



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

DRAFT Recommended Alternative Selection Criteria Memorandum

May 2022

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

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

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Acronyms and Abbreviations

ADT	average daily traffic
AMATS	Anchorage Metropolitan Area Transportation Solutions
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DOT&PF	Alaska Department of Transportation and Public Facilities
FHWA	Federal Highway Administration
LRTP	Long Range Transportation Plan
MTP	Metropolitan Transportation Plan
NEPA	National Environmental Policy Act
NHS	National Highway System
PEL	Planning and Environmental Linkages
USC	U.S. Code
VMT	vehicle miles traveled

1. Introduction

1.1 Background

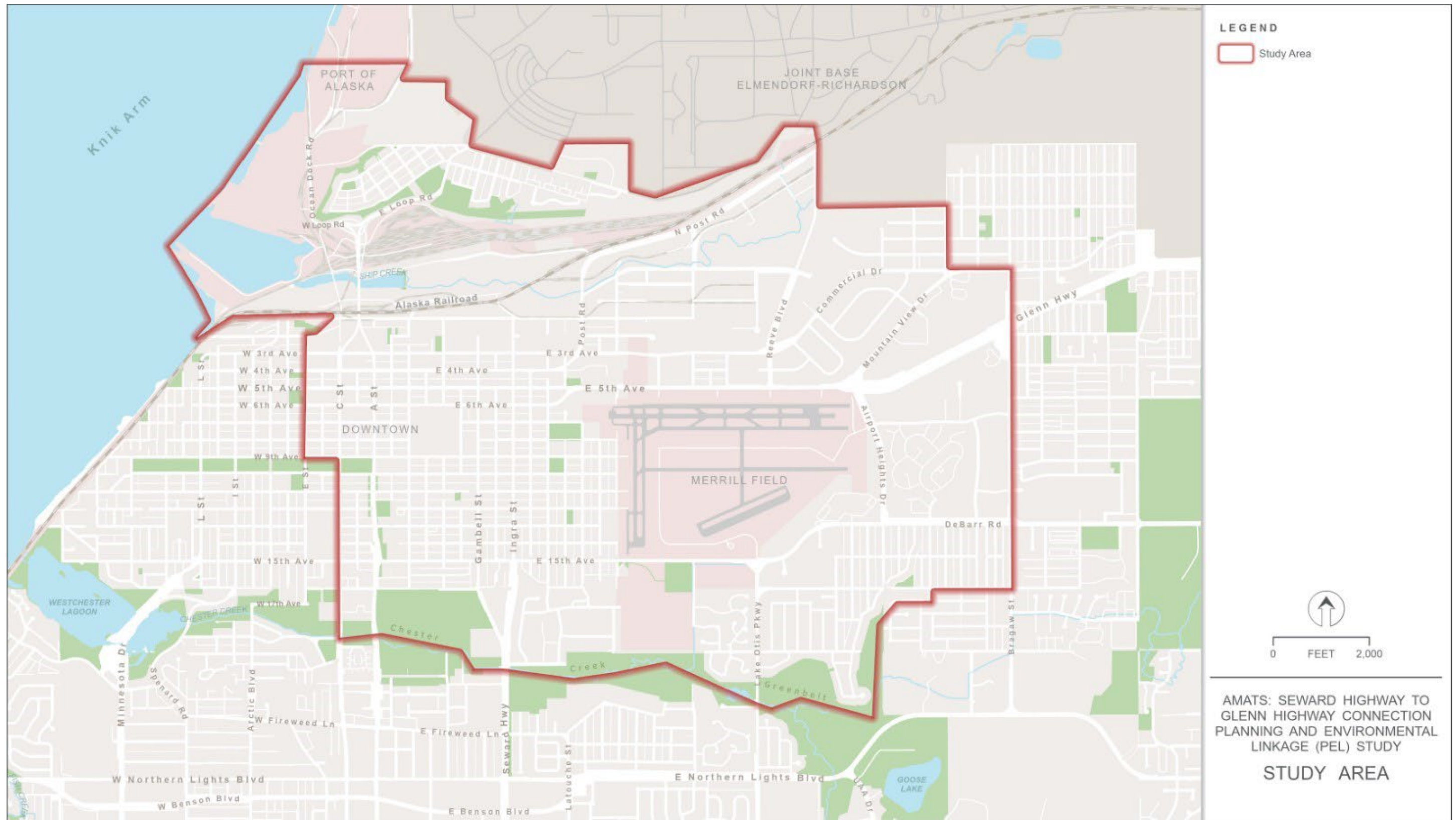
The purpose of this memorandum, consistent with 23 United States Code (USC) 168 and 23 Code of Federal Regulations (CFR) 450.212 and 450.318, is to describe the alternative evaluation screening process and criteria that will be used to evaluate alternatives.

