



**Southwest Alaska
Transportation Plan Update**

Final Report

APRIL 2016



Dear Reader,

April, 2016

The Alaska Department of Transportation and Public Facilities would like to thank all of you for taking the time to provide feedback. You have helped develop a long range transportation plan that provides a vision for the future while recognizing current challenges. Your stewardship during this financially-challenging time will help make the most of limited resources, and position our state for a bright future.

Special appreciation goes out to those who facilitated meetings, provided critical input throughout the planning process, and helped to get the word out about the plan:

- Bristol Bay Borough
- Bristol Bay Native Association
- City of Dillingham
- City of Kodiak
- City of Unalaska
- Kodiak Archipelago Rural Regional Leadership Forum
- Kodiak Island Borough
- Lake and Peninsula Borough
- Southwest Alaska Municipal Conference



Thank you! (English)

Chiqinik! (Denaina)

Quyana! (Yupik)

Quyanaa! (Alutiiq)

Qaġaasakung! (Aleut)

SOUTHWEST ALASKA

TRANSPORTATION PLAN UPDATE

IRIS PROJECT NUMBER Z804080000

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LIST OF ACRONYMS

AAC.....	Alaska Administrative Code
AASP.....	Alaska Aviation System Plan
AEB.....	Aleutians East Borough
AIP.....	Airport Improvement Program
ALP.....	Airport Layout Plan
AMHS.....	Alaska Marine Highway System
ATV.....	All –Terrain Vehicle
AVEC.....	Alaska Village Electric Cooperative
BBB.....	Bristol Bay Borough
BBNA.....	Bristol Bay Native Association
DCCED.....	State of Alaska Department of Commerce, Community and Economic Development
DEC.....	Alaska Department of Environmental Conservation
DNR.....	Alaska Department of Natural Resources
DOLWD.....	Alaska Department of Labor and Workforce Development
DOT&PF.....	Alaska Department of Transportation and Public Facilities
DUNS.....	Data Universal Numbering System
EPA.....	U.S. Environmental Protection Agency
EAS.....	Essential Air Service
FAA.....	Federal Aviation Administration
FFY.....	Federal Fiscal Year
FHWA.....	Federal Highway Administration
FTA.....	Federal Transit Administration
GF.....	General Fund
GPS.....	Global Positioning System
HPP.....	High Priority Program
IRR.....	Indian Reservation Roads
KIB.....	Kodiak Island Borough
KMZ.....	keyhole markup language
LPB.....	Lake and Peninsula Borough
LP.....	Localizer Performance
LPV.....	Localizer Performance with Vertical Guidance
LRTP.....	Long Range Transportation Plan
M&O.....	Maintenance and Operations
MAP-21.....	Moving Ahead for Progress in the 21 st Century
MDA.....	Minimum Decent Altitude
MEDEVAC.....	medical evacuation
MLLW.....	mean lower low water
MOU.....	Memorandum of Understanding

MP	Milepost
M/V	Motor Vessel
NHS	National Highway System
NPIAS	National Plan of Integrated Airport Systems
NOAA	National Oceanic and Atmospheric Administration
OMB	Office of Management and Budget
Pebble	Pebble Mine Project
PLP	Pebble Limited Partnership
Port	International Port of Dutch Harbor
ROW	right-of-way
RSA	runway safety area
SAM	Federal System for Award Management
SAFETEA-LU	Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users
SIDCO	Spruce Island Development Corporation
SREB	Snow Removal Equipment Building
STIP	Statewide Transportation Improvement Program
SWATP	Southwest Area Transportation Plan
TIGER	Transportation Investment Generating Economic Recovery
TRP	Tustumena Replacement Project
UAF	University of Alaska Fairbanks
UGF	Undesignated General Funds
U.S.	United States
UMC	Unalaska Marine Center
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USC	United States Code
USDOT	United States Department of Transportation
USGS	United States Geological Survey
WAAS	Wide Area Augmentation System

EXECUTIVE SUMMARY

The Southwest Alaska Transportation Plan (SWATP) informs transportation development decisions to maximize the public benefits from transportation investments in Southwest Alaska. The purpose of this plan is to address various modes of transportation needs, and provide guidance for responsible investment. The SWATP is an element of the Statewide Long Range Transportation Plan.

The study area for SWATP encompasses four incorporated boroughs and two federally recognized census areas: the Aleutians East Borough, the Aleutians West Census Area, the Bristol Bay Borough, the Dillingham Census Area, the Kodiak Island Borough, and the Lake & Peninsula Borough. The combined area of the four boroughs and two census areas (including water area) equals 93,875 square miles. It is an area roughly equivalent to the state of Oregon (Southwest Alaska Municipal Conference, 2016).

The road system in Southwest Alaska is limited; a majority of the communities are not connected to one another. The transportation system is comprised of airports, gravel roads, ATV trails, boardroads, river channels and the Pacific Ocean. There is very little transit offered; and walking/biking is not recreational choice, but a necessary mode of transportation.

During the SWATP planning process, oil prices dropped from ~\$100 per barrel to ~\$40 per barrel causing the State of Alaska to face a ~\$3 billion budget deficit. Future State funding was uncertain. To help the Southwest communities through these uncertain times, the DOT&PF Planning Team prepared the SWATP so that the document can be used to seek various funding sources, locally and nationally. The plan recommends 11 regional projects¹ for development over the next 10 to 20 years, which are marked **A through L in Figure ES-1**.

¹ Regional projects serve transportation needs between communities, provide access to public facilities or major modes of transportation; and have extensive development requirements.

The plan also includes a list of 77 (42 surface, and 35 aviation) projects that the DOT&PF Planning Team identified as transportation needs in Southwest Alaska (**Appendix A**).

This plan does not obligate funding, nor promise development of projects listed. It does provide a list of projects that meet the goals and objectives of this plan based on 2016 socioeconomic conditions, regional transportation needs, and stakeholder input.

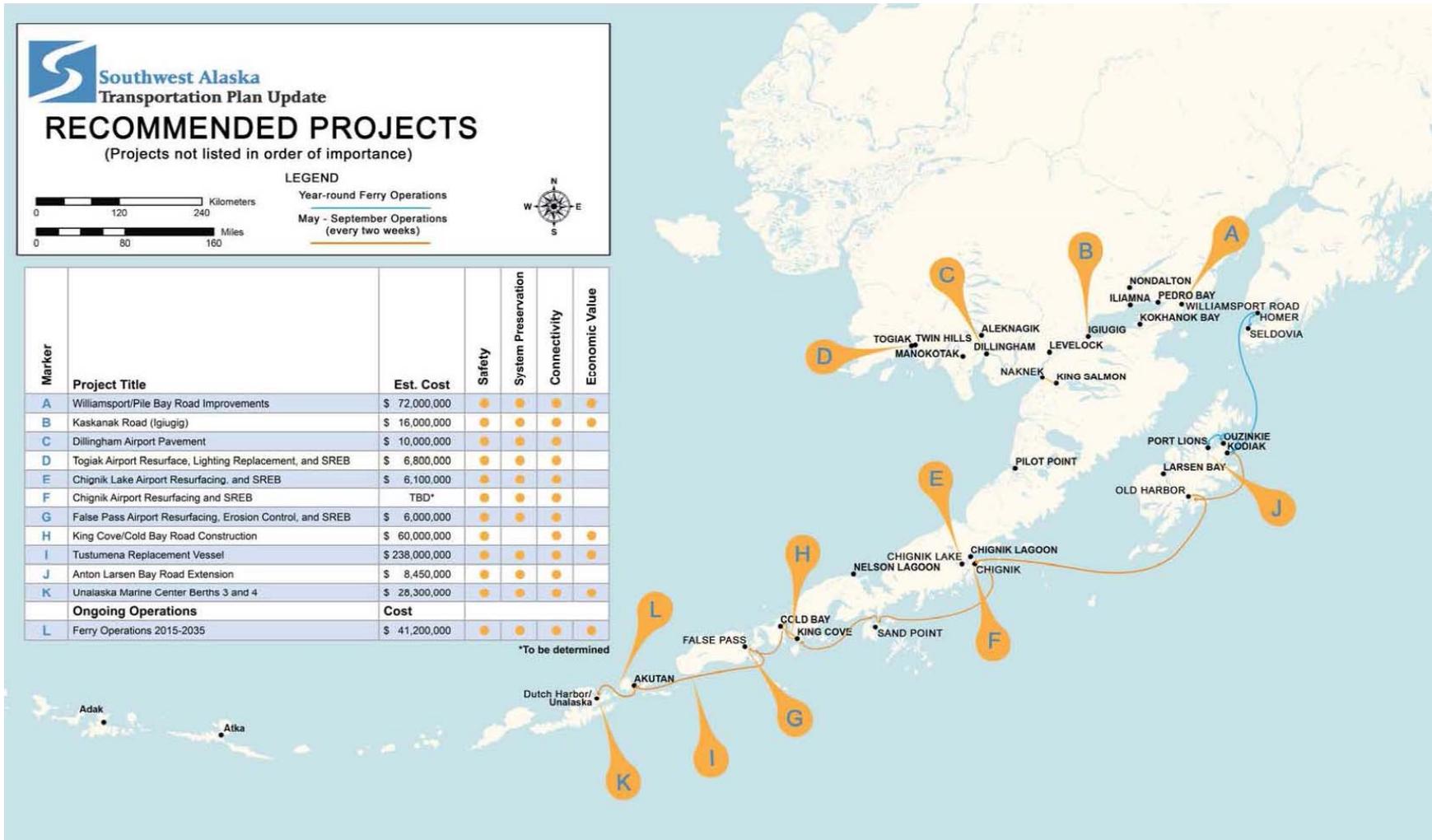


Figure ES-1: Recommended Projects

Source: DOWL GIS and Planning Department

The 11 recommended projects are:

- A. **Williamsport to Pile Bay Road (WPB):** This project would upgrade the road from Williamsport in Cook Inlet to Pile Bay on Lake Iliamna, from a single-lane seasonal road to a two-lane road open year round. *Estimated cost: \$72 million. See letter A on the map above.*
- B. **Kaskanak Road:** This road project would portage around seven miles of flats along the Kvichak River. With the Williamsport Pile Bay Road project, this project provides a multimodal link between Anchorage, AK and the communities of Bristol Bay. *Estimated cost: \$16 million. See letter B on the map above.*

The aviation projects listed below are among the many aviation projects in Southwest Alaska that are being considered by the DOT&PF:

- C. **Dillingham Airport Pavement Rehabilitation:** This project may include shifting the runway to address safety issues. *Estimated cost: \$10 million. See letter C on the the map above.*
- D. **Togiak Airport Resurfacing, Lighting Replacement, and Snow Removal Equipment Building (SREB):** Lighting would be replaced on the runway, taxiway and apron. *Estimated cost: \$6.8 million. See letter D on the map above.*
- E. **Chignik Lake Airport Runway Resurfacing, and New SREB:** This project may include a runway shift away from the community, and geotechnical investigation. *Estimated cost: \$6.1 million. See letter E on the map above.*
- F. **Chignik Airport Resurfacing and SREB:** The existing SREB is in an area that should remain clear of buildings to improve safety for arriving and departing aircraft. *Estimated cost: to be determined. See letter F on the map above.*

- G. False Pass Airport Runway Resurfacing, Erosion Control and Lighting:** This project includes apron expansion, and lighting improvements include a beacon and windsock. *Estimated cost: \$6 million. See letter G on the map above.*

WPB and Kaskanak Road together establish a link between Alaska's population center in Anchorage and the fertile fishing grounds of Bristol Bay, home of 4 of the top 5 ports in the nation for value of landings. These connections will reduce the cost of living for Southwest residents through easier shipment of commodities.

