

To:	Kelly Summers, P.E., Project Manager – Department of Transportation and Public Facilities (DOT&PF)
From:	Renee Whitesell, PTP, Project Manager - DOWL
DATE:	March 16, 2023
SUBJECT:	Alternatives Development and Screening Process
Project:	Parks Highway Alternative Corridor Planning and Environmental Linkages (PEL) Study Project Numbers: Federal-0A41039/004210000 State-CFHWY00421/0A41039

# **Alternatives Development and Screening Process**

This technical memorandum describes the screening process proposed to support alternative development and selection for the Parks Highway Alternative Corridor Planning and Environmental Linkages (PEL) Study. The study will address ongoing safety, congestion, and mobility issues that create challenging driving conditions for residents, visitors, commercial freight companies, and commuters who use the Parks Highway. The alternatives development and screening process is intended to assess a broad range of alternatives for a future highway corridor and identify one or more reasonable alternatives within the study area (Figure 1) for further evaluation under a NEPA review process.



Figure 1: Study Area Location and Boundaries



The alternatives development and screening process uses the following steps:

- Develop draft alternative alignments that respond to the Purpose and Need Statement (P&N) and relevant information from previous studies, public and agency input, local and regional land use, and transportation plans. Conduct an Alternatives Development Workshop with the Technical Advisory Committee, Stakeholder Advisory Committee, and project team to identify potential alternative alignments. See the Stakeholder Engagement and Input section for a summary of the workshop.
- 2. Apply Level 1 Screening: Apply "Fatal Flaw" Screening Criteria to the draft alternative alignments to evaluate whether they meet the project P&N and specific regulatory requirements. Level 1 screening criteria are applied on a pass/fail basis. Alternatives that do not pass Level 1 screening will not advance for further alternative development or evaluation. Alternatives remaining after the application of Level 1 screening will be considered "preliminary alternatives" See P&N the discussion at the end of this section for further details, and Supporting Analyses for Identifying Selection Criteria, page 5, for a description of the project P&N. Per the Statement of Services, a No Build Alternative and Widen Existing Parks Highway Alternative will be presented as preliminary alternatives.
- 3. Refine and conduct preliminary engineering on the preliminary alternatives to increase the level of detail including modifications to respond to environmental constraints or improve performance and/or constructability.
- 4. Apply Level 2 Screening: Apply Level 2 Preliminary Alternative Screening Criteria to eliminate alternatives that meet the purpose of and need for the project, but do not meet other qualitative measures, for example, an alternative would have unreasonable or excessive social, economic or natural environmental constraints, would not meet regulatory requirements, would not meet system performance goals, is unacceptable to stakeholders, or is a more costly than another alternative that has similar environmental constraints. Alternatives that do not pass Level 2 screening will not advance for further alternative development or evaluation, and the reasons why will be documented. The remaining alternatives will be recommended to DOT&PF to advance for detailed alternative development.
- 5. Further refine the detailed alternatives. Refinements include avoiding and minimizing impacts and designing to a higher level of detail to resolve technical issues and prepare detailed cost estimates.
- 6. Apply Level 3 Screening: Apply Detailed Alternative Screening to eliminate alternatives that would not be cost effective, have unreasonable impacts, cannot meet system performance measures, in particular measures needed to meet regional performance goals, or would not withstand a NEPA review process. Level 3 screening uses primarily quantitative measures. The application of Level 3 screening should yield a recommended alternative(s).

DOT&PF has developed, with public and agency input, a P&N statement that states why the project is being proposed (the purpose) and describes the key problems to be addressed and underlying causes (the need). The P&N statement guides the development of the alternatives and is the primary focus of the alternative screening criteria. It is used throughout the screening process. The alternative screening process provides critical information about how well an alternative satisfies the project's purpose and if it will meet the transportation needs of its users. If an alternative does not meet the project's P&N, it will be eliminated.



The screening process will also determine if an alternative meets the project's land use and transportation planning goals, meets regional transportation needs is technically implementable and constructable from an engineering perspective, is financially feasible, and is reasonable under the National Environmental Policy Act (NEPA), practicable under the Clean Water Act, and prudent and feasible under Section 4(f) of the Department of Transportation Act of 1966. For additional information on specific reasons why these three regulatory requirements can lead to elimination of an alternative see Appendix A.