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

This *Recommended Alternative Selection Criteria Memorandum*, developed as part of the PEL Study process, is meant to document the criteria and process used for completing two levels of alternatives screening, leading to the selection of a Recommended Alternative or Alternatives. The screening criteria described below were developed from the Seward-Glenn Mobility PEL Study Purpose and Need Statement as well as in consideration of socioeconomic and environmental factors relevant to the study area. The alternatives screening process will be conducted during a later phase of this PEL Study using the process described below. The results of this process may be adopted or incorporated by reference by a relevant agency during a later environmental review process.

Any metropolitan transportation planning process must be continuous, cooperative, and comprehensive, and must provide for consideration and implementation of projects, strategies, and services that will address the metropolitan transportation planning process factors (23 CFR 450.306), as applicable.

Figure 1. Project Study Area



1.2 Alternatives Screening Process

The screening process tests the performance of alternatives by using criteria that identify whether an alternative reasonably meets the study's purpose and needs, and is acceptable from technical, environmental, community, economic, and cost perspectives. For this PEL Study, the process starts with several preliminary alternatives and then screens them down to a smaller number of alternatives for refinement before ending with the identification of a Recommended Alternative or Alternatives.

23 USC 168(c)(1)(D) authorizes the "preliminary screening of alternatives and elimination of unreasonable alternatives" during the PEL Study process, and the adoption or incorporation by reference of that elimination decision during the environmental review process.

According to Federal Highway Administration (FHWA) and the Council on Environmental Quality (CEQ) regulations and guidance,¹ there are three primary reasons why an alternative might be determined to be not reasonable² during the screening process and eliminated from further consideration:

1. An alternative does not satisfy the purpose and need of the project.
2. An alternative is determined not to be practical or feasible³ from a technical and economic standpoint and using common sense.⁴
3. An alternative substantially duplicates another alternative; that is, it is otherwise reasonable but offers little or no advantage for satisfying the project's purpose and it has greater impacts and/or costs⁵ than other, similar alternatives.

The alternatives screening process described in Table 1 is designed to identify alternatives that trigger one or more of the three items listed above, thereby determining it to be not reasonable and eliminated from further consideration.

The screening process will consist of two steps: Initial Alternatives Screening (Level 1) and Detailed Alternatives Screening (Level 2). Initial Alternatives Screening is intended to be a coarse-level screening focused on screening out the preliminary alternatives that fail to address

¹ AASHTO (American Association of State Highway and Transportation Officials). 2016. *Practitioner's Handbook #7: Defining the Purpose and Need, and Determining the Range of Alternatives for Transportation Projects*. August 2016). Available at: <https://environment.transportation.org/wp-content/uploads/2021/05/ph07-2.pdf?msclkid=f9da01a9c03f11ec9eb286bb046fc009>

² Alternatives can be eliminated in the screening process based on any factor that is relevant to reasonableness. An alternative that does not meet the purpose and need is, by definition, unreasonable. For that reason, it can be eliminated in the screening process. An alternative that does meet the purpose and need can still be rejected as unreasonable based on other factors, including environmental impacts, engineering, and cost. For example, if two alternatives both meet the purpose and need to a similar degree, but one is much higher impact and more costly, those factors can be cited as a basis for rejecting the higher-impact alternative as unreasonable (AASHTO 2016).

³ "Feasibility" considers if the alternative is physically incapable of being built or has other technical issues that are so challenging that they result in unusually difficult construction requirements, ongoing maintenance difficulties, or other unacceptable environmental or social impacts.

