and policies that are needed. In addition, when new transportation projects are initiated, their potential impact on freight mobility and the region's economy should be considered.

To keep the FMS relevant, AMATS should update the project list every two years while other elements should be updated as needed to reflect changing conditions. This process, in addition to assessing freight projects to the call for projects of the MTP every five years, should keep freight oriented projects at the forefront in the AMATS planning and programming processes.

Commitment to Continuing Coordination with Key Freight Modes

This FMS was benefited from the input received from the FAC. The FAC engages the private sector, multiple modes, and end users of the freight system, in the planning process. AMATS should continue to engage the FAC to provide insight on future goods movement, identify freight needs when developing projects, identify freight concerns with site plans, providing input into land use plans, continued involvement with AMATS efforts, and outreach.

Implement Recommended Short-Term Freight Policies

To implement the FMS, several policies recommended in the Section 10 should be implemented over the short term to support this FMS. These include:

Implement Designated Regional Truck Route: A regional truck route network should be identified, signed, and enforced in the AMATS region as a means to concentrate heavy duty truck movements on selected roadways and corridors. While trucks use all system roadways, heavy duty truck movements need to be focused on key regional freight routes to protect communities, reduce neighborhood impacts, and alleviate bottlenecks. Figure 11.3shows the key freight routes recommended as designated regional truck routes, including:

- A/C Streets;
- Seward Highway;
- Glenn Highway; and
- International Airport Road.

Freight Corridor Designation and Design Standards: As part of the Designated Regional Truck Routes implementation strategy, freight corridor designation and design standards should be developed and implemented. Designated regional truck routes should not just accommodate trucks; they should be designed for trucks.

These standards will include pavement condition ratings, signage and wayfinding, turning radii, corridor signalization, utility and signal pole location, landscaping, weight restrictions, trailer access, interaction with bicycle/pedestrian facilities, maintenance (wear and tear), and lighting, among others. Detailed design criteria for streets on the freight network should be included in the MOA's Design Criteria Manual and DOT&PF's *Alaska Highway Preconstruction Manual*.

Designing for truck movements will often require balancing the needs of other, and sometimes competing, transportation modes. For example, lanes have to be wide enough to accommodate a truck without encroaching on adjacent lanes, but wider roadways are usually less pedestrian friendly. As each roadway segment has a different setting (e.g., dense urban, industrial, etc.) and needs, designs should be developed on a case-by-case basis.

Figure 11.3. Regional Truck Route

Truck Route Signage: To help enforce heavy duty truck usage of designed regional truck routes and educate truck drivers on using these specific corridors to access and egress the AMATS region, AMATS should work with the DOT&PF and MOA to implement a comprehensive truck route signage program. While many drivers are familiar with the Anchorage area, signage is particularly helpful to drivers who make infrequent trips here.

Ongoing FAC Facilitation and Integration into Freight Planning Activities: The FAC should be continued as a standing permanent committee within the AMATS planning process. This will facilitate freight planning activities and the development of the freight program in the AMATS region, as well as support and promote freight infrastructure project assessment and implementation in the overall transportation planning process in the AMATS region.

Formalized FAC Review of Site Plans: In cooperation with DOT&PF and MOA, AMATS should formalize the FAC's review of site plans and design reviews specifically related to a site's potential increase in truck movements, truck access and egress routes, use of alternative modes, impact to local neighborhoods and communities, and economic impact.

Due to the volunteer nature of the FAC, they may not be able to review all site plans. While they should focus on site plans that have substantial freight involvement (e.g., a new retail development), they can work with the MOA to educate planners regarding freight concerns to be aware of during the site plan review process for other projects.

Conduct Periodic Freight Stakeholder Surveys: In cooperation with the FAC, AMATS should develop surveys to obtain input from the freight community through periodic surveys (every 2-3 years) regarding their needs and concerns. This information will be used to support the development of specific freight-oriented projects and policies that can be implemented to help guide the AMATS transportation planning process.

Public Education: AMATS should expand educational efforts to advise motorists and pedestrians regarding safety issues associated with freight movement. For example, AMATS and the FAC could work with ARRC to identify ways to expand the reach of their existing Operation Lifesaver program.

Policy Regarding Use of Traffic Calming Measures on Freight Routes: Traffic calming measures are designed to slow traffic down. However, some traffic calming measures make freight movement challenging and potentially unsafe. For example, a curb extension reduces the crossing distance of a road and increases the ability for a pedestrian and vehicle to see the crossing in areas where a parking lane would block visibility. However, larger trucks sometimes drive over the curb when making a right turn, creating a potential conflict with pedestrians.

AMATS should develop a policy to ensure traffic calming measures on freight routes are compatible with truck movements. While there are no standard solutions to address freight conflicts with other modes of transportation, there are potential solutions. For example, on truck routes, instead of using curb extensions for pedestrians, they could be given longer crossing times.

12. Conclusion

The AMATS FMS was developed to identify existing conditions and future freight needs in the Anchorage area. Completion of this plan is an important milestone for freight planning in Anchorage. However, it is not the end of the process. AMATS will build upon the recommendations of the plan and carry them forward into the MTP and other implementation actions.

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