The alternatives development and screening process is designed to be dynamic throughout the PEL Study process. If a new alternative is identified later in the PEL Study process, the same screening process will be applied to support the consistent and systematic evaluation of all alternatives. The process can be compared to a "funnel" (Figure 2), with multiple screening levels applying design strategies, performance needs and goals, and environmental and social constraints and goals, into a range of reasonable alternatives. The levels of screening process are explained in greater detail in the *Alternatives Screening Methodology* and *Screening and Selection Criteria Process* sections.

# Stakeholder Engagement

DOT&PF held an alternatives development workshop on May 11, 2022, to collaborate with stakeholders on the development of a set of preliminary alternative corridor alignments for the PEL Study process and to discuss how alignment alternatives might be evaluated and screened. The workshop was attended by 28 people from a range of organizations, including the project team.

The workshop started with an overview of exiting conditions in the study area, eight emerging themes for the P&N and the alternative development and screening process that will guide the project team in the screening, evaluation, and refinement of alternatives alignments. Emerging themes included Parks Highway function, safety, multi-modal transportation, delay, travel time reliability, land use, economic impact, and population increase in the Mat-Su Borough.

The group discussed additional elements to consider in the alternative development process, which included:

- Non-Motorized Transportation: Consider active transportation facilities as a core element of the design and evaluate whether they will be removed later based on potential use. Grade separated crossings for active travelers should be considered and incorporated into the corridor where appropriate. Work with the City of Wasilla to understand where multimodal facilities are desired within Wasilla concurrent with the PEL Study process.
- **Freight Transportation:** Be mindful of freight transportation needs in the alternative development and refinement process. Focus on minimizing additional miles traveled, out-of-direction travel, signalized intersections, and access to Knik-Goose Bay Road.
- Widening Existing Parks Highway Alternative: Consider widening and other associated improvements to the existing Parks Highway if alternative corridors are unable to be identified.

Additional comments included suggestions for using automated systems for alternatives evaluation, costbenefit analyses, and whether the railroad is a viable option for commuters.





### **Purpose & Need and Regulatory Requirements**

Figure 2: Alternative Screening Process

\* The number of proposed alternatives shown is for illustrative purposes only.



This page is intentionally left blank.



# **Alternatives Screening Methodology**

### **Overview**

The Alternative Screening Methodology (ASM) is a decision-making framework to determine how well each alternative meets the project P&N and additional project goals. The planning products, analysis and decisions made during this PEL Study process, including the P&N and selected alternatives may inform a future NEPA review process and may be incorporated by reference into NEPA documentation. NEPA requires that a reasonable range of alternatives be considered and reviewed objectively, and that the selection process and alternatives eliminated be well documented. This screening process will meet these documentation requirements including the elimination of alternatives from further consideration during a future NEPA process, and the identification of reasonable alternatives that will be more fully evaluated during future project development under NEPA.

Under NEPA, reasonable alternatives are those that are practical and feasible from a technical, engineering, environmental, economic, and social standpoint, and which achieve the P&N for the project. The ASM compares the advantages and disadvantages of a broad range of alternatives for advancement through stages of development into more refined sets of alternatives and ultimately, the recommended reasonable alternatives.

## Supporting Analyses for Identifying Selection Criteria

#### Purpose and Need Statement

The project P&N is the starting point for developing selection criteria with project goals, design criteria assumptions, desired system performance criteria, and preliminary natural environmental, economic, and social conditions forming the basis for increasingly focused criteria. A discussion of the analyses that support the development of screening criteria and a description of each of the screening levels follows.

#### Purpose

The purpose of the Parks Highway Alternative Corridor PEL Study is to improve regional and local transportation through the Wasilla area of the Matanuska-Susitna Borough by identifying an alternative highway corridor that will improve safety for all transportation modes, reduce existing and future traffic congestion, and increase mobility. The study will seek to improve transportation for non-motorized users, respond to community values, and support or enhance economic, social, environmental and energy conditions.