⁴ This item comes from the Forty Most Asked Questions Concerning CEQ's NEPA Regulations, Question 2a. Note that "feasible" is different from the "feasible and prudent" definition at 23 CFR 774.17. The term "common sense" as expressed in the screening process is defined by the best judgment of subject matter experts.

⁵ While costs will be a consideration in the development and screening of alternatives, there are no maximum cost criteria identified at this time. There will be a financial evaluation and report prepared for the project later in the process that could identify a cost ceiling. If this occurs, the cost ceiling screen will be applied to all reasonable alternatives under consideration at the time. If a cost ceiling is not identified, then costs will be utilized for alternatives comparison purposes only.

the needs identified in the Purpose and Need Statement. Alternatives that score poorly may be identified as unreasonable and eliminated from further consideration during the second screening step.

The preliminary alternatives carried forward from Initial Alternatives Screening will be refined into detailed alternatives. Refining the preliminary alternatives will produce information about each alternative’s design, environmental impacts, and cost. The project team may make refinements to the alternatives, such as including desirable elements to each alternative based on the results of the Initial Alternatives Screening, with the intent of creating a alternatives that best meet the purpose and need statement. Detailed alternatives will include enough design to develop a right-of-way footprint and to determine feasibility. Technical, environmental, and economic screening criteria will be used in the Detailed Alternatives Screening process. Each alternative’s performance will be determined for each screening criterion and a respective score will be assigned. The resulting scores will allow for the comparison of alternatives’ performance and identification of the best-performing alternatives. The best-performing alternative(s) may be identified as the Recommended Alternative or Alternatives.

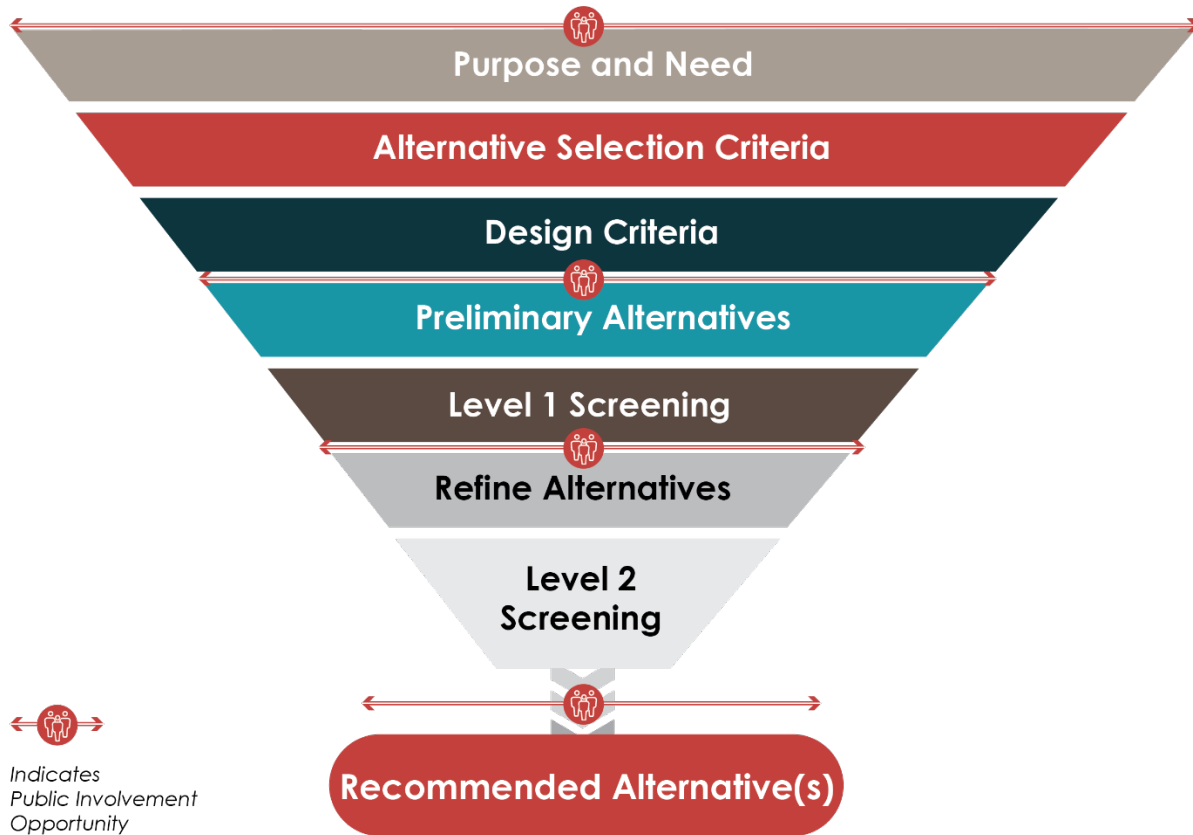
Table 1. Alternative Screening Process for the Seward Glenn Mobility PEL Study