- H. King Cove/Cold Bay Road:** This project would construct a single-lane road with turnouts between King Cove and Cold Bay. Alaska's congressional delegation continues to seek solutions to an impasse with the United States Department of Interior regarding a road crossing the Izembek Wildlife Refuge. *Estimated cost: \$60 million. See letter H on the map above.*

- I. Tustumena Replacement Project:** The Motor Vessel (M/V) *Tustumena* predominantly provides ferry service to 11 Southwest Alaska communities in Kodiak, the southern Alaska Peninsula and the eastern Aleutian Chain. As the vessel ages, it is requiring more lay-up time and higher costs for repairs. The replacement vessel is in design, and is anticipated to be slightly larger and have a higher speed than the existing *Tustumena*. *Estimated cost: \$238 million. On the map above, letter I references the vessel's Southwest Alaska route.*

- J. Anton Larsen Bay Road:** This road extension would connect Kupreanof Strait communities of Port Lions and Ouzinkie to the City of Kodiak, provides the City of Kodiak with access to ice-free waters, and accesses gravel resources along the route. *Estimated cost: \$8.5 million. See letter J on the map above.*

- K. **Unalaska Marine Center Berths 3 and 4:** Unalaska's location on the Great Circle marine navigational route, coupled with existing infrastructure and maritime services, make Unalaska a prime candidate to serve as a crossroads between Arctic and Asian-American routes, serving regional and international economic interests. This project upgrades two of the seven berthing positions, improving AMHS service, expanding the capacity for vessels served, and improving uplands services. *Estimated cost: \$28.3 million. See letter K on the map above.*

Ongoing ferry operations 2015-2035:

- L. **Maintain existing Alaska Marine Highway System ferry service to Southwest Alaska:** If current funding levels continue, the AMHS can maintain current service levels using the *Tustumena* or her replacement, supplemented by the M/V *Kennicott* when needed. Estimated cost: \$41 million. *On the map above, letter L and I references the AMHS's Southwest Alaska route.*

These projects were selected from a list of 77 projects considered by the DOT&PF Planning Team. The list was developed through public outreach since the update was initiated in 2011, and through review of existing community and regional plans. DOT&PF staff selected projects that best met the goals of the plan: Safety, System Preservation, Connectivity, and Economic Value. As part of the analysis, DOT&PF considered projects recommended in the 2004 update, determined their current status, and if they should be carried forward. DOT&PF also inventoried existing issues and needs for each mode, and for the region as a whole. Runway length, approach minimums, and air service to communities that receive limited barge service received explicit consideration. Other issues included cost of living, economic growth, isolation, safety and security, and focusing limited resources on transportation hubs.

Availability of funding for construction, operations and maintenance continues to be a challenge. One upcoming opportunity is for freight route funding under the new federal transportation legislation. Southwest Alaska is highly dependent on marine services for delivery of heavy freight and fuel. Arctic development will require staging and storage of development equipment, and Unalaska is well-positioned to provide these services. On the other hand, Alaska continues to address budgetary shortfalls resultant from low oil prices, and a potential shifting of federal funding priorities for key programs for the Denali Commission, Essential Air Service and Bypass Mail.

As with any plan, users will need to carefully evaluate current conditions to make sure recommended projects still meet the goals and objectives outlined. Project development partners will be increasingly important in helping with these evaluations and in meeting funding needs. By working together to leverage funding and construction opportunities, we can keep Alaska moving through service and infrastructure.

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1.0 INTRODUCTION

The Southwest Alaska Transportation Plan (SWATP) will inform transportation development decisions to maximize the public benefits from transportation investments in Southwest Alaska.

Alaska regulations require statewide long range transportation plans be updated at least every five years. Updates reflect population and economic trends, transportation service demands, changes in technology, economic development projects, and the identification of new transportation objectives (Alaska Administrative Code [AAC] 05.130(b)). In 2011, the Alaska Department of Transportation and Public Facilities (DOT&PF) started an update to the 2004 SWATP. The SWATP includes planning for various vehicle fleets (planes, all-terrain vehicles [ATVs], snow machines, barges, skiffs, and automobiles) and modes of transportation (aviation, surface, and marine), and is one of six area transportation plans being incorporated into the Alaska Statewide Long Range Transportation Plan (LRTP).

SWATP Vision

To inform transportation development decisions to maximize public benefits from transportation investments in Southwest Alaska.

The SWATP is:

- *A regional planning document.*
- *A planning document for various modes of transportation and stakeholders.*
- *Guidance for responsible investment in the Southwest Alaska area.*
- *One of six area transportation plans adopted as components of the LRTP.*

The SWATP is not:

- *A programming document.* This plan does not obligate funding, nor promise development of the projects listed.
- *A document only for DOT&PF.* This plan is a tool for communities, regional groups, and businesses to coordinate infrastructure development.

The Southwest Alaska area consists of four incorporated boroughs and two federally recognized census areas. The boroughs include the Kodiak Island Borough (KIB), Lake and Peninsula Borough (LPB), Bristol Bay Borough (BBB), and Aleutians East Borough (AEB). Census areas encompass the Dillingham Census Area and Aleutians West Census Area, which includes the Pribilof Islands (**Figure 1**). The study area is approximately 93,875 square miles.

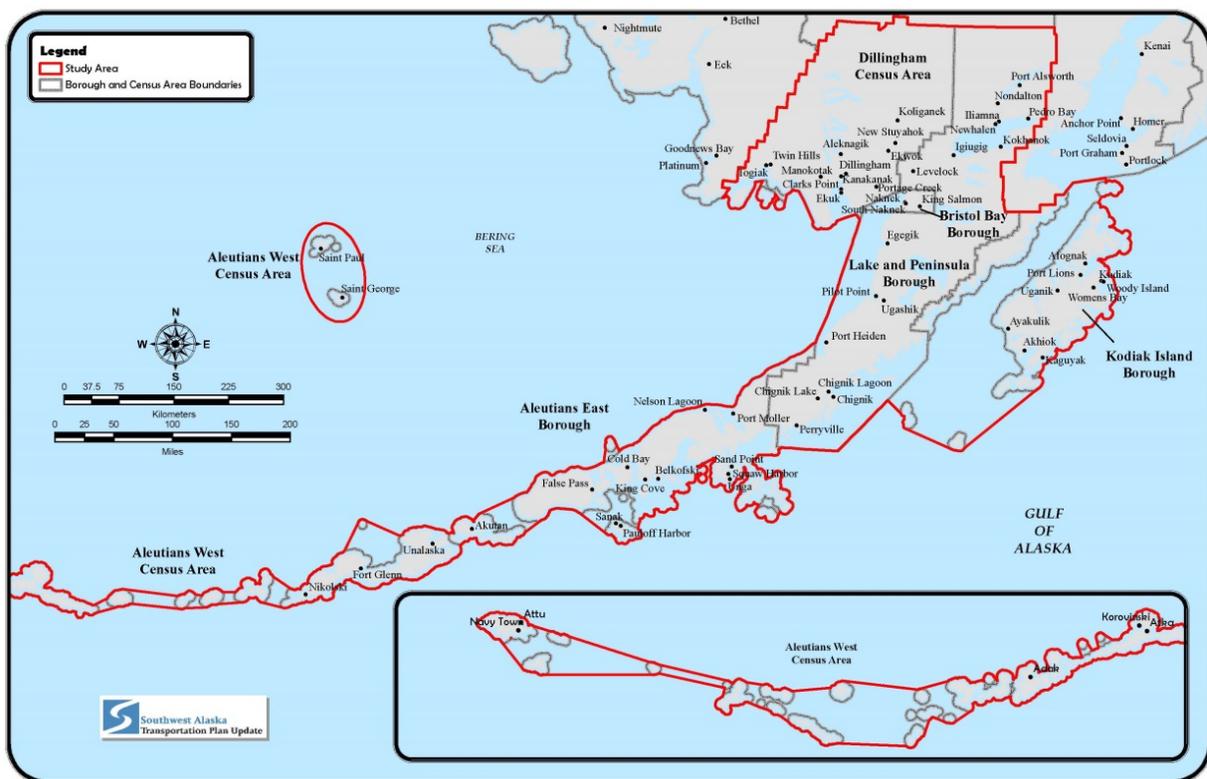


Figure 1: Southwest Alaska Study Area

The study area includes Kodiak, the Alaska Peninsula, Bristol Bay, the Aleutian Islands, and the Pribilof Islands.

2.0 PLAN METHOD AND PROCESS

The SWATP planning process was divided into two phases. Phase 1 inventoried existing transportation infrastructure and identified issues and needs through public outreach.

Phase 2 focused on:

- Applying current transportation planning regulations and guidance to the plan.
- Establishing vision, goals, and objectives.
- Analyzing, prioritizing, and recommending projects.
- Engaging with the public.

2.1 Transportation Planning Regulations and Guidance

For projects in this plan to participate in federal and state funding, this plan must align with the policy guidelines outlined in current transportation legislation: federal requirements outlined in Moving Ahead for Progress in the 21st Century (MAP-21); and the State of Alaska's transportation planning regulations, found in 17 AAC 05.

MAP-21 focuses on incorporating performance goals, measurements, and targets into the planning process, in order to hold the states accountable for the projects they plan. The Federal Highway Administration (FHWA) is still developing the performance measurements. The State of Alaska anticipates these measures will be enforced under the next highway bill, or the revision of MAP-21. In preparation for the anticipated performance measures, the DOT&PF is requiring regional transportation plans to consider MAP-21 and the LRTP goals while establishing objectives that can be measurable in the future.

MAP-21's performance management goals include:

- **Safety** - To significantly reduce traffic fatalities and serious injuries on public roads.

- **Infrastructure condition** - To maintain highway infrastructure in a state of good repair.
- **Congestion reduction** - To significantly reduce congestion on the National Highway System (NHS).
- **System reliability** - To improve the efficiency of the surface transportation system.
- **Freight movement and economic vitality** - To improve the national freight network, strengthen rural community access to national and international trade markets, and support regional economic development.
- **Environmental sustainability** - To enhance the performance of the transportation system while protecting and enhancing the natural environment.
- **Reduced project delivery delays** - Expedite the movement of people and goods through improved project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

The LRTP provides statewide guidance on policy priorities and strategies. This regional plan was started under Alaska's LRTP, "Let's Get Moving 2030." The LRTP was undergoing an update when this regional plan was developed, providing some challenges in coordinating common goals. The revised LRTP created eight policy and action areas:

1. New Facilities;
2. Modernization;
3. System Preservation;
4. System Management and Operations;
5. Economic Development;

6. Safety and Security;
7. Livability, Community, and Environment; and
8. Good Government.

Relevant federal agencies may provide additional guidance in their area of concern. For instance, the United States Department of Transportation (USDOT) Federal Transit Administration (FTA) provides guidance for transit planning in non-metropolitan areas. The USDOT Federal Aviation Administration (FAA) provides Advisory Circulars providing guidance on building and operating airports to airports that receive federal funds. USDOT's Office of Federal Lands Highway provides guidance on LRTPs and transportation improvement programs that serve tribal or federal lands.

2.2 Establish Vision, Goals, and Objectives

The vision for the SWATP is: **to guide transportation development decisions to maximize public benefits from transportation investments in the region.**

Federal guidance, State guidance and public input shaped the goals and objectives for this regional plan update. The goals are general enough to comply with the anticipated intent of subsequent LRTP guidance updates. Throughout the planning process (**Figure 2**), many different stakeholders with unique priorities participated. Clear goals and objectives facilitate a project selection process with integrity.

SWATP Planning Process

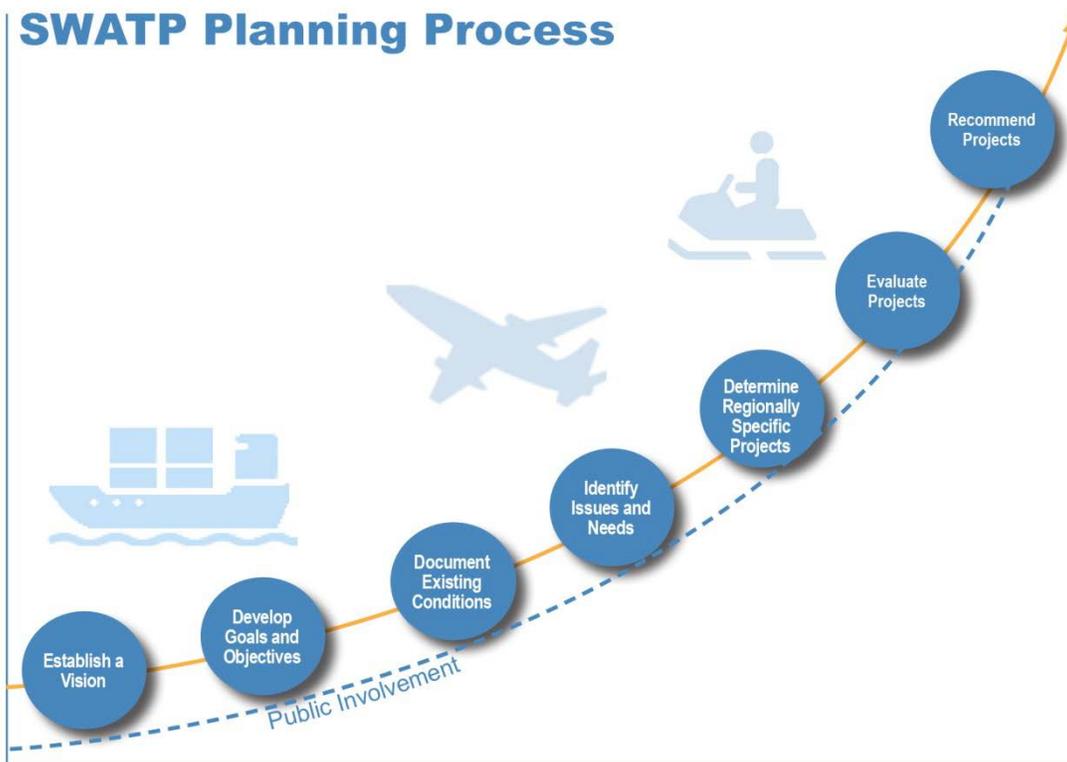


Figure 2: The Planning Process

This figure illustrates the planning process, and was presented during public involvement.