#### Need

Through a collaborative process that balances multiple viewpoints of stakeholders, agencies, and the public, and working within regulatory requirements, DOT&PF determined that a successful solution should address the following needs:

- Improve safety in the corridor for vehicles, pedestrians, and bicyclists
- Decrease fatal and serious injury crashes
- Reduce existing traffic congestion and intersection delay on Parks Highway



- Add roadway capacity to meet projected transportation demand in the corridor
- Improve the roadway network to better separate local, regional, and through trips
- Improve efficiency for freight transport
- Improve multi-modal access and flexibility for all users
- Improve the durability of roadway improvements and ease maintenance operations

Improvements should also meet these additional goals:

- Improve the efficiency of the local and regional transportation system for all its users
- Enhance and protect the public health and safety of travelers and the communities that transportation facilities traverse
- Improve existing natural environmental conditions when possible and avoid/minimize/mitigate adverse impacts to the natural environment
- Contribute to the improvement of the economy, social fabric, and quality of life along the Parks Highway corridor and in the greater Wasilla area
- Satisfy applicable federal, state, and local plans, policies, and regulations

#### **Design Criteria Assumptions**

Design criteria are identified in the Parks Highway, "Alternative Design Criteria Technical Memorandum (DOWL 2022) based on functional classification and a flexible range of criteria provided in design guides adopted by State and Federal Code. The new facility will be a controlled-access highway through rolling terrain. The highway will provide an alternative route to the existing Parks Highway through the Wasilla urban core and will primarily focus on mobility, speed, and limited access. Access will be provided at interchanges at key north-south arterial and/or major collector roadways (to be determined). Access to the highway from local/residential streets and driveways, pedestrian/bicycle traffic, and at-grade intersections will be prohibited. The highway will be designed with a 30-year design life starting from 2025. The design vehicle used in the project criteria is a WB109-D, a turnpike double-semi trailer with a length of 114 feet.

#### Desired System Performance Criteria

Desired system performance criteria are identified in the Parks Highway, *System Performance Criteria Technical Memorandum* (DOWL 2022). The description of the criteria and measurement used to determine system performance are shown in Table 1. The measurements focus on safety and mobility at a regional level, as well as environmental conditions (natural, social, and economic) and pavement condition. Public comment is also considered as part of the screening process. These criteria and corresponding measurements form the performance targets for an alternative corridor to the Parks Highway. The performance targets provide guidance in Screening Level 2 and become critical in Level 3 when the targets are measured numerically.



Table 1. System Performance Targets for an Alternative Corridor				
Performance Criteria	Measurement Type	Performance Target*		
	Ability to meet regulatory requirements	Meets regulatory requirements		
Environmental	Economic impacts	No impacts (avoidance) or minimization of impacts and		
	Social impacts	mitigation		
		Loss then 1.00		
		Less than 1.00		
Safety	Rate of serious injuries per 100 million VMT	Less than 2.50		
	Number of nonmotorized fatalities and serious injuries annually	0		
	Average PM peak period speed (mph)	Greater than 50 MPH		
	Level of travel time reliability index (LOTTR)	Less than 1.10		
Mobility	Truck travel time reliability index (TTTR)	Less than 1.30		
	Percent of person-miles traveled that are reliable	100%		
Pavement	Percent pavement area in good condition	Greater than 20%		
Condition	Percent pavement area in poor condition	Less than 10%		
	Public Comment			
Public Acceptance	Level of public acceptance of alternative	Qualitative measure (High/Medium/Low)		

\* Regional System Performance Targets are based on regional and freight economic indicators from FHWA Freight Facts (2013) as well as other economic and market factors such as "just in time delivery" for manufacturing, distance to employment centers, staff availability etc.

#### Preliminary Environmental Studies

Resource technical memoranda, data summaries and mapping were prepared through a desktop analysis to provide a general overview of environmental, social, and historic/cultural conditions in the study area. The Parks Highway, *Basic Description of the Environmental Setting Report* (DOWL 2022), provides a baseline description of the natural and human environmental setting of the study area including the following resources.



