



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

Recommended Alternative Selection Criteria Memorandum

January 2023

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
GIS	Geographic Information Systems
LRTP	Long Range Transportation Plan
LTS	Level of Traffic Stress
MOA	Municipality of Anchorage
MTP	Metropolitan Transportation Plan
NEPA	National Environmental Policy Act
NHS	National Highway System
PEL	Planning and Environmental Linkages
POA	Port of Alaska
ROM	Rough Order of Magnitude
USC	U.S. Code
VMT	vehicle miles traveled

1. Introduction

1.1 Background

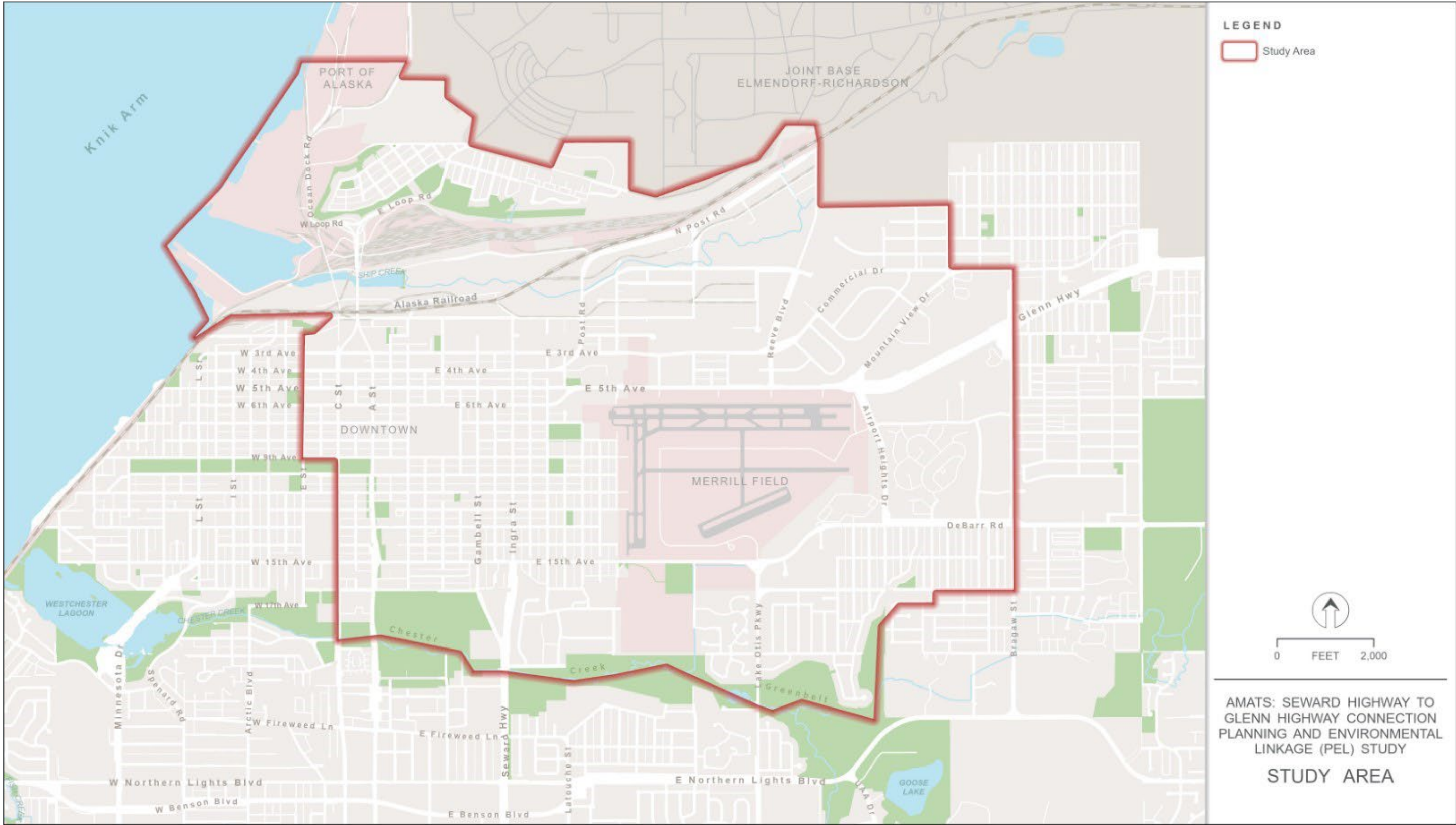
The purpose of this memorandum, consistent with 23 United States Code (USC) 168 and 23 Code of Federal Regulations (CFR) 450.212 and 450.318, is to describe the alternative evaluation screening process and criteria that will be used to evaluate alternatives.