Screening Step	Description
1. Purpose and Need	DOT&PF and AMATS developed a draft purpose and need statement based on transportation deficiencies in the study area as identified through public input, traffic demand modeling and forecasting, and research of the current conditions. The Purpose and Need Statement for the study will inform the development of alternatives, screening criteria, and the alternative screening process.
2. Alternative Selection Criteria	Develop alternatives selection criteria that measure the extent to which an alternative will meet the purpose and need for use in Level 1 of the screening process.
3. Design Criteria	Develop design criteria that support the desired facility performance and that will be used to prepare the preliminary alternatives. The design criteria will be consistent with adopted plans that convey the community’s intent for the study area’s transportation system.
4. Preliminary Alternatives	Develop preliminary alternatives that respond to the Purpose and Need Statement based on previous studies, public and agency input during the outreach process, and local and regional land use and transportation plans.
5. Level 1 Screening	Conduct the Level 1 Screening (Initial Alternatives Screening) of preliminary alternatives to eliminate alternatives that do not meet the purpose of and needs for the study.
6. Refine Alternatives	Advance alternatives that pass the Level 1 screening process, refining them to improve upon their ability to meet the purpose and need and to attempt to avoid and minimize impacts to social, economic, and natural resources.
7. Level 2 Screening	Conduct Level 2 Screening (Detailed Alternatives Screening) to allow identification of reasonable alternatives and a recommended alternative or alternatives. The Level 2 screening will be based on a basic description of the environmental setting for use in the PEL Study report, which includes a concise description of existing social, economic, and environmental conditions within the study area.
8. Recommended Alternative or Alternatives	Identify a recommended alternative or alternatives in the PEL Study report that may be carried into subsequent project development and NEPA processes.

Notes: AMATS = Anchorage Metropolitan Area Transportation Solutions; DOT&PF = Alaska Department of Transportation and Public Facilities; NEPA = National Environmental Policy Act

Figure 2 presents an overview of the screening process.

Figure 2. Overview of Alternatives Development and Screening Process



2. Level 1 Screening: Initial Alternatives Screening

2.1 Purpose and Need

During the Level 1 alternatives screening phase, each of the preliminary alternatives will be evaluated using criteria that identify whether the alternative meets the purpose of and need for the study.

The purpose of the Level 1 screening is to eliminate alternatives that do not meet the study's purpose and need.

The draft Purpose and Need Statement is:

Purpose

The purpose of the PEL Study is to improve mobility,⁶ accessibility,⁷ and safety for people and goods traveling by all modes on or across the roadway system connecting the Seward Highway, the Glenn Highway, and the Port of Anchorage. The intent is to (1) maintain the functionality of the National Highway System,⁸ (2) meet the local travel needs of residents who must safely travel across or along those roadways and (3) improve neighborhood connections.

Needs

Conflicting Travel Functions

Serving competing regional and local travel functions on the highway network in the study area leads to conflicts that reduce mobility, safety, and accessibility for all users.

Safety

Crashes for vehicles and people walking and bicycling are elevated at several study area intersections.

Social Demands and Economic Development

Current street design on the Seward/Glenn Highway corridor in the study area is inconsistent with the vision expressed in recently adopted plans and is adversely affecting neighborhood redevelopment efforts, community cohesion, and quality of life.

The study's final Purpose and Need Statement is still under development. The Purpose and Need Statement and these screening criteria will not be finalized until after the public and agencies have had an opportunity to comment on both.