- **Transportation**: summary and mapping of transportation characteristics in the study area, and an overview of transportation plans, policies, and regulations relevant to the development of alternative corridors.
- Land Use: summary and mapping of land use characteristics in the study area, including an overview of land use plans, policies, zoning, and regulations relevant to the development of alternative corridors.
- **Native Allotments**: Identification and mapping of lands acquired under the Alaska Native Allotment Act of 1906 and owned by the recipients or their descendants.
- **Socioeconomic**: Identification and mapping of social groups including low income, elderly, disabled, non-drivers, transit dependent, minority or ethnic populations that could be benefitted or harmed by a proposed project. A description of the economic and demographic characteristics in the study area
- **Environmental Justice**: Summary of the Environmental Justice populations in the study area including elderly, disabled, low income, or people of color.
- **Major Utilities**: Identification and mapping of utility facilities and components that would be difficult and/or expensive to relocate (e.g., high pressure natural gas mains, sewer interceptors, electrical substations, telecom switching stations, electrical transmission lines).
- **Cultural and Historic Resources**: Identification and mapping of the cultural and historic resources and ownership. Information for mapping is from the Alaska Heritage Resources Survey (AHRS) data repository. (Note: All resource location information is confidential.)
- Section 4(f) and Section 6(f): Identification and mapping of Section 4(f) and 6(f) properties, ownership and description of the use or function that makes the property a Section 4(f) or Section 6(f) resource.
- Wetlands, Waterbodies and Water Quality: Identification and mapping of wetlands, waterbodies and impaired waterbodies in the study area as shown on MSB mapping and using expert judgement based aerial photos.
- Fish and Wildlife: Summary of fish streams (anadromous and resident), birds, game, and furbearer species in the study area.
- **Floodplains**: Identification and mapping of the 100-year floodplain for all water bodies as shown on FEMA flood hazard mapping.
- **Hazardous Waste Sites**: Identification and mapping of regulated and non-regulated hazardous water sites in the study area.



### **Screening and Selection Criteria Process**

The alternative screening and selection criteria are established before any alternatives are evaluated to ensure each alternative is examined consistently and without bias. Screening takes place at three levels with a range of selection criteria within each level becoming increasingly more focused on how well the alternatives meet the P&N and additional study goals. After each screening level the remaining reasonable alternatives are refined to include greater locational and design detail. This will include considering the location of interchanges, grade separation for over- and under-passes, local circulation changes, and location of auxiliary facilities such as park and ride, transit stops and pedestrian/bicycle paths.

Depending on the screening level, the selection criteria are measured as pass/fail, qualitatively or quantitatively for the effectiveness of an alternative meeting the P&N, desired system performance to meet user needs, technical constraints and feasibility, cost constraints, potential for impacts to the natural, built, social and economic resources in the study area and level of acceptance by agencies, stakeholders, and the public. The selection criteria also help to define trade-offs when comparing alternatives. The three screening levels are:

- Level 1: "Fatal Flaw" Alternatives are evaluated on a pass/fail basis for meeting the P&N and regulatory requirements.
- Level 2: Preliminary Alternative Alternatives are evaluated with primarily qualitative screening criteria that address benefits, constraints, and costs (monetary and other). The criteria are derived from safety concerns, performance measurement goals, design criteria, environmental (natural, economic, and social) benefits and constraints, and stakeholder acceptance. The screening also continues to evaluate the alternative(s) ability to meet the project P&N and regulatory requirements.
- Level 3: Detailed Alternative Alternatives are evaluated with quantitative criteria that address measurable roadway system performance, engineering feasibility, major structural requirements, ROW, and construction costs and environmental (natural, economic, and social) impacts. The screening also continues to evaluate the alternative(s) for meeting the project P&N and regulatory requirements.

The following sections discuss each of the three screening levels in more detail, as well as the selection criteria and the measures for the criteria in each level.

#### Level 1: "Fatal Flaw" Screening

Level 1, "Fatal Flaw" Screening, will efficiently assess all draft alternatives to determine if they meet the project P&N and specific regulatory requirements. Draft alternatives will be screened using readily available data and the professional judgment of the DOT&PF and engineering and environmental project team members. The screening is completed with no additional data collection. Pass/fail criteria will determine if an alternative meets the project P&N. An alternative that fails any one criterion is considered to not meet the project P&N, and therefore does not lead to an implementable solution and is removed from further consideration.



As stated in the project scope of work, Level 1 eliminates those alternatives that do not meet the following criteria:

- Alternatives that do not meet the project's Purpose and Need, and
- Alternatives impacting 4(f) resources (unless all practical alternatives impact 4(f) resources or if the 4(f) impacts are determined to be "de minimis").

The "No Build" Alternative and "Widen Existing Parks Highway" alternative will carry forward as preliminary alternatives regardless of their performance against the Level 1 screening. Table 2 lists the Level 1 "Fatal Flaw" screening criteria. For each criterion the alternative receives a "+" for pass and "-" for fail. Assessments are based on the ability of the draft alternative to meet the criterion.