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 (POA) 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

This PEL Study approach for developing and screening alternatives was developed to be consistent with federal guidelines, consider a wide array of transportation options, and conduct a methodical screening process to identify the alternative(s) that best meet the study's purpose and need while also considering other factors. 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.

The process consists of several steps, including alternatives development, Initial (Level 1) Alternatives Screening, further alternatives refinement, and Detailed (Level 2) Alternatives Screening, and ends with the identification of a Recommended Alternative or Alternatives. Initial Alternatives (Level 1) Screening is intended to be a coarse-level screening focused on eliminating the preliminary alternatives that fail to address the needs identified in the Purpose and Need Statement. This level will entail modeling preliminary alternatives and developing qualitative and quantitative evaluation measures. Detailed (Level 2) Alternatives Screening will analyze the smaller subset of alternatives that pass the initial (Level 1) screening, which will be developed to a high level of detail. The Detailed (Level 2) Alternatives Screening will use screening criteria that focus on environmental impacts, costs, and technical feasibility, with the intent of showing differences between the detailed alternatives and resulting in the identification of a Recommended Alternative or Alternatives.

Federal regulations at 23 USC 168(c)(1)(D) authorize 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. Federal regulations at 23 CFR 450 require that the alternatives development and evaluation process is rational, thoroughly documented, and includes public involvement. Additionally, the Alaska Department of Transportation and Public Facilities (DOT&PF) *Planning and Environmental Linkages (PEL) Guidebook*¹ provides guidance regarding the alternatives development and evaluation process. This PEL Study will follow applicable statutes, regulations, and DOT&PF guidance throughout the process.

According to Federal Highway Administration (FHWA) and the Council on Environmental Quality (CEQ) regulations and guidance,² there are three primary reasons why an alternative might be determined to be not reasonable³ during the screening process and eliminated from further consideration:

¹ Available at https://dot.alaska.gov/rfpdocs/25213030/pel_guidebook.pdf

² 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>

³ 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; see previous footnote).

1. An alternative does not satisfy the purpose and need of the project.
2. An alternative is determined not to be practical or feasible⁴ from a technical and economic standpoint and using common sense.⁵
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 costs⁶ than other, similar alternatives.

The alternatives screening process summarized 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 eliminating it from further consideration.

The draft screening measures were shared with the public and provided for public comment during the second Public Meeting (May 25, 2022) and comment period (May 23 to June 24, 2022). The criteria have been updated to reflect the input received. The preliminary alternatives and draft screening results will be shared with the public to gather ideas and comments. 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 (Level 1) 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 alternatives that best meet the Purpose and Need Statement. Detailed alternatives will include enough design to develop a right-of-way footprint and determine feasibility. Technical, environmental, and economic screening criteria will be used in the Detailed (Level 2) 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.

⁴ "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.

⁵ This item comes from the *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act 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.

⁶ While costs will be a consideration in the development and screening of alternatives, no maximum cost criteria have been identified at this time. A financial evaluation and report will be 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 used for alternatives comparison purposes only.