2.2 Level 1 Screening Criteria

The project team developed Level 1 screening criteria based on the draft Purpose and Need Statement (see Table 2). Additionally, the screening criteria were developed in consideration of the metropolitan transportation planning factors (23 CFR 450.306). The factors are:

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
2. Increase the safety of the transportation system for motorized and non-motorized users;
3. Increase the security of the transportation system for motorized and non-motorized users;
4. Increase accessibility and mobility of people and freight;

⁶ Mobility is defined as "The ability to move or be moved from place to place"

(<https://www.fhwa.dot.gov/planning/glossary/index.cfm>).

⁷ Accessibility is defined as "The ease of reaching valued destinations, such as jobs, shops, schools, entertainment, and recreation" (<https://ops.fhwa.dot.gov/publications/fhwahop12004/glossary.htm>).

⁸ The NHS includes the Interstate Highway System as well as other roads important to the nation's economy, defense, and mobility. These are highways in rural and urban areas that provide access between an arterial and a major port, airport, public transportation facility, or other intermodal transportation facility (https://www.fhwa.dot.gov/planning/national_highway_system/).

5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns;
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
7. Promote efficient system management and operation;
8. Emphasize the preservation of the existing transportation system;
9. Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation; and
10. Enhance travel and tourism.

Table 3 shows how the screening criteria are aligned to the Planning Factors.

The screening criteria also considered the *Statewide Long Range Transportation Plan* (LRTP) and *2040 Metropolitan Transportation Plan* (MTP) goals and objectives. The Statewide LRTP establishes a vision for the state's transportation system. The LRTP has eight policy goals that guide the state's transportation investment decisions. The policy goals are:

- Develop new capacity and connections that cost-effectively address transportation system performance;
- Make the existing transportation system better and safer through transportation system improvements that support productivity, improve reliability, and reduce safety risks to improve performance of the system;
- Manage the Alaska Transportation System to meet infrastructure condition performance targets and acceptable levels of service for all modes of transportation;
- Manage and operate the system to improve operational efficiency and safety;
- Promote and support economic development by ensuring safe, efficient, and reliable access to local, national, and international markets for Alaska's people, goods, and resources, and for freight-related activity critical to the state's economy;
- Improve transportation system safety and security;
- Incorporate livability, community, and environmental considerations in planning, delivering, operating, and maintaining the Alaska Transportation System; and
- Ensure broad understanding of the level, source, and use of transportation funds available to the Alaska Department of Transportation and Public Facilities (DOT&PF); and provide and communicate the linkages between this document, area transportation plans, asset management, other plans, program development, and transportation system performance.

The 2040 MTP goals and objectives were also considered when developing the alternative selection criteria because they provide general guidelines about what the community intends to achieve with the transportation system. The MTP 2040 goals are shown in Figure 3.

Figure 3. MTP 2040 Goals



To facilitate Level 1 screening, DOT&PF and Anchorage Metropolitan Area Transportation Solutions (AMATS) will develop the preliminary alternatives with sufficient detail to allow use of the AMATS travel demand model to forecast future travel volumes and associated travel metrics. The results of the screening process will be documented in the *Initial Alternatives Screening Technical Memorandum*.

Alternatives that are determined by DOT&PF and AMATS to not meet the study's purpose and need will be considered unreasonable for National Environmental Policy Act (NEPA) purposes. Such alternatives will not be carried forward for further analysis. The basis for determination will be documented in the *Initial Alternatives Screening Technical Memorandum*.

The preliminary alternatives, screening criteria, and results will be presented to the public for comment before they are finalized. Preliminary alternatives that are not eliminated during Level 1 screening will be refined and advanced to Level 2 screening.

Table 2. Level 1 Screening Criteria (Purpose and Need)