Table 2. Level 1: "Fatal Flaw" Screening Criteria					
Criteria Category	Criteria Category Screening Criteria Description				
	Potential to improve safety for vehicles, pedestrians, and bicyclists	Pass/Fail			
	Potential to reduce existing traffic congestion on Parks Highway	Pass/Fail			
	Potential to reduce delay at intersections on Parks Highway	Pass/Fail			
	Adds capacity to meet transportation demand in the corridor	Pass/Fail			
Purpose and	Separates local, regional and through trips	Pass/Fail			
Need	Potential to improve travel time for all users and in particular freight users	Pass/Fail			
	Provides flexibility and multi-modal travel opportunities	Pass/Fail			
	Potential to decrease annual fatal and serious injury crashes	Pass/Fail			
	Improves modal options for all users	Pass/Fail			
Section 4(f)	Does not directly affect listed or eligible Section 4(f) resources	Pass/Fail			

All Level 1 evaluation measures are pass/fail.

Alternatives with "yes" or pass answers to all Level 1 screening questions shall be forwarded Level 2 screening.



#### Level 2: Preliminary Alternative Screening

Level 2 screening continues to include the P&N and employs primarily qualitative criteria that assess the benefits, potential social, economic, and environmental constraints, technical feasibility, system performance, preliminary costs and right-of-way needs, and level of public support to evaluate the Preliminary Alternatives.

Following Level 1 ("Fatal Flaw") screening, the project designers will refine the preliminary alternatives to respond to constraints, reduce potential impacts, or improve constructability. Alternatives may be divided into segments and include options for interchanges and local circulation. Segments and options will be reviewed independently or in combinations as determined by project designers, based on the potential for an alternative to be delivered as multiple projects with independent utility and logical termini.

Level 2 screening includes the following steps that qualitatively:

- Estimate the potential impacts of the alternatives on various resources (acres of residential, commercial land potentially impacted)
- Identify if resources will be potentially affected by an alternative (acres of wetland impacted, streams crossed, etc.)
- Evaluate the alternatives for costs, logistical considerations, and technical feasibility
- Evaluate the success of each alternative in meeting selected performance measures
- Determine whether any of the alternatives would have substantially greater costs without having substantially greater benefits.

The intent of using a series of performance criteria is to determine if certain alternatives are substantially less/more effective in meeting the transportation needs of the users. The environmental criteria help to identify areas of potential constraints.

Table 4 lists the Level 2 screening criteria. The criteria are measured using a scale to determine how strongly the alternative performs in relation to the criteria, as follows:





A comment box will also be used to document why a criterion has been evaluated in the way it has or to note specific items such as community features, resources etc., that would be affected by the alternative. Stronger performance, or a higher numeric ranking, denotes a greater level of success for an alternative.

Alternatives that continue to meet the P&N, largely meet study goals, and are found to have sufficient merit for success will be recommended to move forward to Detailed Alternative development.



Table 3. Level 2: Preliminary Alternative Screening Criteria					
Criteria Category		Screening Criteria Description	Potential Benefit, Issues, or Impact	Measure	Comments
		1.1 Waterbody, wetland, riparian, or flood hazards directly affected	Permitting	Scale	Types of areas affected
		1.2 Habitats: wildlife, fish, essential fish, or T&E directly affected	Consultation	Scale	Type of habitat affected
		1.3 Hazardous material or Superfund sites directly affected	Permitting, Clean-up	Scale	Type of hazardous material
	Natural	1.4 Potentially lowers the visual quality of the surrounding area.		Scale	Note views blocked, trees removed etc.
tal		1.5 Within 100 ft of an EJ		Scale	Distance to EJ community
ronmen		1.6 An existing residential neighborhood is divided/disrupted		Scale	Neighborhood name, size
Envi		1.7 Consistent with plan policies or development code		Scale	List plan/policies
		1.7.1 MSB Title 15			
		1.7.2 MSB Title 11			
		1.7.3 MSB Long-Range Transportation Plan (LRTP)			
		1.7.4 Alaska Strategic Highway Safety Plan 2018-2022			
	_	1.7.5 Alaska Highway Safety Plan – FFY 2021			
	Socia	1.7.6 MSB Official Streets and Highways Plan			