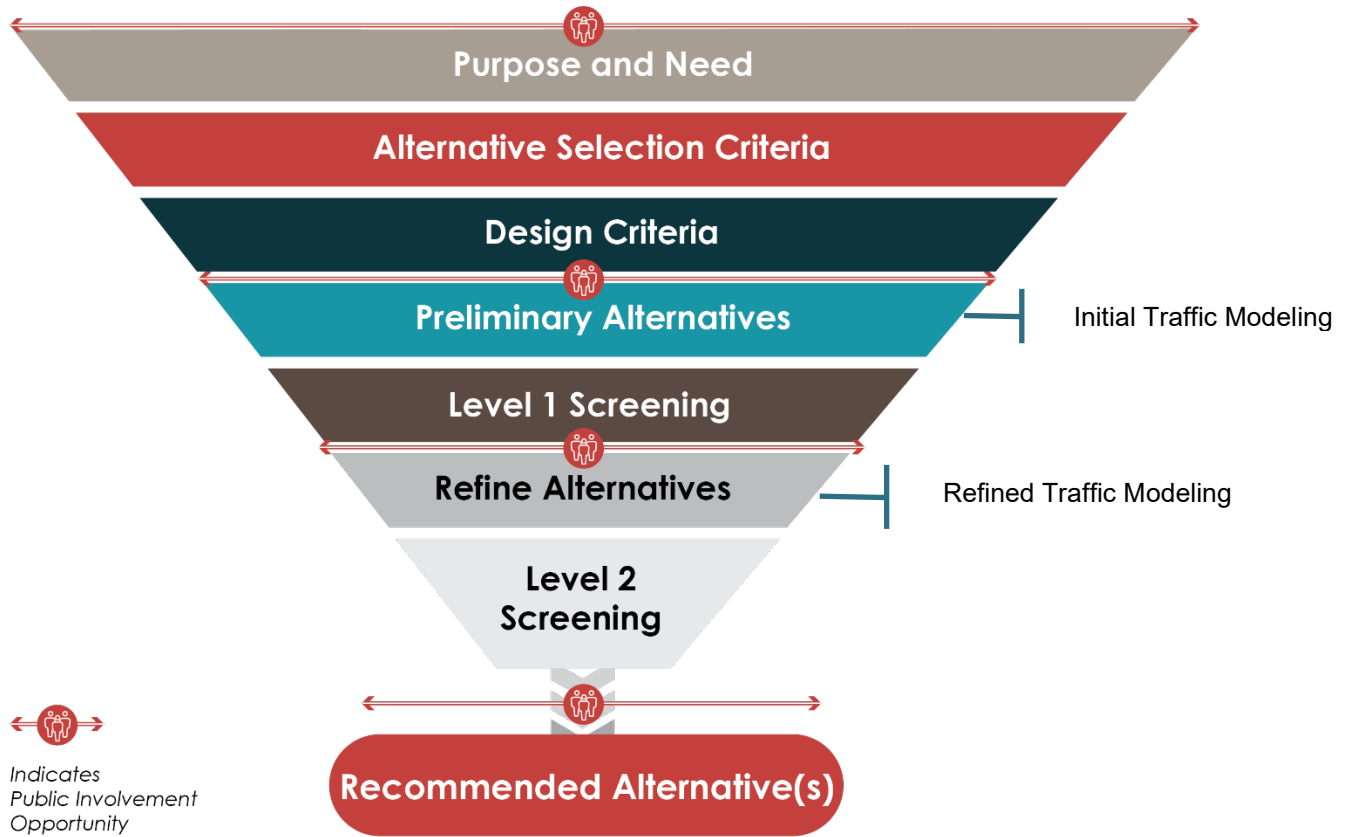
Table 1. Alternative Screening Process for the Seward-Glenn Mobility PEL Study

Screening Step	Description
1. Purpose and Need	The Project Team developed a draft Purpose and Need Statement based on transportation deficiencies in the study area as identified through traffic demand modeling and forecasting, and research of the current conditions. That draft Purpose and Need Statement was revised based on public and agency input. 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 the Initial (Level 1) Alternatives Screening process.
3. Design Criteria	Develop design criteria that support the desired facility performance and will be used to prepare the preliminary alternatives. The design criteria will be consistent with DOT&PF’s design criteria and adopted plans that convey the community’s intent for the study area’s transportation system.
4. Preliminary Alternatives	Develop and model 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. Preliminary alternatives will be developed and shared with key stakeholders and members of the committees established for the project.
5. Level 1 Screening	Conduct the Initial (Level 1) Alternatives Screening of preliminary alternatives to eliminate alternatives that do not meet the purpose of and needs for the study. Preliminary alternatives and draft Level 1 screening results will be shared with the public online and at a public meeting.
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 attempt to avoid and minimize impacts to social, economic, and natural resources. Additional traffic modeling will be conducted on the refined alternatives.
7. Level 2 Screening	Conduct Detailed (Level 2) 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. Draft Level 2 screening results and the draft Recommended Alternative(s) will be shared with the public online for review and comment.