Criterion/Purpose and Need Category	Measure	Data and Method	Why the Measure is Important
Safety	Number of crashes with the Build Condition compared to the No Action Condition	<p><u>Data</u></p> <ul style="list-style-type: none"> • Safety statistics by roadway classification • VMT/ADT by roadway functional classification <p><u>Method</u></p> <ul style="list-style-type: none"> • Travel demand model will be used to forecast travel by functional classification type 	The number of crashes that can be expected varies based on several factors, including traffic volume and functional classification. Having a transportation network that reduces the number of crashes improves safety.
	Number of conflict points (intersections) between vehicles and non-motorized users	<p><u>Data</u></p> <ul style="list-style-type: none"> • Existing multimodal facilities such as trails and sidewalks • Existing road network • Assumed preliminary project network <p><u>Method</u></p> <ul style="list-style-type: none"> • GIS will be used to calculate the number of intersections in the study area 	Conflict points are where a vehicle can potentially crash with a pedestrian or bicyclist. Intersections are planned points of conflict. Reducing the number of conflict points can increase safety.
	Number of vehicle conflict points with the Build Condition compared to the No Build Condition.	<p><u>Data</u></p> <ul style="list-style-type: none"> • Existing road network • Assumed preliminary project network <p><u>Method</u></p> <ul style="list-style-type: none"> • GIS will be used to calculate the number of intersections in the study area 	Conflict points are points where a vehicle can potentially crash with another vehicle. Conflicts may arise due to diverging, merging, crossing, or weaving. The number of conflict points can measure safety improvements and crash risk. Reducing the number of conflict points can increase safety.
Conflicting Functions	Peak period freight travel time	<p><u>Data</u></p> <ul style="list-style-type: none"> • Travel time using proposed corridors for freight modes measured to and from key freight origins/destinations <p><u>Method</u></p> <ul style="list-style-type: none"> • Travel demand model will be used to provide results for each mode evaluated; the model will produce travel times. • Travel time will be computed to and from key freight destinations 	A well-functioning freight system is essential to the Anchorage economy. Travel time delays can have a substantial impact on the cost of freight movement.

Criterion/Purpose and Need Category	Measure	Data and Method	Why the Measure is Important
	Peak period travel time	<p><u>Data</u></p> <ul style="list-style-type: none"> Travel time using proposed corridors measured to and from key origins/destinations <p><u>Method</u></p> <ul style="list-style-type: none"> Travel demand model will be used to provide results for each mode evaluated; the model will produce travel times GIS analysis will be used to compute changes in travel time 	
	Miles of roadway in study area that have a peak period volume-to-capacity ratio above 0.8	<p><u>Data</u></p> <ul style="list-style-type: none"> Volume-to-capacity ratio <p><u>Method</u></p> <ul style="list-style-type: none"> GIS will be used to calculate the mileage in the study area that meets this measure 	Volume-to-capacity ratio measures the level of congestion in a transportation system. In general, a volume-to-capacity ratio below 0.8 (which is equivalent to Level of Service D) is considered acceptable.
	Peak period delay	<p><u>Data</u></p> <ul style="list-style-type: none"> Peak period delay <p><u>Method</u></p> <ul style="list-style-type: none"> Travel model outputs will be compared 	Delay is the amount of extra travel time caused by congestion. Reducing the delay in the system improves transportation mobility. It also has air quality benefits along with cost savings benefits to the travelling public.
	Miles of road with an average peak period travel within 20% of design speed	<p><u>Data</u></p> <ul style="list-style-type: none"> Peak period speed Design speed <p><u>Method</u></p> <ul style="list-style-type: none"> Travel model outputs will be compared 	Travel speed relates to a road's function. Higher functioning roads such as highways and arterials typically have higher speeds than collectors and local roads. Excessive speed increases the risk of a crash and makes a road uncomfortable for non-motorized users. Lower speeds can result in traffic cutting through neighborhoods in search of a faster route. Having traffic travel at an appropriate speed for the road function improves system efficiency for all users.