The four goals are safety, system preservation, connectivity, and economic value.

Goal #1: Safety

- Improve operational safety and security.
- Reduce risks for the Southwest Alaska transportation system users.

Objectives:

- Bring all airports up to FAA standards where practicable.
- Address safety needs identified in the airport layout plans (ALPs), the Alaska Aviation System Plan (AASP), and other planning documents.

Goal #2: System Preservation

- Preserve and maintain the existing Southwest Alaska transportation system.

Objectives:

- Resurface runways at Regional Class airports where pavements are deteriorating.
- When federal funds have been allocated, complete on-going projects at high-traffic, Community Class airports in a timely fashion.
- Provide all airports with adequate maintenance and provide lighting where practical.
- Provide maintenance equipment and snow removal equipment buildings.
- Rehabilitate facilities at risk of failing. While system preservation ideally addresses structures before they fail, funding restraints have limited funds available for preventative maintenance, and failures need to be addressed.
- Maintain existing Southwest ferry service.

Categorizing Airports*

Regional Class airports are public use airports, heliports, or seaplane bases that serve as an economic or transportation hub for more than one community, indicated by having at least three of the following characteristics: • At least 10,000 annual passenger boardings • An air carrier hub • A postal hub or more than 2 million pounds of cargo handled annually • Scheduled passenger service in aircraft with at least 30 seats • Community has a health facility serving two or more communities • Primary or secondary fire tanker base • Community has a Coast Guard air station, air support facility, or forward operating station.

Community Class airports include public use airports, heliports, or seaplane bases that serve as the main air transportation facility for an individual community providing, at a minimum, basic health, safety, and emergency needs. The community must have a minimum year-round population of at least 25 people and a public school. The community airport must be at least one hour driving time (over year-round accessible road) from an international, regional or other community airport.

Local Class includes airports, heliports, or seaplane bases that accommodate mostly general aviation activity.

* Alaska Aviation System Plan

Goal #3: Connectivity

- Improve intermodal connections.
- Establish or improve access to airports, barge landings, ports, and docks.
- Improve access to transportation hubs.
- Improve regional transportation hub access to other communities in the state.
- Provide access to public services and facilities such as health clinics, hospitals, and schools.

Objectives:

- Maintain surfacing and runway length at Regional Class airports.
- Maintain Regional Class airports to encourage continued air service.
- Improve airports with limited or no barge access.
- Improve aprons (expansion and resurfacing) at Regional Class airports.
- Invest in projects that connect two or more communities.

What is a hub?

A hub is an area that serves as a central location or focal point for a particular activity.

A transportation hub is a location where passengers and/or freight move between vehicles or transportation modes to travel on to other communities. Southwest Alaska has several regional transportation hubs. Communities such as King Salmon, Kodiak, Iliamna, Dillingham, Cold Bay and Unalaska all see high volumes of travelers and cargo each year, with many of the travelers and freight moving on to smaller communities nearby.

Transportation hubs can also serve as economic hubs. Economic hubs are areas that see a high level of economic activity, such as the production, distribution, and consumption of goods and services. In economic hubs you may see more banking, and increase access to retail and distribution facilities.

Goal #4: Economic Value

- Provide intermodal connections that enhance economic activity, bringing new business or money to the region.
- Provide access to fisheries.
- Enhance freight mobility.

Objectives:

- Invest in transportation projects that have strong benefits of supporting resource development, fishing, and tourism.

2.3 Analyze and Prioritize Projects

This plan focuses on transportation corridors that serve multiple communities and regionally-significant facilities and industries. Maintaining and improving existing facilities and enhancing safety have priority, and new construction will be strategically implemented.

The DOT&PF Planning Team initially considered approximately 77 aviation and surface transportation projects. This project list resulted from a review of the 2004 SWATP, a review of DOT&PF funding plans, and through public input. The list includes regionally significant projects from other plans (comprehensive plans, community transportation plans, etc.). Most projects improve transportation between communities in Southwest Alaska at some level, but not all were in line with the LRTP, or the SWATP goals and objectives.

The DOT&PF Planning Team evaluated whether projects met the goals and objectives of this plan. These employees included the Central Region Surface Transportation Planning Manager, the Central Region Aviation and Programs Planning Manager, the Kenai Area Planner (acting for Southwest); the Matanuska-Susitna Area Planner (assisting with Southwest), and the Operations Manager for Statewide Aviation.

The DOT&PF Planning Team identified 11 projects for inclusion in the plan based on their maximization of public benefit through regional transportation development. The list was vetted at public meetings in Unalaska, Dillingham, King Salmon, and Kodiak in September and October 2015.

After the meetings, communities submitted resolutions requesting consideration of additional projects, and the DOT&PF Planning Team reviewed eleven additional projects for inclusion in this plan. Two of them were added to the plan's list of recommended projects. One project originally on the key projects list was removed, because it was significantly developed. The result is a list of 11 key regional projects, listed and described in Section 8.0 of this plan.

Appendix A lists projects evaluated, along with the review standards for establishing compliance with goals and objectives.

2.4 Public Involvement

Beginning 2011, the DOT&PF Planning Team conducted public outreach, and received feedback that guided this update. The primary goal of engaging the public was to identify common Southwest transportation priorities and stakeholders that may be a part of implementing projects identified in this plan (Figure 3). Given the funding issues identified in Section 3.2, transportation stakeholders will need to leverage resources to accomplish common goals.

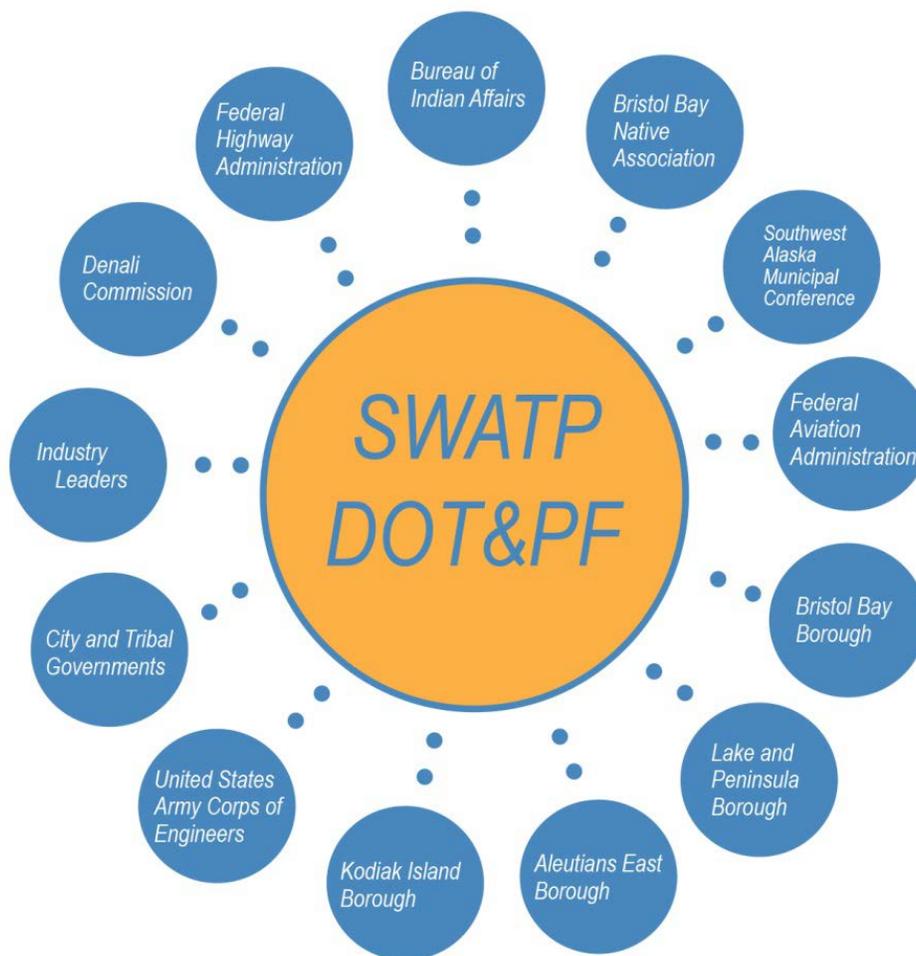


Figure 3: Southwest Alaska Transportation Plan Stakeholders

This figure was presented during public involvement, and shows stakeholders who may be instrumental in implementing the projects in this plan.

Appendix B has additional documents from public involvement. Public involvement guided public vetting of goals, objectives, and project priorities for the region (Figure 4).

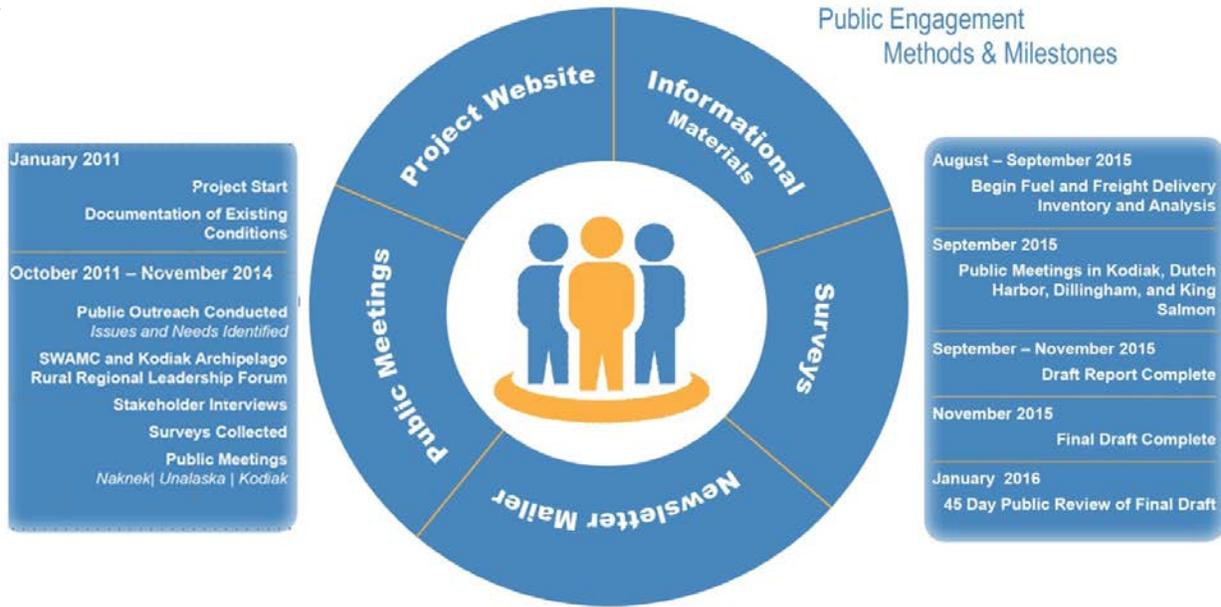


Figure 4: Public Engagement, Methods and Milestones

The figure above was presented during public involvement. Pictured below are community meetings in Kodiak (left) and Unalaska (right)



3.0 FUNDING AND PLANNING ENVIRONMENT

The State of Alaska does not have a regulatory or statutory mechanism by which the Department receives consistent annual State funds to address transportation projects, and the State is heavily dependent on federal funding sources to fund transportation infrastructure. Most transportation projects in Alaska are funded with approximately 90 percent federal funding. The remaining 10 percent is funded through the State of Alaska's General Fund, and is a required match by federal funding providers. During the completion of this plan, the President signed a five year highway bill called Fixing America's Surface Transportation (FAST) Act. The bill includes funding for highways and transit projects. Additional information on the FAST Act programs and funding can be found on the U.S. DOT FHWA website.

Federal funding sources for surface projects include the FHWA and FTA which are paid for by federal gas taxes. Federal airport improvement projects are funded through the FAA's Airport Improvement Program (AIP), which is paid for through federal user fees, fuel taxes, and similar sources of revenue.

Governments at the federal, state and local level have the common challenge of funding construction and maintenance of transportation infrastructure. On one hand, transportation infrastructure supports a healthy community and economic development. On the other hand, the taxes and fees charged to build and maintain infrastructure impact the business and individuals that pay them.

One tool for generating revenue is taxation. Taxes can be applied to income, property or purchases. The funds generated by taxes can be pooled for general governmental use, often called a "general fund." Taxes can also be directed to a specific fund. For instance, federal gas taxes are directed to the Federal Highway Trust Fund. These funds are then allocated to states for use on transportation projects. The State of Alaska fuel tax goes into the general

fund. The legislature then treats those funds like any other general funds, and can choose to spend them on transportation projects or for other government projects. For more information on State fuel taxes, refer to Alaska Statutes, Section 43.40.010, "Tax on transfers or consumption of motor fuel and expenditure of proceeds."