Notes: AMATS = Anchorage Metropolitan Area Transportation Solutions; 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

The Purpose and Need Statement was developed based on DOT&PF's mandate to maintain the functionality of the National Highway System and 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 forms the basis for the Level 1 Screening Criteria, and alternatives may be deemed not reasonable and eliminated due to their failure to meet the Purpose and Need Statement. The draft Purpose and Need Statement was shared with the public and provided for public comment during the second Public Meeting (May 25, 2022) and comment period (May 23 to June 24, 2022). Comments were considered, and a revised Purpose and Need Statement will be used during the subsequent study steps.

During the Initial (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 Purpose and Need Statement is:

Purpose

The proposed purpose is to improve mobility,⁷ accessibility,⁸ safety, and livability⁹ for people and goods traveling on or across the roadway system connecting the Seward Highway, Glenn Highway, and POA by all modes (including people on foot, bicycles, or buses) while improving community cohesion. The intent is to (1) maintain the functionality of the NHS while meeting the local travel needs of residents that live, play, and work in the area and must safely travel across or along those roadways;¹⁰ and (2) improve neighborhood connections, quality of life, and accommodate adopted plans, as practicable.

⁷ Mobility is defined as "The ability to move or be moved from place to place" (<https://www.fhwa.dot.gov/planning/glossary/index.cfm>).

⁸ 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>).

⁹ Livability is defined as "Using the quality, location, and type of transportation facilities and services available to help achieve broader community goals. Livability in transportation helps to achieve those goals by leveraging financial resources and using the transportation planning process to advance supportive projects, policies, or decisions. Livability directly benefits people who live in, work in, or visit an area – whether in an urban, suburban, or rural context" (<https://ops.fhwa.dot.gov/publications/fhwahop12004/glossary.htm#fn77>).

¹⁰ 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/).

Needs

Reduce 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.

Improve Safety

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

Promote Social Equity and Economic Development

Current highway and arterial design on the Seward/Glenn Highway corridor in the study area is inconsistent with the vision expressed in recently adopted plans. Those plans envision improving neighborhood redevelopment, community cohesion, and quality of life.

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 at the end of this section). 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;
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 (at the end of this section) 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:

1. Develop new capacity and connections that cost-effectively address transportation system performance;
2. 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;
3. Manage the Alaska Transportation System to meet infrastructure condition performance targets and acceptable levels of service for all modes of transportation;
4. Manage and operate the system to improve operational efficiency and safety;
5. 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;
6. Improve transportation system safety and security;
7. Incorporate livability, community, and environmental considerations in planning, delivering, operating, and maintaining the Alaska Transportation System; and
8. Ensure broad understanding of the level, source, and use of transportation funds available to the 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



The project team, with input from community members and stakeholders during an alternatives development workshop, will develop the preliminary alternatives with sufficient detail to allow use of the study travel demand model to forecast future travel volumes and associated travel metrics for use in the Level 1 screening process. These data for each of the preliminary alternatives will enable the project team to apply certain Level 1 screening criteria that require model results.

To conduct the Level 1 screening process, the project team will gather other necessary data for each of the criteria listed in Table 2. Much of these data will come from existing products developed for the study; Municipality of Anchorage, DOT&PF, and Anchorage Metropolitan Area Transportation Solutions (AMATS) data sources; publicly available published information; and adopted plans and studies. The data sources and citations will be documented with the results of Level 1 screening process in the *Initial Alternative Screening Technical Memorandum*. The results will be quantified in terms of the measures presented in Table 2. These results will be presented in a format that allows readers to compare results across each alternative.

A determination of whether each alternative meets the Purpose and Need Statement will also be made. Alternatives that are determined by the project team 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
1. Safety	1A. Number of crashes with the Build Condition compared to the No Action Condition Qualitatively discuss potential crash severity based on number of conflict points and travel speeds	<u>Data</u> <ul style="list-style-type: none"> • Safety statistics by roadway classification • VMT/ADT by roadway functional classification <u>Method</u> <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.
1. Safety	1B. Number of conflict points (intersections) between vehicles and non-motorized users per mile of non-motorized infrastructure	<u>Data</u> <ul style="list-style-type: none"> • Existing multimodal facilities such as trails and sidewalks • Existing road network • Assumed preliminary project network <u>Method</u> <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.
1. Safety	1C. Number of vehicle conflict points with the Build Condition compared to the No Build Condition.	<u>Data</u> <ul style="list-style-type: none"> • Existing road network • Assumed preliminary project network <u>Method</u> <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.
2. Pedestrian Mobility and Accessibility	2A. Pedestrian Level of Traffic Stress (LTS)	<u>Data</u> <ul style="list-style-type: none"> • Number of lanes • Posted speed limit • Functional classification of a road • Presence and quality of dedicated pedestrian infrastructure <u>Method</u> <ul style="list-style-type: none"> • GIS will be used to calculate pedestrian LTS on the Seward-Glenn Highway corridor for each alternative 	A high pedestrian LTS adversely affects the mobility and accessibility of the corridor for people walking. A low pedestrian LTS can encourage more people to choose walking and reflects reduced barriers, slower speeds, etc. A lower LTS may also be reflective of improved livability and is consistent with MOA's adopted plans for the area.