Criterion/Purpose and Need Category	Measure	Data and Method	Why the Measure is Important
Social Demands and Economic Development	Consistency with <i>Anchorage 2020</i> , <i>Anchorage 2040 Land Use Plan</i> , <i>Fairview Neighborhood Plan</i> , and other land uses plans	<p><u>Data</u></p> <ul style="list-style-type: none"> Data on goals, land use, etc. from other municipal plans <p><u>Method</u></p> <ul style="list-style-type: none"> A GIS overlay of the alternatives will be compared to the <i>Anchorage 2040 Land Use Plan</i> map A qualitative evaluation of the study alternatives based on plan goals and recommendations will be conducted 	The construction and operation of transportation facilities can have positive and negative effects on existing and future economic activities. Planned economic development, population, and job growth should be considered when screening alternatives to ensure that existing and future conditions are accounted for.
	Regional VMT	<p><u>Data</u></p> <ul style="list-style-type: none"> Peak period VMT <p><u>Method</u></p> <ul style="list-style-type: none"> Travel model outputs will be compared 	VMT is one way to measure the total vehicle usage in an area. Reducing VMT can result in reductions to greenhouse gas emissions. It can also help determine if land use and transportation goals are being met as denser development patterns, better connected transportation networks, etc. often result in lower VMT.
	Regional VMT per capita	<p><u>Data</u></p> <ul style="list-style-type: none"> Peak period VMT Population <p><u>Method</u></p> <ul style="list-style-type: none"> Travel model outputs will be compared on a per capita basis 	Decreasing VMT per capita measures the efficiency of a transportation system in moving people.
	Impacts to Section 4(f) resources	<p><u>Data</u></p> <ul style="list-style-type: none"> Data on likely Section 4(f) resources <p><u>Method</u></p> <ul style="list-style-type: none"> A GIS overlay of the alternatives will be compared to the likely Section 4(f) resources 	Section 4(f) of the Department of Transportation Act of 1966 specifies that a transportation project requiring the use of publicly owned parks, recreation areas, historic sites (including those owned privately), wildlife and waterfowl refuges, and many other types of resources can be approved only if there is no feasible and prudent alternate to using that land and if the project is planned to minimize harm to the property.

Notes: ADT = average daily traffic; GIS = Geographic Information Systems; VMT = vehicle miles traveled

Table 3. Comparison of Level 1 Screening to Planning Factors

Screening Measure	Planning Factors (23 CFR 450.306) ^a									
	1. Support economic vitality	2. Increase safety	3. Increase security	4. Increase accessibility and mobility	5. Protect environment, energy conservation, the quality of life, and economic development	6. Enhance connectivity across and between modes	7. Promote efficient system management and operation	8. Emphasize preservation of the existing transportation system	9. Improve resiliency and reliability	10. Enhance travel and tourism
Number of crashes with the Build Condition compared to the No Action Condition	X	X	-	X	-	X	X	-	-	-
Number of conflict points (intersections) between vehicles and non-motorized users	-	X	-	X	X	X	X	-	-	-
Number of vehicle conflict points with the Build Condition compared to the No Action Condition	-	X	-	X	X	X	X	-	-	-
Peak period freight travel time	X	-	-	X	-	X	X	-	-	-
Peak period travel time	X	-	-	X	-	-	X	-	-	-
Miles of roadway in study area that have a peak period volume-to-capacity ratio above 0.8	X	X	-	X	-	-	X	X	X	-
Peak period delay	X	X	-	-	X	-	-	-	-	-
Miles of road with an average peak period travel within 20% of design speed	-	-	-	X	X	X	X	-	-	-

Screening Measure	Planning Factors (23 CFR 450.306) ^a									
	1. Support economic vitality	2. Increase safety	3. Increase security	4. Increase accessibility and mobility	5. Protect environment, energy conservation, the quality of life, and economic development	6. Enhance connectivity across and between modes	7. Promote efficient system management and operation	8. Emphasize preservation of the existing transportation system	9. Improve resiliency and reliability	10. Enhance travel and tourism
Consistency with <i>Anchorage 2020</i> , <i>Anchorage 2040 Land Use Plan</i> , and other land uses plans	X	-	-	X	X	X	-	X	X	X
Regional VMT	X	-	-	X	-	-	X	-	-	-
Regional VMT per capita	X	-	-	X	X	-	X	-	-	-
Impacts to Section 4(f) resources	-	-	-	-	X	-	-	-	-	-

Notes: VMT = vehicle miles traveled

^a Full text of each planning factor is listed at 23 CFR 450.306

3. Level 2 Screening: Detailed Alternatives Screening

Alternatives carried forward from Level 1 screening will be refined into detailed alternatives and evaluated in Level 2 screening. The detailed alternatives will be documented in the *Final Detailed Alternatives Development Report*. The purpose of Level 2 screening is to determine which alternatives are reasonable for NEPA purposes and to identify recommendations. During Level 2 screening, DOT&PF and AMATS will evaluate the alternatives carried forward from Level 1 screening against criteria that focus on their environmental impacts, costs, and technical feasibility. Environmental impacts will be documented in the *Draft Environmental Impacts Memorandum*. At the conclusion of Level 2 screening, a Recommended Alternative or Alternatives will be identified for a subsequent preliminary engineering and NEPA process. The Level 2 screening criteria are shown in Table 4.