Fees can be collected for certain state functions, as when licensure fees collected by the Alaska Department of Motor Vehicles help fund the agency. Fares collected by the Alaska Marine Highway System (AMHS) fund about 30 percent of their operating budget.

Taxes and fees can be collected by governments at any level, including tribal governments.

The revenues collected through taxes and fees can have limitations associated with them. Some federal funding types are reserved for projects improving busy highways, while others are reserved for more local roads. Some federal funding is set aside for transit, some for other transportation needs.

As transportation funding dollars see more competitive pressure, communities should anticipate fully leveraging multiple funding sources in order to develop, design, and construct transportation projects. A transportation project may have multiple elements and could possibly leverage multiple funding sources. As an example, a road project might also address salmon habitat in a culvert, in which case a watershed conservation agency might be able to provide some funding. Road construction could clean up a hazardous materials area, and environmental conservation funds may be available to fund that element of the project. A road project could require utility upgrades that qualify for United States (U.S.) Department of Agriculture or State of Alaska Village Safe Water funding. A number of Southwest Alaska airports were used by the military during World War II, and may qualify for funding to clean up environmental contamination, a process that could be paired with a construction project (Figure 5).

When one agency provides funding, it can be attractive for other agencies to participate in the project. Most funding entities have limited funds, and the act of providing some funding for a project shows that it is important. If one agency is funding a project, another one knows that the project has been vetted, there is a common commitment of funds, and interested agencies will need to provide that much less.

Funding from multiple sources will take extra time for grant application coordination and agency requirements. One funding agency might require one form of accounting, while another needs a

different one. One agency might require daily construction reports, while another needs a weekly summary. With advance coordination, these conflicting requirements may be reduced, and necessary reports consolidated. Sometimes, one funding agency has enough experience with handling money that other agencies will allow them to manage the whole project. In some cases, the Denali Commission would provide some funding for rural road development to DOT&PF. The two agencies would agree on how the money would be spent and any accounting or reporting requirements. Often these agreements are documented in a Memorandum of Understanding (MOU). These streamlining efforts provide more efficient project delivery and reduce reporting and delivery complexity.



Figure 5: Cold Bay Airport

Cold Bay's airport was built and extensively used by the military during World War II, and could qualify for environmental clean-up funding.

While using multiple funding sources for a project presents some challenges, it has the advantage of meeting multiple needs with one project, and reducing the individual obligations to one agency. Below is a discussion about some of the funding sources available for transportation projects in Alaska.

3.1 Funding Sources

Each type of funding available for transportation projects has different opportunities and limitations. Any transportation development partners should have a basic understanding of funding available, and where to start discussions on how it is being used. Outlined below are some common funding sources, resources for more information, and initial contact information for someone who can provide further context.

FHWA: The FHWA provides each state with surface transportation funding from the Highway Trust Fund. At the state level, this funding is broken down into funding categories, each targeting different sorts of transportation with different rules. For example, some funds are for safety projects, some for large highways, and some for bridges. One of the accounts, the Ferry Boat Program, provides some funding for AMHS. How these funds are divided up is determined by Congress.

How do I participate?

If you have a project that improves transportation between more than two communities or that significantly impacts economic development, contact the DOT&PF's Regional Planner for your area. For most of Southwest Alaska, this planner will be in the DOT&PF's Southcoast Region. For the Dillingham area, this planner will be in DOT&PF's Central Region. Additionally, the AMHS has a dedicated planner for their projects.

For more information, visit: <http://dot.alaska.gov/stwdplng/cip/stip/index.shtml>

FAA: The FAA administers Airport Improvement Program (AIP) from which the state receives 95 percent of the capital funding used for airport projects (**Figure 6**). The statutes and regulations that establish the program limit expenditures to public use aviation needs and preclude projects to develop revenue-producing and exclusive-use facilities. Any revenue generated by the airport must be spent within the airport system – it cannot be diverted to a community or state general fund.



Figure 6: False Pass Airport

FAA funding is proposed for improvements to False Pass airport, including erosion control, lighting and a new wind sock.

How do I participate?

If you have an idea on an airport improvement that would improve safety, efficiency, or condition, contact the Regional Aviation Planner for your region.

For more information, visit: <http://dot.alaska.gov/stwdav/index.shtml>

United States Environmental Protection Agency (EPA): The EPA provides funding for environmental concerns such as water and sewer system repairs, new construction for areas without service, and environmental clean-up. They've delegated responsibility for managing these funds to the Alaska Department of Environmental Conservation (DEC). The funding can be either a grant or loan.

 *How do I participate?*

Your first step would be to contact DEC's Village Safe Water or Municipal Grants and Loans programs to determine the program that may work best for your project.

For more information, visit: <http://dec.alaska.gov/water/index.htm>

Transportation Investment Generating Economic Recovery (TIGER) Grants: TIGER grants are a federal USDOT program of competitive grants that fund projects focusing on safety, innovation, and opportunity. Annual application process is very competitive.

 *How do I participate?*

Keep an eye on the website to determine application dates and to download materials. In the meantime, you should register at Grants.gov. This process can take two to four weeks, and must be completed before submitting a final application. You will be required to get a Data Universal Numbering System (DUNS) number, which is a proprietary 9-digit code that uniquely identifies each business or organization globally – there is no cost associated with getting this number. You'll also need to register with the System for Award Management (SAM), and get a SAMs number. The SAM helps the federal government track information on business and trading partners.

For more information, visit: <http://www.transportation.gov/tiger>

Fostering Advancements in Shipping and Transportation for the Long-Term Achievement of National Efficiencies (FASTLANE) Grant Program: The FASTLANE program is a new program in the FAST Act to fund critical freight and highway projects across the country. The FAST Act authorizes \$800 million in funding for the FASTLANE program for fiscal year 2016, with 25 percent reserved for rural projects, and 10 percent for smaller projects. The FASTLANE grant program provides funding for projects of national or regional significance, which are identified in this plan.



How do I participate?

The program solicits grant applications typically in the spring. The next Notice of Notice Funding Opportunity should be out April 2017.

For more information, visit: <https://www.transportation.gov/FASTLANEgrants>

ETA: Some of the funding available in the Highway Trust Fund is allocated for transit funding.



How do I participate?

Unlike road funding or airport funding, you are not required to go through the State to receive transit funding. However, the DOT&PF's Transit Planners can help navigate the bureaucracy and determine which programs might work best for your community.

For more information, visit: <http://dot.alaska.gov/stwdplng/transit/>

Denali Commission: In September 2015, President Obama announced that the Denali Commission will be the lead agency for communities threatened by erosion, flooding, and permafrost. The Denali Commission and its Commissioners are responding to the President's announcement, setting up policies and programs to help threatened communities. This independent federal agency was originally established to work with multiple state and local partners to develop infrastructure that supports communities and economic development. While the earmark establishing the Denali Commission has been eliminated, they still have some monies and provide coordination between agencies.



How do I participate?

If you have a rural transportation project, contact the Senior Program Manager for the Transportation Program. Keep your eye on the website to find out about public meetings that will share information on upcoming programs. A list of commissioners and other staff is on the website.

For more information, visit: <https://www.denali.gov/programs#transportation>

General Fund (GF): The State's GF may be tapped for transportation projects through legislative action. The legislature may choose to use a special pot of funds that support transportation projects, or they could choose to take funds from the same pot that funds other elements of state government. This funding can be challenging to secure. Decreased oil prices puts pressure on every available dollar and creates competition among agencies. One advantage of GF is that the design and environmental analysis can be faster than if a project is federally funded. For federal programs, participants are required to complete the environmental analysis before moving on to right-of-way (ROW) acquisition or design. If the project is funded with State GF, the environmental process can occur concurrently with the ROW acquisition and design. While the State accepts some risk if an environmental challenge is found, the State may choose to balance that risk with the importance of economic development. GF may be appropriate for a large transportation project that supports significant economic growth and requires a relatively quick design and build. GF can also be appropriate for relatively small transportation projects. Projects that are under \$1 million are easier for legislators to fit into budget gaps.



How do I participate?

Contact your legislator's office. They will need support materials (scope, any studies or design) the September before the next regular legislative session, which generally begins in the middle of January. They will want to see some sort of community support, and communities usually provide their legislators with a Capital Improvement Project list before the legislative session.

For more information, visit: <http://akleg.gov/index.php>

Fish and Game: Fish and Game has some grant monies available to improve power boating and sport fishing access boat launches. These funds cannot be used for projects that primarily support subsistence or commercial operations.

 How do I participate?

Contact The Alaska Department of Fish and Game for more details.

<http://www.adfg.alaska.gov/index.cfm?adfg=fishingsportboatingangleraccess.main>

Municipal Harbor Facility Grant Program: The program's intent is to provide financial assistance to municipal or regional housing authority owned harbor facilities. There is a 50/50 match requirement, and the program is funded annually at the discretion of the Alaska Legislature and consists of two tiers, Tier I and II. Tier I has priority and consists of major maintenance and repair of a harbor facility that was previously owned by the State and now is locally owned. Tier II consists of all other harbor facilities and those harbor facilities which have already received a Tier I grant. A harbor facility may only receive one Tier I grant but is eligible for multiple Tier II grants.

 How do I participate?

Contact your regional planner or the Statewide Ports and Harbors Engineer.

For more information, visit: http://dot.alaska.gov/stwddes/desports/harbor_grant.shtml.

Bonding: A government may decide to go into debt to pay for transportation upgrades, depending on the state of the economy, and the debt the government already carries. Governments often hold votes for approval to go into debt for a certain purpose.



How do I participate?

Contact your government representative for more information.

For more information, visit: <http://treasury.dor.alaska.gov/ambba/>

A community can make participation more attractive to state and federal agencies by contributing community funding. Tribes also have possible sources of funding, through their own revenue generation or through Tribal Transportation funding (see discussions below). Non-profits are sometimes willing to participate if the project will help meet their goals.

Since the 1990s, federal sources have primarily funded transportation in Alaska. A number of issues could impact how that funding is used in the future.

3.2 Planning Considerations/Issues

Since the 2004 SWATP update, policies and conditions impacting transportation development in Alaska have changed. By documenting these changes, stakeholders can understand the new constraints impacting this plan. It will also help future planners understand when issues that have shaped transportation decisions have changed, and when reviewing the proposed projects may be warranted.

3.2.1 Freight Funding

Budget agreements made late in 2015 show evidence that the USDOT is focused on making the movement of freight a priority for the United States. The President signed a five-year funding bill on December 4, 2015. The bill includes the following two new areas for freight funding:

- National Highway Freight Program: approximately \$1.2 billion annually; and
- Nationally-Significant Freight & Highways Projects Program: approximately \$900 million annually.



Figure 7: Naknek Dock

Equipment stands quiet on a fall day after the fishing season has ended. Naknek landed 165 million pounds in the 2012-2013 commercial fishery season, worth \$167 million (NOAA, 2010-2013).

This program, proposed for Federal Fiscal Year (FFY) 2016-2021, will focus on large-scale projects of national or regional importance. Freight projects in rural Alaska will be eligible for funding through a competitive grant process called the FASTLANE grant program. (Funding information on how you can participate is on page 20). Southwest Alaska freight transport is highly dependent on marine services and capabilities (**Figure 7**), and federal funding may be available for Southwest Alaska. AMHS provides freight delivery for residents in Southwest Alaska, delivering vehicles, passengers, and cargo such as food or basic goods purchased in Anchorage or Seattle. The Southwest Alaska region includes 40 communities that are not connected to the NHS through the ferry system. Residents living in these communities

receive their daily goods, fuel, food, vehicles, building supplies, and other domestic goods via barge delivery or air transport.

3.2.2 Arctic Development

Arctic industries use the Ports of Unalaska and Dutch Harbor to position, stage, and store equipment and supplies while they wait for the approximate four-month window of ice-free conditions necessary for their operations. Arctic development projects include mining, oil and gas exploration and drilling, port infrastructure, and transportation of freight and passengers. Arctic development particularly impacts Dutch Harbor.

- Fuel for communities north of Unalaska is stored at Dutch Harbor.
- Northbound cargo passes through Dutch Harbor.
- Dutch Harbor provides staging for oil and gas exploration and support vessels.
- Mining companies have expressed an interest in staging materials and supplies in Dutch Harbor.

3.2.3 United States Earmark Ban and Impacts on the Denali Commission

An earmark is a legislative provision that directs approved funding toward specific projects (Merriam-Webster, 2015). Alaska received more than 189 earmarks, worth approximately \$1 billion, between FFY 2005 and 2010 (Executive Office of the President, Office of Management and Budget [OMB], 2011). In 2012, the U.S. Congress voted to ban earmarks and passed a budget guiding spending into 2015, including \$63 billion in budget cuts. One of the earmark programs cut that had a significant impact on Alaska was the Denali Commission.

The Denali Commission's Transportation Program was originally created in 2005 as part of the Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) legislation and accompanying amendments to the Denali Commission Act of 1998 (as amended).