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Criterion/Purpose and Need Category	Measure	Data and Method	Why the Measure is Important
2. Bicycle Mobility and Accessibility	2B. Bicycle LTS	<p><u>Data</u></p> <ul style="list-style-type: none"> • Number of lanes • Posted speed limit • Functional classification of a road • Presence and quality of dedicated pedestrian infrastructure <p><u>Method</u></p> <ul style="list-style-type: none"> • GIS will be used to calculate bicycle LTS on the Seward-Glenn Highway corridor for each alternative 	A high bicycle LTS adversely affects the mobility and accessibility of the corridor for people biking. A low bicycle LTS can encourage more people to choose biking and reflects reduced barriers, slower speeds, etc. A lower bicycle LTS may also be reflective of improved livability and is consistent with MOA's adopted plans for the area.
2. Port Mobility and Accessibility	2C. 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 State of Alaska's economy. Travel time delays can have a substantial impact on the cost of freight movement.
2. Port Mobility and Accessibility	2D. Number of at-grade rail crossings	<p><u>Data</u></p> <ul style="list-style-type: none"> • Aerial photography, ground truthing as needed <p><u>Method</u></p> <ul style="list-style-type: none"> • Number of rail crossings will be counted along each of the routes used by trucks to access the POA facilities. 	At-grade rail crossings present a safety hazard for commercial vehicles that access the POA. Additionally, they cause increased trip times and delays due to rail movements and safety procedures for at-grade crossings. Reducing the number of crossings may decrease safety concerns and delay.
2. Vehicle Mobility and Accessibility	2E. Miles of roadway in study area that have a peak period Level of Service of D or better	<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"> • Traffic modeling and GIS will be used to calculate the mileage in the study area that meets this measure 	Level of Service measures the amount of congestion in a transportation system Level of Service D is considered acceptable.
2. Vehicle Mobility and Accessibility	2F. 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 traveling public.

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Criterion/Purpose and Need Category	Measure	Data and Method	Why the Measure is Important
3. Livability	3A. Consistency with <i>Anchorage 2020</i> , <i>Anchorage 2040 Land Use Plan</i> , <i>Fairview Neighborhood Plan</i> , <i>Our Downtown plan</i> , <i>Government Hill Neighborhood Plan</i> , <i>Mountain View Targeted Neighborhood Plan</i> , <i>Climate Action Plan</i> , <i>Anchorage Original Neighborhoods Historic Preservation Plan</i> ; <i>Former Alaska Native Service Hospital Master 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"> GIS overlay of the alternatives will be compared to the <i>Anchorage 2040 Land Use Plan</i> map Qualitative evaluation will be conducted of the study alternatives based on plan goals and recommendations Evaluation will include ability to implement a Main Street concept on Gambell Street, and a Greenway Street on Ingra Street 	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.
3. Livability	3B. Reduction in study area 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, and air quality and noise impacts. 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.
3. Livability	3C. Impacts to parks and historic properties (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"> GIS overlay of the alternatives will be compared to the likely Section 4(f) resources 	Purchasing park land or historic properties adversely affects community character. Moreover, 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.