To accommodate Level 2 screening, DOT&PF and AMATS will develop the detailed alternatives at a higher level of detail to compare environmental impacts, costs, and feasibility. Rationale for rankings or groups will be documented in the *Preferred Alternative Selection Memorandum*. The detailed alternatives, screening criteria, and results will be presented to the public for comment before they are finalized.

Table 4. Level 2 Screening Criteria (Engineering and Environmental Impacts)

Criterion	Measure	Method	Why the Measure is Important
Environmental Impacts	Impacts to the human and natural environment: <ul style="list-style-type: none"> • Land Use • Social Impacts • Relocation Impacts • Economic Impacts • Joint Development • Impacts on Pedestrians and Bicyclists • Air Quality Impacts • Noise Impacts • Water Quality Impacts • Permits • Wetland Impacts • Water Body Modifications and Wildlife Impacts • Floodplain Impacts • Historic and Archaeological Preservation • Hazardous Waste Sites • Visual Impacts • Energy • Construction Impacts • Relationship of Local Short-Term Uses versus Long-Term Productivity • Irreversible and Irrecoverable Commitment of Resources 	<u>Quantitative</u> <ul style="list-style-type: none"> • Evaluate key environmental constraints using GIS data and required right-of-way footprint <u>Qualitative</u> <ul style="list-style-type: none"> • When GIS or quantitative data is not available, professional judgement will be applied 	The construction and operation of transportation facilities may cause temporary or permanent direct or indirect impacts to the human and natural environment along the corridor. These impacts should be assessed, considered, and documented during the alternatives screening process.

Criterion	Measure	Method	Why the Measure is Important
Technical Feasibility	<ul style="list-style-type: none"> Reasonableness of constructability considering available technology 	<u>Quantitative</u> <ul style="list-style-type: none"> Evaluate constructability of alternative 	Determines if the alternative has a reasonable chance of being successfully constructed.
	<ul style="list-style-type: none"> Presence of construction, operation, or maintenance constraints that cannot be overcome 	<u>Quantitative</u> <ul style="list-style-type: none"> Evaluate construction, operation, and maintenance considerations Consider possible phasing of recommendations 	Determines if the alternative is able to successfully be constructed, operated, and maintained within a reasonable period of time considering economic and other constraints.
Economic Feasibility	<ul style="list-style-type: none"> Preliminary cost to construct alternative 	<u>Quantitative</u> <ul style="list-style-type: none"> Preliminary construction cost estimate 	Overall cost will dictate the level of funding required and if it is attainable and appropriate for the level of benefit in comparison to other alternatives.
	<ul style="list-style-type: none"> Preliminary cost to maintain alternative 	<u>Quantitative</u> <ul style="list-style-type: none"> Preliminary annual maintenance cost estimate 	High levels of maintenance funding and allocation of resources may not match the appropriate level of benefit in comparison to other alternatives.

4. Identification of a Recommended Alternative or Alternatives

The process of identifying one or more recommended alternatives in a PEL Study is similar to the process used during the NEPA phase of a project. As described in Section 430.6.6 of the *Alaska Highway Preconstruction Manual*, factors to consider include ability to satisfy purpose and need (which includes safety), direct and indirect impacts, avoidance of sensitive resources, and cost.

An alternative that is “recommended” in a PEL Study means that it is considered reasonable and feasible and recommended for consideration as the Preferred Alternative or Alternatives during subsequent NEPA and project development.

An alternative that is “not recommended” means that it will not be evaluated further in the PEL Study due to comparatively negligible benefits and higher impacts than other alternatives but may be studied further with subsequent NEPA and project development.

An alternative that is “eliminated” means that it does not meet the purpose and need established with this study or the alternative is unreasonable due to impacts and/or infeasibility.

Identification of the Recommended Alternative or Alternatives will be documented in the *Recommended Alternative Selection Memorandum*.