Table 3. Level 2: Preliminary Alternative Screening Criteria					
Criteria Category		Screening Criteria Description	Potential Benefit, Issues, or Impact	Measure	Comments
		<ul> <li>1.8 Directly affects the following: <ul> <li>Residential (single or multifamily)</li> <li>School/educational facility</li> <li>Place of Worship</li> <li>Medical facility</li> <li>Public Service Facility (fire/police station, etc.)</li> <li>Medical facility</li> <li>Land Trusts (Farm, Alaska Great Land Trust, University, etc.)</li> </ul> </li> </ul>	Relocation	Scale	
		1.9 Within 100 ft of dwellings	Noise, air impact	Scale	Distance to dwelling(s)
		1.10 Industrial or commercial use directly affected	Relocation	Scale	
		1.11Within 100 ft of commercial or industrial uses	Noise, air impact	Scale	Distance to use
	Economic	<ul><li>1.12 Potentially maintains /improves access to vacant land</li><li>1.12.1 Existing access points and facilities</li><li>1.12.2 Vacant land</li></ul>	Opens land for development	Scale	Provides access to businesses etc.
billity	2.1 Pc increa Highw	otentially resolves congestion/ delays and uses average peak travel speed on Parks vay		Scale	
Wol	2.2 Pc Highw	otentially shifts traffic from Parks yay to alternative corridor		Scale	Alt. distance from Parks Hwy



Table 3. Level 2: Preliminary Alternative Screening Criteria						
Criteria Category	Screening Criteria Description	Potential Benefit, Issues, or Impact	Measure	Comments		
	2.3 Potentially accommodates varying traffic volumes improving peak travel times		Scale			
	2.4 Potentially improves non-motorized connections and provides facilities for non-motorized users (multi-modal)	Potential to accommodat e traffic (including non- motorized)	Scale			
Safety	2.5 Potentially decreases vehicular and non- motorized fatalities/ injury crashes	Grade separated paths or bridges	Scale			
Pavement Condition	2.6 Potentially increases durability of maintenance improvements		Scale	maintenance concerns		
ROW and Cost	3.1 Number of parcels potentially impacted	300' and 500' wide corridor	Scale	ROW impact		
	3.2 Estimated cost for ROW	Parcel value, 300' and 500' corridor	Scale	Cost		
Public Accept- ance	4.1 Level of public acceptance		Scale	Survey Responses		
P&N	5.1 Project meets P&N	Level 1 screening	Scale			



#### Level 3: Detailed Alternatives Screening

Level 3 screening uses quantitative measures based on transportation planning, engineering, roadway system performance, environmental impacts, ROW requirements and cost to evaluate the alternatives that have advanced to detailed alternative development.

Project designers will refine the Preliminary Alternatives that have advanced from Level 2 Preliminary Alternative Screening to Detailed Alternative Development following concurrence from DOT&PF. The No Build Alternative will also advance to Level 3 screening

Where possible, Level 3 screening will quantitatively assess natural resource, economic and social impacts, potential relocations needed under the Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs (Uniform Act), major structural requirements such as interchanges, bridges, utility impacts, and ROW and construction cost. This final level of screening results in the identification of a range of a Recommended Alternative(s) that DOT&PF may carry forward after the PEL Study toward project development.

Alternatives will continue to be evaluated using a scale to determine how strongly the alternative performs in relation to the criteria, as follows:



A comment box will also be used to document why a criterion has been evaluated in the way it has or to note specific items such as community features, resources etc., that would be affected by the alternative. Stronger performance, or a higher numeric ranking, denotes a greater level of success for an alternative.

The need for further refinement of the evaluation process may be revisited during the application of the detailed alternative evaluation process. Further refinement may include updating a performance measure to provide for greater clarity or clearer and more consistent measurement, changing the scale to provide for a greater level of granularity in the evaluation of impacts, or could include the use of weighting to assist with measuring the performance of the alternatives against key evaluation criteria. Any changes to the evaluation process will be clearly documented with associated explanations for why revisions have occurred.