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Criterion/Purpose and Need Category	Measure	Data and Method	Why the Measure is Important
3. Livability	3D. Right-of-way acreage of various land uses; number of dwelling units; numbers of businesses, including from low-income or minority areas	<u>Data</u> <ul style="list-style-type: none"> • Right-of-way needs of the various alternatives <u>Method</u> <ul style="list-style-type: none"> • GIS overlay of the alternatives will be compared to right-of-way needs by land use 	Purchasing property affects neighborhoods by reducing housing or services and affects community character. Wide rights-of-way also affect community cohesion.
3. Livability	<ul style="list-style-type: none"> • 3E. Acres of roadway pavement fronting existing residential development • 3F. Acres of greenspace provided • 3G. Miles of new bikeway • 3H. Miles of upgraded sidewalk/trail 	<u>Data</u> <ul style="list-style-type: none"> • Engineering data from the alternatives <u>Method</u> <ul style="list-style-type: none"> • Calculated from each alternative concept drawing 	Plans for the area anticipate that better connected and improved bicycle and pedestrian facilities with supporting green space will foster the kind of development desired. Wider streets and paved areas are detrimental to the character the adopted plans are trying to create.
3. Livability	3I. Change in truck traffic at 5th Avenue at Merrill Field and Seward Highway/ 20th Avenue	<u>Data</u> <ul style="list-style-type: none"> • Study Travel Model runs <u>Method</u> <ul style="list-style-type: none"> • The study travel demand model will be used to provide results for each location, which will be compared to existing conditions 	Input received from members of the public have indicated that high commercial truck traffic in the corridor results in a reduction in neighborhood livability and quality of life, as well as presents safety concerns. Reductions in truck traffic along these routes would increase the perceived livability of adjacent neighborhoods.
4. Cost	4A. ROM Cost	<u>Data</u> <ul style="list-style-type: none"> • Engineer's estimate, presented as design, right-of-way acquisition, utilities and construction phases <u>Method</u> <ul style="list-style-type: none"> • Project team engineers will use best available information from similar efforts to compile a ROM cost of each alternative 	An alternative that meets the purpose and need can still be rejected as unreasonable based on other factors, including environmental impacts, engineering, and cost.

Notes: ADT = average daily traffic; GIS = Geographic Information Systems; LTS = Level of Traffic Stress; MOA = Municipality of Anchorage; ROM = Rough Order of Magnitude; 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, 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
1A. Number of crashes with the Build Condition compared to the No Action Condition	X	X	-	X	-	X	X	-	-	-
1B. Number of conflict points (intersections) between vehicles and non-motorized users	-	X	-	X	X	X	X	-	-	-
1C. Number of vehicle conflict points with the Build Condition compared to the No Action Condition	-	-	-	X	X	X	X	-	-	-
2A. Pedestrian Level of Traffic Stress (LTS)	-	X	-	X	X	X	X	-	-	X
2B. Bicycle LTS	-	X	-	X	X	X	X	-	-	X
2C. Peak period freight travel time	X	-	-	X	-	-	X	-	-	-
2D. Number of at-grade rail crossings		X	-	X	-	X	X	-		-
2E. Miles of roadway in study area that have a peak period Level of Service of D or better	X	X	-	X	-	X	X	-	X	-
2F. Peak period delay	X	X	-	X	-	X	X	-	X	-
3A. Consistency with plans	X	X		X	X	X	X	-	-	X
3B. Reduction in study area VMT	X	X	-	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, 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
3C. Impacts to parks and historic properties (Section 4(f) resources)	-	-	-	-	X	-	-	-	-	X
3D. Right-of-way acreage of various land uses; number of dwelling units; numbers of businesses, including from low-income or minority areas	X	-	X	-	X	-	-	-	-	X
<ul style="list-style-type: none"> • 3E. Acres of roadway pavement fronting existing residential development • 3F. Acres of greenspace provided • 3G. Miles of new bikeway • 3H. Miles of upgraded sidewalk/trail 	X	X		X	X	X	X			X
3I. Change in truck traffic	X	X		X	X	X				
4A. Rough Order of Magnitude Cost	X				X		X	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 the Initial (Level 1) Alternatives Screening will be refined into detailed alternatives and evaluated in Detailed (Level 2) Alternatives 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, the project team 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, the project team 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 Irretrievable 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 judgment 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.

Recommended Alternative Selection Criteria Memorandum

Criterion	Measure	Method	Why the Measure is Important
Technical Feasibility	Reasonableness of constructability considering available technology	<u>Quantitative</u> <ul style="list-style-type: none"> • Evaluate constructability of alternative 	This determines if the alternative has a reasonable chance of being successfully constructed.
	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 	This 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	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.
	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.

Notes: GIS = Geographic Information System

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*¹¹, 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 it 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 the PEL 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*.

¹¹ Available at: <https://dot.alaska.gov/stwddes/dcsprecon/preconmanual.shtml>