The program included two major components, rural roads and waterfront development, as outlined below:

1. The roads portion of the program targeted the planning, design, and construction of basic road improvement needs. Projects focused on connecting rural communities to one another and the state highway system and enhancing rural economic development. Eligible road projects included local community road and street improvements and roads to subsistence use sites. Roads built of wood were an option for communities where traditional roads were impractical to build.
2. The waterfront portion of the program addressed planning, design and construction of port, harbor and other rural waterfront needs. Eligible project types included regional ports, barge landings and docking facilities.

SAFETEA-LU expired in 2009 and operated under a continuing resolution from June 2009 through June 2012.

In late June 2012, Congress passed a two-year transportation bill, MAP-21, that did not include authorization or funding for the Denali Commission's transportation program.

The Denali Commission, in partnership with the stakeholders listed in Section 1.3, invested approximately \$1 billion dollars in transportation infrastructure between 2005 and 2012 (Figure 8).

3.2.4 Moving Ahead for Progress in the 21st Century (MAP-21)

President Obama signed MAP-21, the new highway bill, into law on July 6, 2012. MAP-21



Figure 8: Nondalton

Among the projects that the Denali Commission funded was a dock and landing for Nondalton, a community along Sixmile Lake.

focused on setting national performance goals, which require states to focus FHWA funding on the NHS. MAP-21 consolidated the number of federal programs by two-thirds, from about 90 programs to less than 30, to focus resources on key national goals. This focus eliminated funding for earmark programs such as the Denali Commission's Transportation Program and eliminated the Bureau of

Indian Affairs Indian Reservation Roads (IRR) High Priority Program (HPP). Where IRR used to distribute funds based on road inventory, funds are now largely dependent on tribal population. Tribes over 10,000 split 25 percent of available funds, and tribes over 1,000 split 60 percent of the funds. The remaining 15 percent is split between tribes with fewer than 1,000 members. Southwest Alaska's population is in large part Alaska Native, with 32 percent identifying as American Indian or Alaska Native (Alaska Department of Labor and Workforce Development [DOLWD], 2012).

MAP-21 focuses funding on the NHS (Figure 9). Only the Southwest communities that receive ferry service are connected to the NHS. Figure 9 shows the NHS connection to Homer on Alaska’s Kenai Peninsula. Homer provides the closest link to the contiguous-land-based NHS for residents of Southwest Alaska. The dashed lines on this map show routes for communities served by the AMHS.

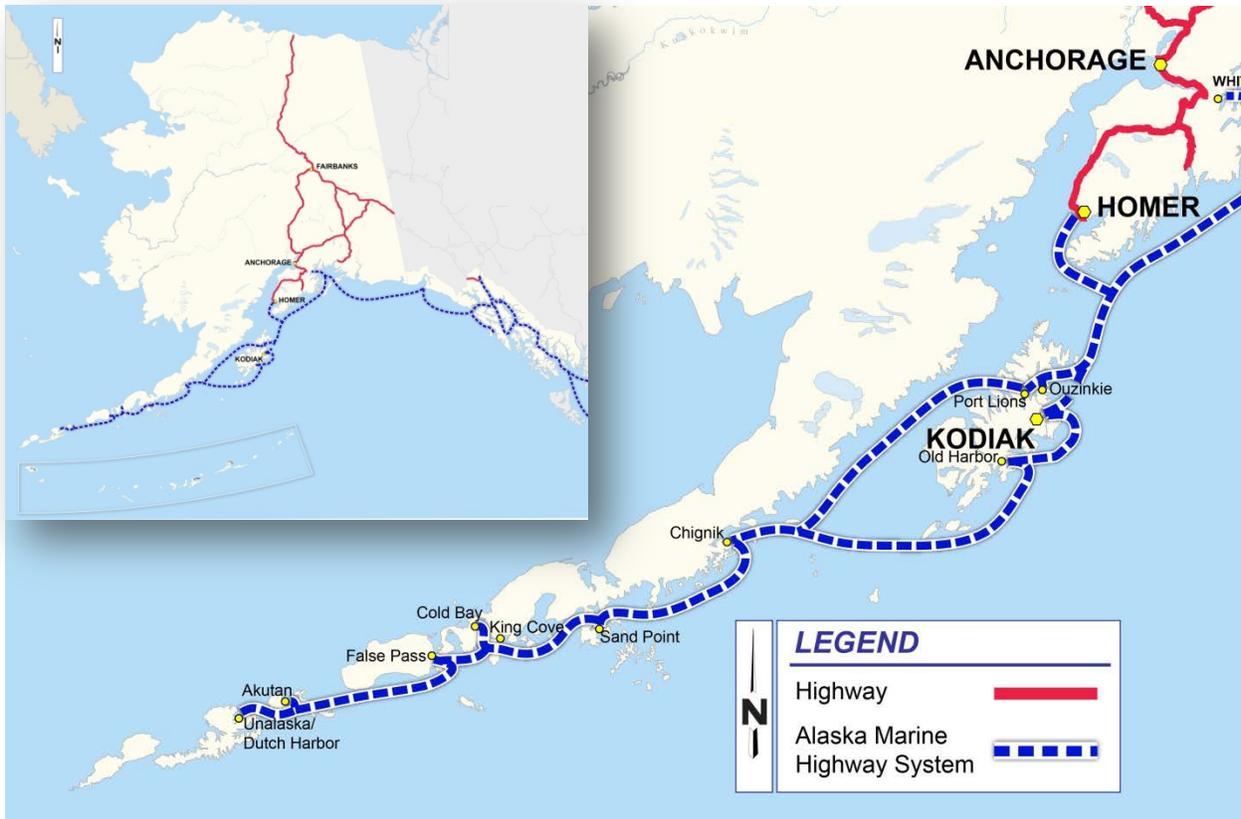


Figure 9: The National Highway System in Alaska

Southwest Alaska is connected to the statewide National Highway System (inset) through the Alaska Marine Highway System port in Homer.

3.2.5 The Federal Aviation Administration Budget Cuts and Shifts

The FAA has experienced budget cuts and has shifted their investment priorities to rural access and pavement maintenance programs, and FAA funding for airport construction. In recent years, the FAA has required that a large share of the federal AIP funds nationwide be spent to expand runway safety areas (RSAs), and be used to resurface or reconstruct deteriorating paved airport surfaces at Regional Class airports. For example, Regional Class airports such as Cold Bay, Dillingham, Iliamna, King Salmon, Kodiak, and Unalaska have seen significant recent expenditures to address RSAs and pavement condition, though a considerable amount of work remains at several of these airports. Congress has mandated improvement of safety areas at FAR Part 139 certificated airports and busier airports, by 2015. Other federal programs that support vital aviation services may be reduced or changed during the time frame of this plan, including Bypass Mail or Essential Air Service. Medical transport services may be impacted by cuts to the Indian Health Service or Medicare.

3.2.6 Price of Oil Drops Significantly

The price of oil in 2015 was an average of \$53 a barrel according to the United States Energy Information Administration (December 2015) and is anticipated to remain at that level for a few years. Even after recovery, the State's funding shortfall will have resulted in reduced infrastructure repair, and exacerbating maintenance challenges.

DOT&PF depends on undesignated general funds (UGF), funded primarily through oil revenue, for 40 percent of their total operating budget in 2016, for a total of \$247 million. For comparison, Health and Social Services, the University of Alaska system, and Corrections use more UGF, at \$368 million, \$356 million and \$281 million respectively (State of Alaska, Office of the Governor, 2015a).

The AMHS fares collected do not cover costs to operate. The AMHS's operating budget is \$145 million in FFY2016. \$97 million (62 per cent) of their budget is dependent on UGF, and

\$48 million is recovered from fares. In comparison, Southcoast Region road and airport maintenance will require \$20 million, or 21 percent of the amount needed to operate the AMHS (State of Alaska, Office of the Governor, 2015a and 2015b). This disparity attracts political attention when budgets are tight (**Figure 10**).

3.2.7 Fuel Prices

All fuel and freight is either flown or barged in to Southwest Alaska. Shipping origin determines fuel prices and shipping is often from Seattle, Washington. The more isolated the community, the more expensive the fuel is. Barge operators also charge the community based on operational tasks associated with delivering fuel, such as transferring the fuel from the barge to the fuel header, and the number of stops a barge has to make in one community. Because fuel is shipped and stored, a community will generally pay the same price for fuel all winter, regardless if the price rises or falls in the rest of the state.

The high cost of living in rural Alaska negatively affects community sustainability and reduces the funds available for travel. As noted in the Phase 1 Report, additional studies are warranted to document if fuel costs can be reduced through infrastructure improvements, and if those



Figure 10: Alaska's Capitol Building, Juneau, AK

The legislative session begins in January. Senators, Representatives, and the State's administrative officers develop budgets that address the sharp downturn in oil prices, which has impacted the State's budget.

reduced costs would be passed on to the customer.

Although fuel prices are going down nation-wide, they remain relatively high in rural Alaska. For example, in January 2015 the price of a gallon of gasoline in Anchorage, Alaska was \$2.89. The price in Dillingham, Alaska was \$6.71. While decreasing oil prices (discussed above) reduce fuel costs, it also reduces funds available for state provisions such as education (McBride, 2015).

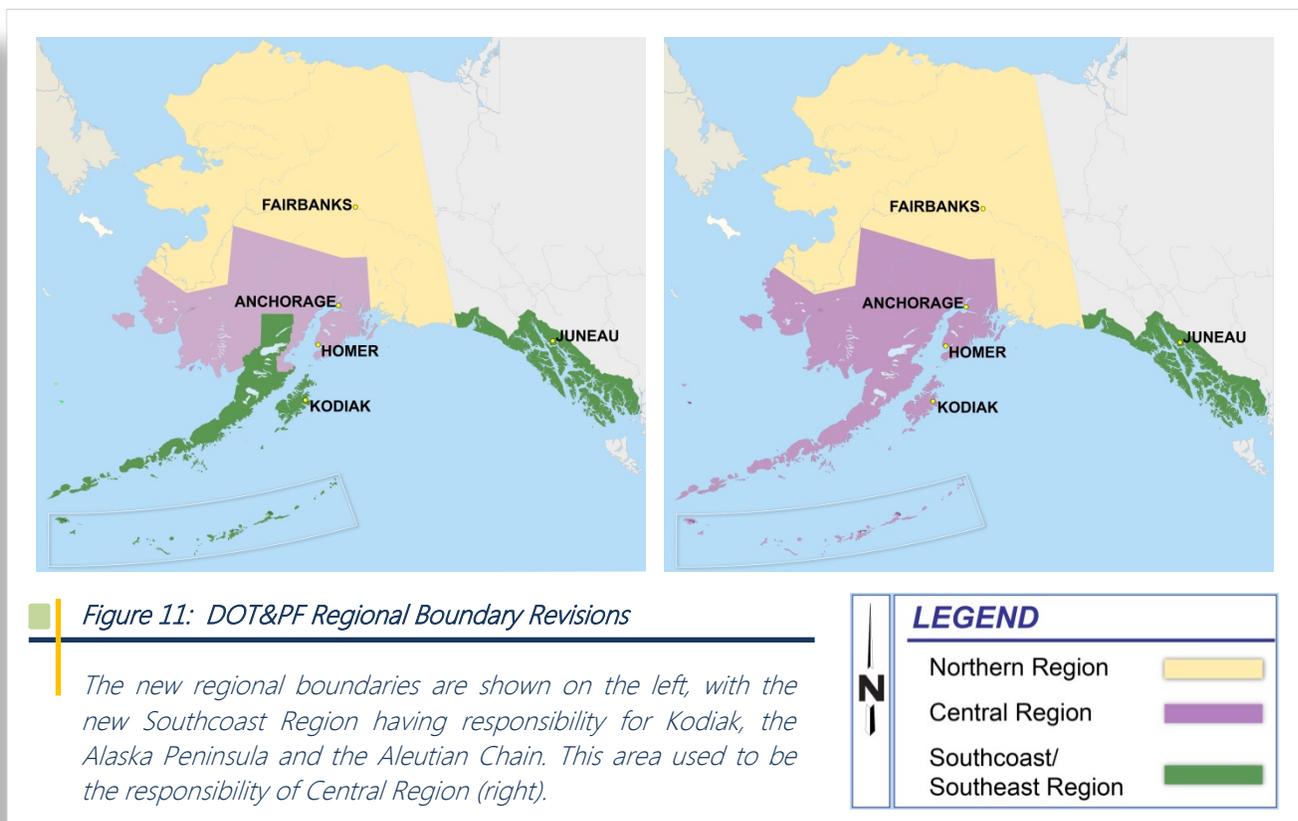
Aviation is the main year-round mode of transportation in the Southwest Alaska, and is also an expensive option for the traveler, in part due to fuel prices (Sharp, 2012). Residents travel back and forth between communities and Anchorage to access jobs, health care, education, and other public facilities. A round trip ticket between Anchorage and Dillingham was approximately \$400 dollars during the summer of 2015.