Table 4. Level 3: Detailed Alternative Screening Criteria						
Crite	ria Category	Screening Criteria Description	Measurement	Measurement Method		
		Wetlands directly affected	Acreage	GIS		
		Streams crossed	Number crossed	GIS		
		Riparian areas directly affected	Acreage	GIS		
		Wildlife habitat directly affected	Acreage	GIS		
		Wildlife corridors crossed	Number crossed	GIS		
		Fish habitat directly affected	Stream length in ft	GIS		
		Essential Fish Habitat directly affected	Stream length in ft	GIS		
	Natural	Tree canopy removed	Acreage	GIS		
		T&E habitat directly affected	Acres <u>or</u> distance to known T&E location	GIS		
		Flood hazard zones affected	Acres and Type	GIS		
		Hazardous material site directly affected	Acreage	GIS		
Ital		Superfund site directly affected	Acreage	GIS		
mer		Distance to nearest Section 4(f) site	Miles	GIS		
wiror		Distance to nearest Section 6(f) site	Miles	GIS		
Eu		Dwellings within 100 feet of the alternative	Number and distance in feet	GIS		
		Potential residential displacements	Number	GIS		
		Acres of vacant residential zoned land directly affected	Acreage	GIS		
		EJ community directly affected	Acres/population	Yes/no		
	Casial			number		
	Social	Neighborhoods bisected	Acreage	GIS		
		Distance to a native allotment	Miles	GIS		
		Distance to nearest school / community center	Miles	GIS		
		Visual effect of roadway on surrounding area	Qualitative/professional judgement	high/med/low		



ia Category	Screening Criteria Description	Magauramant	Maacuramant
		measurement	Method
	Visual effect of interchange on surrounding area	Qualitative/professional judgement	high/med/low
	Acres of commercial/industrial developed land affected	Acreage	GIS
	Number of commercial/industrial uses within 100 feet of the alternative	Acreage	GIS
Economic	Number of potential commercial/industrial displacements	Acreage	GIS
	Acres of vacant land directly affected	Land removed from inventory	GIS
	Improves access to developable land	Distance to access	GIS
Safety	Estimated decrease in fatalities and serious injuries	Existing collision data for Parks Hwy, Highway Safety Manual Predictive Method for alts.	CMF Clearinghouse factors HSM Predictive Method
	Economic Safety	Economic       Acres of commercial/industrial developed land affected         Number of commercial/industrial uses within 100 feet of the alternative         Economic       Number of potential commercial/industrial displacements         Acres of vacant land directly affected         Improves access to developable land         Safety	SafetyEstimated decrease in fatalities and serious injuriesExisting collision data for Parks Hwy, Highway Safety Manual Predictive Method for alts.



Table 4. Level 3: Detailed Alternative Screening Criteria					
Criteria Category	Screening Criteria Description	Measurement	Measurement Method		
	Average PM peak travel speed on Parks Highway	LOS Calculation	Highway Capacity Manual (6 <sup>th</sup> Ed.)		
	Estimated Freight Travel Time Reliability	2.0 or lower	Truck Travel Time Reliability (TTTR) Index		
Mobility	Peak hour a.m. and p.m. travel time for length of existing Parks Highway with alternative corridor (minutes)	Time needed for study area and regional users to travel the length of the corridor at am/pm peak (min)	Yes/ No Qualitative, input from DOT&PF O&M, MSB EMS		
	Percent improvement in peak a.m. and p.m. travel time on existing Parks Highway with the alternative	Travel time improvement	Synchro Analysis		
	Peak hour a.m. and p.m. travel time for length of the alternative (minutes)	Travel time improvement	Synchro Analysis		
	Percentage of year 2050 through traffic using the alternative - origin/ destination outside the study area.	Trip redistribution	Model analysis		
	Percentage of year 2050 through traffic using the alternative - origin/ destination inside the study area.	Trip redistribution	Model analysis		
	Percentage of year 2050 through traffic using the alternative - either the origin or destination inside the study area and the other outside the study area.	Trip redistribution	Model analysis		
	Percentage traffic shift from Parks Highway to the alternative corridor	What is the percent of current Parks Highway trips shift to the alternative corridor?	OD Model		
Cost	Total bridge construction cost estimate	Cost estimate	Cost estimate		
	Total interchange cost estimate	Cost estimate	Cost estimate		
	Total construction cost estimate	Cost estimate	Cost estimate		