3.2.8 Pebble Mine

The Pebble Mine Project (Pebble) is a copper-gold-molybdenum porphyry deposit in the advanced exploration stage. The project is located on State land in the Bristol Bay Region of Southwest Alaska, approximately 17 miles northwest of the community of Iliamna. Pebble consists of two contiguous deposits. Pebble West is a near surface resource of approximately 4.1 billion metric tons. Pebble East is significantly deeper than Pebble West and contains an estimated resource at 3.4 billion metric tons (Alaska Department of Natural Resources [DNR], 2015). The project is currently on hold as the Pebble Limited Partnership (PLP) reviews its options for advancing the project further. PLP's eventual development of an optimum project plan would outline an opening position for transportation routes. If PLP advances to develop an optimum project plan, review of this document should be revisited, and a subarea plan considered.

3.2.9 DOT&PF Boundary Changes

DOT&PF is organized into three regions (Central, Northern, and Southcoast), a statewide headquarters, and a section for AMHS. The Alaska Railroad is a separate corporation in the State of Alaska. In fall 2014, the department changed boundaries to expand the Southeast Region to encompass additional areas of Southwest and coastal Alaska, and renamed it the Southcoast Region (Figure 11). With the new boundary changes, Central Region is responsible for the Matanuska Susitna Borough, the Kenai Peninsula the Municipality of Anchorage, and locations along the Kuskokwim River. Southcoast Region oversees the remainder of Southwest Alaska, the Aleutian Islands, Kodiak, Island, and Southeast Alaska. The shift provides the opportunity for the regions to have better coordination, operational and planning expertise, and to further carry out the successful implementation of projects in Southwest Alaska.



3.2.10 Essential Air Service Changes

The Essential Air Service (EAS) subsidy program went into effect after the passing of the Airline Deregulation Act in 1978. The EAS program is administered by the USDOT to establish a minimum level of scheduled air service to rural communities which would otherwise have lost service through changes in air carrier profitability after deregulation. This program is controversial and often debated in Congress. Some feel the subsidies are not necessary in contiguous United States communities with other transportation modes available. The program has generally been supported in Alaska and Hawaii because of isolation and lack of alternative systems of transportation such as roadways.

Subsidized EAS routes are available for bid by certified air carriers, which are selected according to service reliability and arrangements with other airlines at the connecting hubs. Community desires are also considered when selecting a carrier. Contracts are awarded for a two-year period, and designate routing, frequency of service, aircraft type, and subsidy rate. Air carriers receiving these subsidies must provide 90 days prior notice before discontinuing service to an airport, allowing time for alternative service to be found. Currently, 49 communities in Alaska receive EAS subsidies for air service, and air carriers providing that service receive an aggregate amount of \$15,510,296 per year from these subsidies (USDOT, October 2015). Six of these Alaska airports receive subsidized jet service, and those six airports receive 63 percent of the total Alaska subsidy, for a total of \$9,896,767. The Statewide Aviation Planner notes that more EAS sites are in the process of being added to the Southwest area, but at this time they are not far enough along in the process to be counted in the data (Rauf, 2015). As of October 2015, 18 of the communities receiving EAS subsidies, or 37 percent, are in Southwest Alaska. They receive \$2,874,838, or 19 percent of available EAS funding.

Recent changes to the EAS program have banned any new communities from entering the program. However, communities in Alaska and Hawaii that are more than 175 driving miles from the nearest large or medium National Plan of Integrated Airport Systems (NPIAS) hub airport are exempt from this change.

What is a NPIAS hub?

Note that the National Plan of Integrated Airport Systems defines hubs based on the number of passenger boardings each year. By the NPIAS definition, there are only three hubs in Alaska: Anchorage is a medium hub, and Fairbanks and Juneau are small hubs.

3.2.11 Bypass Mail Program

The Alaska Bypass Mail program was established in 1972 to ease demand on Alaska postal facilities running over capacity. The program allows parcel post mail to be shipped to rural Alaska communities directly through private shippers and/or the authorized, certified air carriers serving those communities, bypassing any handling by the U.S. Postal Service. The difference between U.S. parcel post rates and the air carriers' air freight rates are paid by the U.S. Postal Service. The program reduces the need for and cost of additional U.S. Postal Service employees and facilities. Shipping time is shortened because of reduced handling. Consequently, the Alaska Bypass Mail program both increases costs and reduces costs for the U.S. Postal Service, with a net loss. The funding airlines receive from the Alaska Bypass Mail program helps them control operational costs and provide less expensive fares to passengers. Some carriers have suggested that the Alaska Bypass Mail program subsidizes public assistance programs by making travel to and from health care facilities less expensive, thereby increasing public benefit (**Figure 12**).



Figure 12: Kokhanok

Kokhanok is one of the Iliamna Lake communities served by the Alaska Bypass Mail program.

Because shipment of these goods are, in a sense, "subsidized" by the U.S. Postal Service, air carriers get additional revenue. They are more able to provide service for passengers and goods between participating rural communities and regional aviation hubs. Without the Bypass Mail program, some small communities with little demand for passenger service would

receive far less of that service. Additional passenger service to small rural Alaska airports is a benefit of the program. Purchasers of goods shipped at the cheaper rates also benefit from this program.

Items shipped through the Alaska Bypass Mail program include bulk shipments of palletized goods, mostly food and dry goods destined for rural communities. Items not allowed to be shipped via Alaska Bypass Mail include hazardous substances and building materials.

There are currently 16 bypass mail hubs that serve over 100 destination airports in rural Alaska. Within Southwest Alaska, bypass mail originates from 5 postal hubs – Cold Bay (4 destination airports), Dillingham (8 destination airports), Iliamna (4 destination airports), King Salmon (4 destination airports), Togiak (1 destination airport), and Port Heiden (4 destination airports). **Table 1** shows the current bypass mail hubs in the planning area and the associated destination airports.

Table 1: Current Bypass Mail Hub and Destination Airports in Southwest Alaska

COLD BAY	ILIAMNA
False Pass	Kokhanok
King Cove	Nondalton
Nelson Lagoon	Pedro Bay
Port Moller	Port Alsworth
DILLINGHAM	KING SALMON
Aleknagik	Egegik
Clarks Point	Levelock
Ekwok	Pilot Point
Koliganek	South Naknek
Manokotak	
New Stuyahok	PORT HEIDEN
Twin Hills	Chignik
	Chignik Lagoon
TOGIAK	Chignik Lake
Quinhagak	Perryville

NOTE: (Hubs in bold)

Source: U.S. Postal Service, 2012; Lockmann, 2015

The Rural Service Improvement Act of 2002 was the last major legislative change to the Alaska Bypass Mail program. This act greatly improved the safety and efficiency of air service to rural Alaska communities. Minimum qualifications and service frequencies were established for air carriers handling bypass mail, improving service to the communities. In addition, more stringent qualifications reduced the number of carriers qualified for inclusion in the program, in turn reducing competition and improving the health of the qualified carriers.

Concerns about government efficiency and large budget deficits within the U.S. Postal Service have made the high cost Alaska Bypass Mail program a controversial subject in Congress in recent years. In addition to possible legislative and funding changes, the U.S. Postal Service in Alaska is considering the addition of new bypass mail hubs to the system, with route changes to accommodate the new hubs. Any bypass mail hub and route changes will likely be

followed by all air service to those rural Alaska communities receiving bypass mail service changes.

Should the Alaska Bypass Mail program be reduced or eliminated, communities in the planning area now receiving the benefit of improved air service through the Bypass Mail program may be eligible for Essential Air Service subsidies through the USDOT to preserve a minimum level of air service.

The Alaska Bypass Mail and Essential Air Service programs have received increased budgetary scrutiny at the federal level. While there is recognition that Alaska has a unique dependency on aviation and needs special federal support, budgetary pressures may eventually cause reductions to these programs.

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4.0 EXISTING CONDITIONS

Southwest Alaska is a largely maritime region with some of the most productive fishing grounds in the world - Bristol Bay, the Bering Sea, and the Gulf of Alaska. The fishing industry is the basis for a significant portion of the regional economy. Southwest Alaska was home to three of the nation's top five fishing ports in 2010, 2011, and 2012, bringing in \$392 million, \$489 million, and \$503 million in fish products, respectively. In 2013, the region held four of the top five slots nationwide. The ports of Dutch Harbor, Kodiak, Aleutian Islands Other (Adak, Akutan, Atka Island, False Pass), Bristol Bay Other (Dillingham [Figure 13], Egegik, Ekuk, Saint George Island, Saint Paul Island and Togiak), and Naknek (Figure 14) brought in a total value of \$558 million in fish value (National Oceanic and Atmospheric Administration [NOAA], 2010-2013). Protecting the resource is a priority, as is developing and maintaining transportation infrastructure that supports the industry.



Figure 13: Dillingham Small Boat Harbor during Fishing Season

Dillingham is one of the Southwest Alaska communities helping to make Southwest Alaska nationally competitive in commercial fishing markets. Photo credit: Julianne Baltar.



Figure 14: Fishing Boats in Naknek

Naknek King Salmon has been in the top five ports nationally for value of catch since 2010.

The Southwest area's population peaked in 1990s, and has seen a decline since. There are currently almost 30,000 people living in the area. Over the next 20 years, a one percent per year decline in the Southwest area population is expected. The Aleutians East Borough and Dillingham Census Area are anticipated to grow over the term of this study. Kodiak will maintain its population. The populations of the Aleutians

West Census Area, the Bristol Bay Borough, and the Lake and Peninsula Borough are anticipated to decline (Alaska Department of Labor and Workforce Development [DOLWD], 2010). For more information on population and trends, see the Phase 1 Report.

4.1 Aviation

Aviation and marine transportation provide most of the transportation to and from communities in the region. Roads provide access within communities and to aviation and marine transportation facilities. Regional Class airports include Cold Bay, Dillingham, Iliamna, King Salmon, Kodiak, and Unalaska Airports, all owned and operated by the State of Alaska. These Regional Class airports connect air service to 53 smaller airports in the region. 22 seaplane bases in the region are also registered with the FAA.

The Alaska DOT&PF and FAA's funding investment in this region over the past 30 years has significantly improved Alaska aviation system. Comparing the changes to average runway length and runway surface are two ways to recognize progress in the region. Average runway length increased for the Regional and Community Classes, but declined for the Local Class. All of the Regional Airports, except for Iliamna, have runways that are now over 6,000 feet long. Airports in the Community Class increased in runway length by an average of over 500 feet during that time period (**Appendix C**).

The percent of runways in Southwest Alaska that are paved increased from 13 percent in 1985 to 28 percent in 2014. All six of Southwest Alaska's Regional Airports are now paved – Unalaska and Iliamna formerly were gravel. Four Community Class airports (Akutan, Sand Point, Saint George, and Saint Paul) are now paved and one Local Class airport (Kodiak Municipal) has been paved.

DOT&PF has established a runway length goal of 3,300 feet for Community Airports, where practical. From 1985 to 2014, DOT&PF extended many airports across Alaska, and Southwest Alaska has particularly benefited from this standard. In 1985 only 10 Community and Local Class Airports were 3,000 feet or longer. By 2014, 27 airports are at least 3,000 feet long. **Appendix D** illustrates airports over 3,000 feet. While the State standard remains 3,300 feet, some airports cannot meet that standard due to cost, terrain, or other local conditions.

The largest runway length increases were at Ekwok, Kokhanok, Nelson Lagoon, Pedro Bay, Saint Paul, and Sand Point. A new airport was built in Akutan. The largest runway length decreases were at King Cove, Naknek, Port Heiden, and Togiak (**Appendix E**). Natural events, like erosion, can result in shorter runway length. Other factors include the need to move runway thresholds, to increase runway safety areas or address obstructions in the runway approach.

4.2 Non-AMHS Marine

Marine service capabilities include 22 harbors in the region and five deep draft docks. While the fishing industry use of the area is expected to remain stable, use of marine facilities by oil and gas exploration companies may require changes to facilities or additional repair and emergency response capability (DOT&PF, 2014).

For the purposes of this report, this analysis is divided between non-AMHS marine services and AMHS services.

Non-AMHS marine analysis is divided into the following:

- Regional conditions
- Regional operations
- Marine hub facilities

4.2.1 Regional Conditions

Freight movement in Southwest Alaska is highly dependent on marine services. Freight is shipped from Seattle/Tacoma to Anchorage, Kodiak, or Unalaska. Once the barges reach these main ports, freight is typically transferred to smaller barges and shipped to secondary ports or harbors located up river or along the coastlines in the region.

In addition to Unalaska and Kodiak, Dillingham also serves as a distribution port for other Southwest Alaska communities. Unlike Unalaska and Kodiak, Dillingham does not receive direct freight service from Seattle/Tacoma. Other ports or harbors in the region may be regionally significant or nationally important, but do not generally serve as distribution ports.

4.2.2 Regional Operations

The barge companies listed below strategically split the delivery effort with other businesses to provide communities located along the river with barge service. Some of the larger barge companies serving the Southwest Alaska area include the following.

Matson (previously Horizon Lines; Matson, 2015)

- Services Anchorage, Kodiak, and Dutch Harbor (Unalaska).
- Sails twice weekly, consistent day-of-the-week service between Tacoma, Anchorage, and Kodiak.
- Provides weekly service between Tacoma and Dutch Harbor (Unalaska).
- Provides truck, rail, and barge service connections throughout Central Alaska, Kodiak, and the Aleutian Chain.
- Provides a full range of equipment including dry and refrigerated containers, open top containers, car carriers, flatracks, and insulated containers.
- Expertise in supporting Alaska's seafood industry.

Vitus Marine (Anderson, 2015)

- Services Aleutian Islands, Arctic Circle and inland on rivers such as the Kobuk, Nushagak, Kuskokwim, Kvichak, and Yukon Rivers.
- Typically will load customer's freight in Dutch Harbor (Unalaska), Dillingham, Bethel, or Nome and deliver to any number of smaller locations.
- Can be chartered to move a customer's freight to between almost any two ports in Western Alaska including combining fuel and freight.

- Provides bulk fuel deliveries to Dutch Harbor (Unalaska), Dillingham, Naknek, Bethel, and Nome. Vitus Marine has supply sources through the Pacific Ocean including Washington, Cook Inlet Alaska, Russia, South Korea, and Singapore.
- Partnered with Alaska Village Electric Cooperative (AVEC) which services fuel to fifty-six communities in Western and Interior Alaska. AVEC funded the construction and leased its initial flagships, two articulating tug and barge vessels to Vitus for the faster, safer fuel delivery to their villages.
- Owns and operate six barges and three landing crafts.
- Derives 85 percent of its revenue from marine fuel delivery.

Samson Tug and Barge (Barge, 2015)

- Alaska service area includes Cordova, Valdez, Seward, Kodiak, King Cove, Dutch Harbor (Unalaska), Anchorage, Fairbanks, Kenai Peninsula, and Prudhoe Bay.
- Services Larsen Bay every summer and provides service to Adak and Atka as needed.
- Sails from Seattle to the above mentioned communities bi-weekly.
- Owns and operates three sets of tugs and barges which move every day in Western Alaska year round.
- Seafood is a major item that Samson helps deliver. Seafood is either delivered to Dutch Harbor (Unalaska) and exported to foreign ports, or it is delivered to Seattle for transportation overseas or to the Lower 48.

Cook Inlet Tug and Barge

- Services Cook Inlet, Prince William Sound, Kodiak, Dutch Harbor (Unalaska), and Puget Sound.

- Owns and operates two tractor tugs that run year round and aid ships and ocean barges with ice escorting during the winter months. The fleet also includes conventional tugs as well as flat deck barges with and without ramps. The company's barges mobilize and demobilize equipment and vehicles, most often tractor trailers, drilling equipment, and supplies.

4.2.3 Marine Hub Facilities

Unalaska

Unalaska is home to the International Port of Dutch Harbor (Port, **Figure 15**). The Port is a deep-draft; ice-free port strategically located in the Aleutian Islands. It is the only Port of Refuge in the Aleutians and the entire west coast of Alaska, a designation that requires procedures for tracking ships in distress and accepting them into port, and includes elements from customs clearances to health certifications. This designation is issued through the United States Coast Guard (USCG) and the DEC. Dutch Harbor provides direct access to international shipping lanes.

Each year, the Unalaska Marine Center (UMC) welcomes approximately 732 vessels. These include Coast Guard cutters, research vessels, container ships, catcher processors, fuel tankers, fuel and cargo barges, AMHS ferries, and cruise ships. More than one billion pounds of cargo, 65,000 cargo containers, and 12 million gallons of fuel transfer across the UMC dock every year.

The Port is the number one commercial fishing port in the U.S. for poundage. Millions of dollars are generated in raw fish tax from Unalaska, as well as marine fuel taxes generated by the sale of approximately 60 percent of the State's marine fuel. (City of Unalaska, 2015; McLaughlin, 2015).

Appendix F includes a map of Unalaska facilities.



 Figure 15: Dutch Harbor

Dutch Harbor, in Unalaska, imported and exported ~1,382,000 short tons in 2012 (Meyers, 2014). A short ton is 2,000 pounds.

The City of Unalaska maintains the community's marine facilities:

- **UMC and the USCG Dock:** These facilities include 2,051 linear feet of dock face, with 40' depth at mean lower low water (MLLW). The facility accepts containerized general cargo, ferries, and fuel vessels. 30-ton and 40-ton cranes and a rail system are available to move containerized cargo and are operated by Horizon Lines. Fueling is provided by North Pacific fuel. Potable water, warehouse space, sewage pump-out, and uplands storage areas are available (City of Unalaska, 2015).
- **Light Cargo Dock:** This dock provides 340 linear feet of dock face with 25 feet MLLW at the north side of the dock, shallowing to 20 MLLW at the south end. Breasting dolphins are located at either side of the sheet pile dock. Shore power, potable water, and upland storage are available (City of Unalaska, 2015).
- **Spit Dock Facility:** This facility provides multiple long- and short-term moorage for vessels up to 200 feet in length. Shore-power, refuse removal, and potable water are provided (City of Unalaska, 2015).
- **Robert Storrs Small Boat Harbor:** This harbor has 71 slips, and spaces for vessels up to 60 feet. Both long term moorage and transient slips are available. Potable water, shore-power, refuse removal, and waste oil disposal are provided (City of Unalaska, 2015).
- **Carl E. Moses Small Boat Harbor Facility:** This harbor has 52 slips for vessels up to 150 feet long. Both long term moorage and transient slips are available. Potable water, shore power, waste oil disposal, refuse removal, and restrooms and showers are provided. There is also a drive-down floating dock available with a shore side crane. The crane has a 2,500 pound lifting capacity (City of Unalaska, 2015).

The Port is located at the crossroads of the North Pacific. It lies on the Great Circle Route, which welcomes more than 4,500 transits of Panamax-size vessels or larger each year. Panamax vessels follow the size regulations set by the Panama Canal Authority. A Panamax vessel cannot be longer than 965 feet, or wider than 106 feet. Draft is not more than 39.5 ft. These vessels have an average capacity of 65,000 Dead Weight Tonnage, and are primarily used in transporting coal, crude oil and petroleum products (Maritime Connector, 2015).

Kodiak

The City of Kodiak owns, operates and maintains all public port, harbor and shipyard facilities within the City of Kodiak, including three deep draft port terminals, two boat harbors with over 30,000 linear feet of moorage and a shipyard with 660 ton Travelift. Kodiak facilities are ice free year round.

Appendix G includes a map of Kodiak facilities.

Port Facilities include:

- **Pier III Container Terminal:** This 500ft long pier includes a breasting dolphin that is 950 feet long from bollard to bollard. The depth is 45 feet at MLLW. This facility was completed in 2016 and accommodates the next generation of container ships serving Alaska. Pier III is one of three deep draft container terminals in the state. The facility includes six acres of upland container storage and a 100 gauge container gantry crane. The primary user is Matson.
- **Pier II, Fisherman's Terminal (City Dock):** This 1,050 foot long pier provides 38 foot depth at MLLW. This multi-use deep draft facility serves AMHS vessels, cruise ships, government vessels, freight vessels and barges, and Kodiak's large commercial fishing fleet. Amenities include potable water, garbage reception, used oil and bilge waste reception, three acres of upland storage and a 20,000 square foot warehouse.

- **Pier I, Ferry Terminal:** This pier is 230ft long, and provides 26.6 foot depth at MLLW. Kodiak's ferry terminal replacement is scheduled for completion in June 2016. AMHS uses the dock for transfer of passengers, vehicles and commercial freight containers. Petro Marine Services transfers bulk fuel at the facility. Commercial fishing vessels and catcher processors load and unload ship supplies and commercial fish product. Amenities include potable water and garbage reception.

Harbor Facilities:

Kodiak has two harbors (**Figure 16**) and a transient float with 30,000 linear feet of combined moorage space. Amenities include potable water, 440 volt three phase shore power, public restrooms, launch ramps, tidal grid, and garbage and used oil disposal.

- St Paul Harbor (Downtown) has 250 slips for vessels up to 60 feet long.
 - Oscars Dock is 242 feet long and 40 feet wide, with 18 foot depth at MLLW. This dock is used for vessels up to 120 feet long, primarily for loading, unloading and vessel maintenance.
 - Dock 1 is 180 feet long and 40 feet wide, with 15 feet of depth at MLLW. This dock is used for vessels up to 90 feet long, primarily for loading, unloading and vessel maintenance.



Figure 16: Kodiak's Near Island Harbor

In 2012, Kodiak imported and exported 213,000 short tons. (Meyers, 2014).

- St Herman Harbor (Near Island) has 350 slips for vessel up to 220 feet long. This harbor has the largest capacity for vessels 90 feet long and over in the State of Alaska.
- Channel Transient Float (City Float) has 800 linear feet of moorage, and accommodates vessels up to 120ft.

Shipyard/660 Ton Travelift:

The Kodiak Shipyard was built in 2009. The facility includes a heated wash pad and water recycling system. Uplands accommodate six vessels up to 180 feet long, with plans for additional uplands development. The 660 ton Travelift accommodates vessels up to 180 feet long and 42 feet wide (White, 2016).

Dillingham

The Port of Dillingham (**Figure 17**) is a regional port for many communities in Southwest Alaska. The port provides marine services for commercial fishing, cargo, and recreational vessels. The dock is a major staging area for the salmon-rich Bristol Bay fisheries. The facilities are owned, operated, and maintained by the City of Dillingham.



Figure 17: Dillingham Waterfront

In 2012, Dillingham imported and exported 17,000 short tons (Meyers, 2014). Photo credit: Randy Romenesco.

Dillingham facilities include:

- **The main freight dock consists of two docks:** The old 'T' dock that has 200 feet of docking face and a new dock that has over 300 feet of docking face.
- **Maintenance capabilities:** Available marine repair services can address most deck, hull, engine, radar gyro, hydraulic, electrical, refrigeration, marine surveyors, and marine electronic repairs.
- **Small boat harbor:** This harbor is the only protected harbor in Bristol Bay. It provides residents and fisherman in the region with safe mooring for over 400 Bristol Bay gillnetters and set netters.
- Other services offered include potable water, waste oil disposal, refuse disposal, and crane service for the fleet and an ice machine for ice sales.

4.3 Alaska Marine Highway System

The AMHS provides transportation between 11 communities on Kodiak Island, the southern Alaska Peninsula, and eastern Aleutian Islands. Docking facilities are owned by municipalities or private entities. This system connects the region with the rest of the state and the NHS.

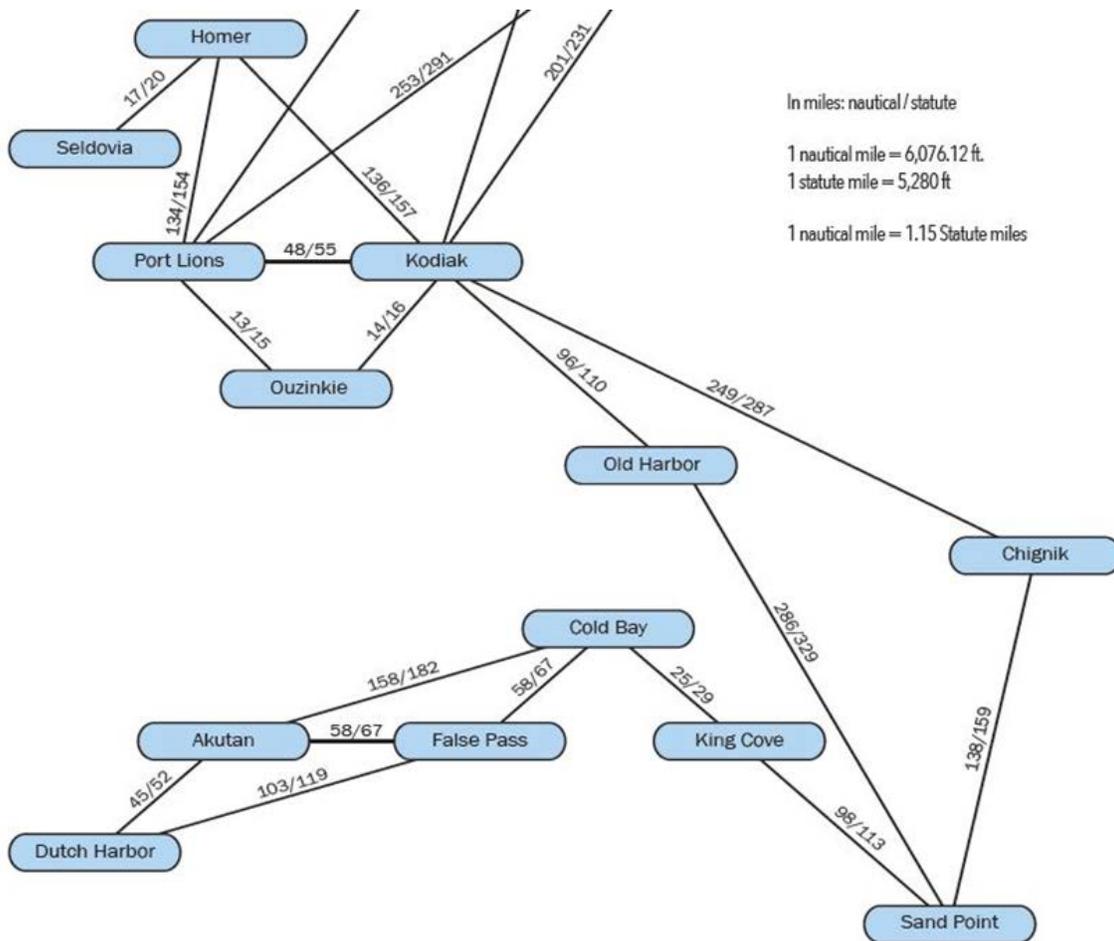


Figure 18: AMHS Routing, 2015

This schematic shows Southwest Alaska service, including links with Homer and Seldovia.