Table 4. Level 3: Detailed Alternative Screening Criteria					
Criteria Category	Screening Criteria Description	Measurement	Measurement Method		
Pavement Condition	Alternative is easily maintained (i.e., pavement rehab and snow maintenance)	shoulder widths, curvature, snow fencing	Qualitative assessment of travel times from alt corridor and surrounding land use and zoning		
	Total acres ROW	Acreage	GIS		
Right of Way	Acres existing residential required for ROW	Acreage	GIS		
	Acres existing commercial/industrial required for ROW	Acreage	GIS		
Community	Level of community support (local and regional) - business	Do businesses in and near downtown Wasilla, and within the greater Mat-Su support the alternative?	Community feedback through public involvement activities		
Support	Level if community support - residents	Do residents in the study area support the alternative?	Community feedback through public involvement activities		



Appendix A Regulatory Requirements



The following regulatory requirements can lead to elimination of an alternative under Level 1: "Fatal Flaw" Screening (emphasis added).

## NEPA Regulations and Council on Environmental Quality Guidance

According to NEPA regulations and guidance issued by the Council on Environmental Quality, there are three primary reasons why an alternative might be determined to be not reasonable and eliminated from further consideration.

1. The alternative does not satisfy the purpose of the project (evaluated in the Level 1 screening

2. The alternative **meets the purpose of and need for the project but is unreasonable** based on a combination of other factors such as costs, environmental impacts, or its inability to meet permitting or other regulatory requirements (evaluated in the Level 2 screening).

3. The 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 impacts and/or costs that are similar to or greater than those of other, similar alternatives (evaluated in the Level 2 screening).

### **Clean Water Act Requirements**

Because the area of analysis for the project might support federally regulated wetlands or other waters of the United States, DOTs will also consider the Clean Water Act Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (40 Code of Federal Regulations 230) and Executive Order 11990, Protection of Wetlands, during the development of PEL Study alternatives.

The U.S. Army Corps of Engineers is responsible for determining compliance with the Section 404(b)(1) Guidelines and may permit only the least environmentally damaging practicable alternative.

The Section 404(b)(1) Guidelines state that "no discharge of dredged or fill material [to Section 404– regulated waters] shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences" [Section 230.10(a)]. This section of the guidelines further states that:

1. For the purpose of this requirement, practicable alternatives include but are not limited to: a. Activities which do not involve a discharge of dredged or fill material into the waters of the United States or ocean waters; b. Discharges of dredged or fill material at other locations in waters of the United States or ocean waters;

2. An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. If it is otherwise a practicable alternative, an area not presently owned by the applicant which could reasonably be obtained, utilized, expanded, or managed in order to fulfill the basic purpose of the proposed activity may be considered.

3. Where the activity associated with a discharge which is proposed for a special aquatic site (as defined in Subpart E of the guidelines) does not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose (i.e., is not water dependent), practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise. In addition, where a discharge is proposed for a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise. To achieve



compliance with the Section 404(b)(1) Guidelines, the evaluation of alternatives will need to demonstrate the alternative selected is the least environmentally damaging practicable alternative.

## Section 4(f)/Section 6(f) Requirements

Section 4(f) of the Department of Transportation Act of 1966 (49 USC Section 303) applies to publicly owned parks, recreation areas, and wildlife and waterfowl refuges and publicly or privately owned significant historic properties. The requirements of Section 4(f) apply only to agencies within the U.S. Department of Transportation (USDOT). Section 4(f) prohibits USDOT agencies from approving the use of any Section 4(f) land for a transportation project, except as follows:

- First, the USDOT agency can approve the use of Section 4(f) land by making a determination that (1) there is no prudent and feasible alternative that would avoid the use of the Section 4(f) resource and (2) the project includes all possible planning to minimize harm to that property.
- Second, the USDOT agency can approve the use of Section 4(f) property by making a finding of de minimis impact for that property.

Section 6(f) of the Land and Water Conservation Act requires that the conversion of lands or facilities acquired with Land and Water Conservation Act funds be approved by the U.S. Department of Interior. Approval requires "substitution of other recreation properties of at least equal fair market value and of reasonably equivalent usefulness and location."

An alternative that would not be available because of the severity of Section 4(f) or Section 6(f) impacts could be eliminated during Level 2 screening. To achieve compliance with the Section 4(f) regulations, it will need to be demonstrated, through an evaluation of alternatives that either (1) the alternative selected would have a de minimis use of Section 4(f) resources or (2) there is no feasible and prudent alternative that would avoid the use of Section 4(f) resources, and the project includes all possible planning to minimize harm to Section 4(f) resources.