The AMHS serves the area with two ferries, the *Tustumena* and *Kennicott*², using docking facilities owned by municipalities or private entities. The *Tustumena* makes seasonal (May to September) trips every two weeks through the area to Unalaska, and runs a continuous circuit between Homer, Seldovia, Kodiak, Ouzinkie, and Port Lions while not operating in the west. During the winter she runs a continuous circuit for Kodiak, Ouzinkie, Port Lions, Seldovia, and Homer. She also makes several Cross-Gulf trips when the *Kennicott* is not available, generally in the winter when the *Kennicott* is supporting the legislative transport mission to Juneau. While there is interest in expanding ferry service in the study area, fleet limitations and costs are significant challenges to expansion. Figure 18 describes current AMHS routes in Southwest Alaska, including Homer and Seldovia.

Link volume is used to establish a measure of capacity used, relative to the capacity provided (Figure 19). Figure 20 shows the percent used to the different southwest communities. A "link" is defined as a departure from one port and an arrival at the next. A complete trip usually consists of several links. For

example, a passenger or vehicle going from Kodiak to Sand Point in one trip would typically travel on two links; "Kodiak to Chignik" and "Chignik to Sand Point." This passenger or vehicle

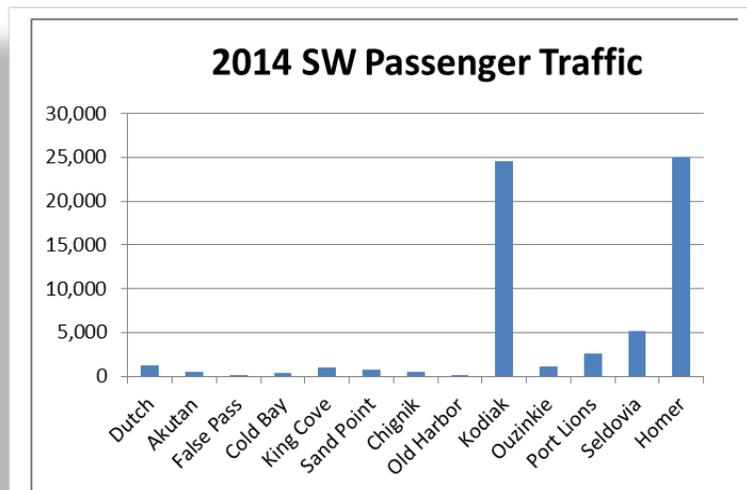


Figure 19: 2014 Southwest Alaska Traffic

2014 is indicative of other years with exception of 2013 when Tustumena was out of service. Note that "Dutch" is Dutch Harbor/Unalaska.

² The *Tustumena* is one of two AMHS ferries certificated for ocean service. The other is the *Kennicott* serving Southeast and Cross-Gulf routes. Thus their schedules must be meshed when overhauls, layups, or federal capital improvement projects take them out of revenue service.

would be counted as one on each of these links. Consequently, the link volume count includes both the through-traffic and the traffic embarking from the first port in the link pair.

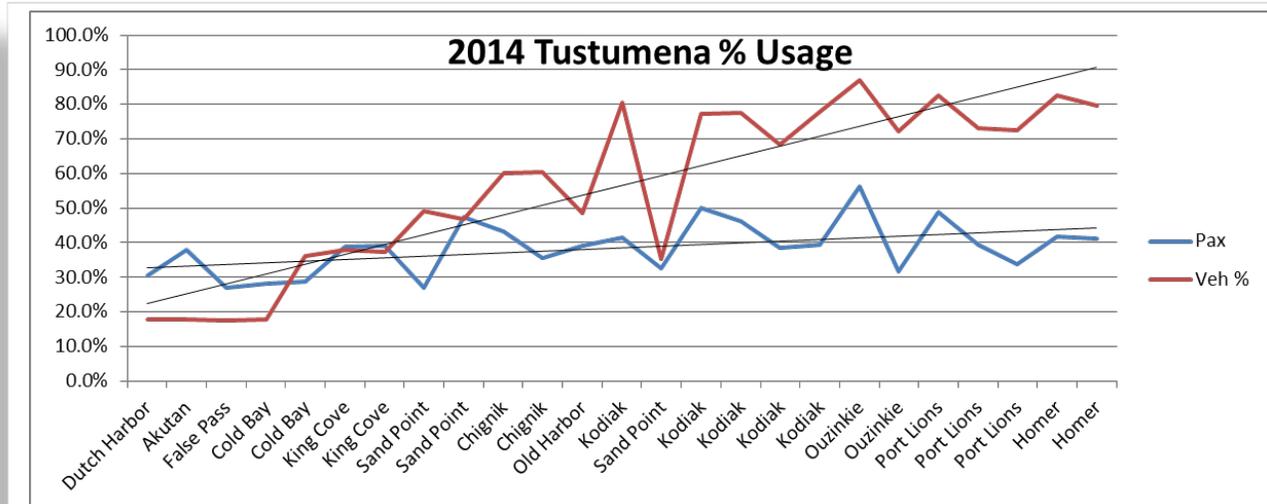


Figure 20: 2014 Tustumena Usage

Some communities are listed several times as they involve several links to different communities: ex. Cold Bay has links to False Pass and King Cove. Dutch Harbor is co-located with the community of Unalaska.



4.4 Land



Figure 21: Trail Systems

Above, at the end of Anton Larsen Bay Road on Kodiak Island, a well-developed trail is used by ATVs, snowmobiles, and the occasional truck. One project in this plan proposes upgrading this trail to a road.



Figure 22: Alternative Transportation

Below, residents in Chignik Lagoon illustrate common use of alternative motorized transportation.

Land transportation refers to travel by roads in most parts of the U.S. Although roads may provide land transportation in Alaska’s larger population centers, that is not always the case in Southwest Alaska (Figure 21). Few road corridors exist between widely spaced communities in the region. Land transportation planning in Southwest Alaska is not limited to automobiles and trucks; instead, it includes a variety of travel modes—snowmobile, ATVs, amphibious ATVs (such as ARGOs), hovercraft, pedestrian, bicycle, dog sled, and horse (Figure 22).

One of the strategic goals of the Let’s Get Moving 2030 is to constrain needs (Strategy 3). Without new revenue, DOT&PF is not able to meet the goals of

transportation plans, nor the needs for system maintenance. One action item to meet this strategy is to transfer ownership of local roads to local communities (Action Item 3.7) (DOT&PF, 2008). Data analyzed during Phase 1 shows that the State owns and maintains 130 miles of roads functionally classified as either Rural Minor Collector or Rural Local roads (Tables 30 and 31, DOT&PF, 2014).

The Bristol Bay Native Association (BBNA) is pursuing possible funding for transit development, and the City of Dillingham has expressed an interest in developing a transit program. Kodiak has one city bus, and a “paratransit” service that provides scheduled transportation with those who have special needs.

According to 2010 census data, a larger percent of Southwest Alaska residents walk to work than in the rest of the nation or in the rest of Alaska (U.S. Department of Commerce, 2010). Ted Meyer, Bristol Bay Borough Planner (since moved to Lake and Peninsula Borough) explained in 2011 that non-resident pedestrians have a significant impact on many Southwest Alaska communities, and can increase year-round residential population by tenfold, as happens in Naknek during the fishing season. Many of these pedestrians are seasonal workers or tourists who have limited English proficiency. When these pedestrians are walking on the road shoulders, they are often sharing space with all-terrain vehicles or snowmobiles.

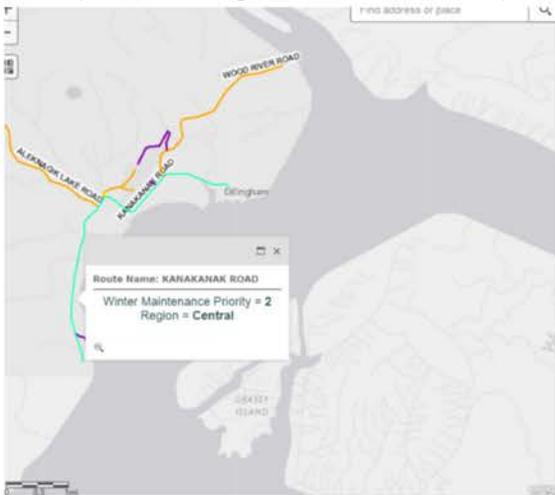
More details on these topics can be found in the Phase I report, Chapter 6, Land Transportation (DOT&PF, 2014).

4.5 Safety and Emergency Response

The SWATP must provide consideration of projects, strategies, and services that increase the safety and security of the transportation system for motorized and non-motorized users (49 United States Code [USC] 450.206). This concern can be broken down into two basic areas, safety and security.

DOT&PF Road Clearing Priorities

<http://dot.alaska.gov/stwdmno/wintermap/>



Road clearance priority levels are shown on an interactive map:

1. High-volume, high-speed highways, expressways, minor highways, all safety corridors and other major urban and community routes. May take up to 24 hours to clear after a winter storm.

2. Routes of lesser priority based on traffic volume, speeds and uses. Typically, these are major highways and arterials connecting communities. May take up to 36 hours to clear after a winter storm.

3. Major local roads or collector roads located in larger urban communities. May take up to 48 hours to clear after a winter storm.

4. Minor local roads that provide residential or recreational access. May take up to 96 hours to clear after a winter storm.

5. Roadways that are designated as "No Winter Maintenance" routes, e.g. Williamsport Pile Bay Road, Dillingham's Snake Lake Road, or the Iliamna-Nondalton/Newhalen River Road. Generally cleared only in spring to open road for summer traffic.

1. Safety: Safety of users is explicitly considered during the design process. Road safety features include constructed items such as road width, clear areas along roadways, or fewer curves for roads with higher speeds. Aviation design features include pavement configuration, lighting, and clearance of imaginary surfaces such as safety areas designed to reduce damage to aircraft that depart the runway.

After design and construction, safety features are facilitated through maintenance and operations practices. For instance, certificated airports remove snow in accordance with their snow and ice control plan, which will outline how much snow can accumulate, which areas are cleared first, and where snow can be stacked. Likewise, DOT&PF has established a list of which roads will be cleared of snow first. There are also standards for maintenance of signs, lighting, vegetation, and other designed elements.

Transportation infrastructure facilitates efficient emergency response (police, fire,

Emergency Medical Services), and access for those maintaining and repairing critical utilities after a disaster. During an emergency response, DOT&PF will participate with local agencies using the National Incident Management System. DOT&PF hosts emergency response drills at each certificated airport every three years, and invites other local emergency responders to participate.

2. Security: Transportation is crucial to economic stability and to our ability to respond to emergencies. Damage or destruction of transportation infrastructure can have wide-reaching and profound impacts. For this reason, transportation infrastructure can be either the primary target of terrorists, or a collateral target that makes response to a primary target more difficult.

The disasters that Southwest Alaska or any other Alaskan community would face can be divided between natural disasters and man-made disasters. Transportation infrastructure in Southwest Alaska needs to be built with increased awareness of both.

4.5.1 Natural Disasters

As coastal land positioned between two plate tectonics on the northernmost section of the Ring of Fire, Southwest Alaska is an area of focused natural disasters that include volcanic activity, seismic activity, and impacts of climate change that include flooding, coastal erosion, storm surges, and other effects of stronger storms.

The Alaska Volcano Observatory maintains an interactive map of Alaska's volcanoes, and provides updates on volcano activity (**Figure 23**). This screen shot shows volcanoes in Southwest Alaska (Alaska Volcano Observatory, 2014).

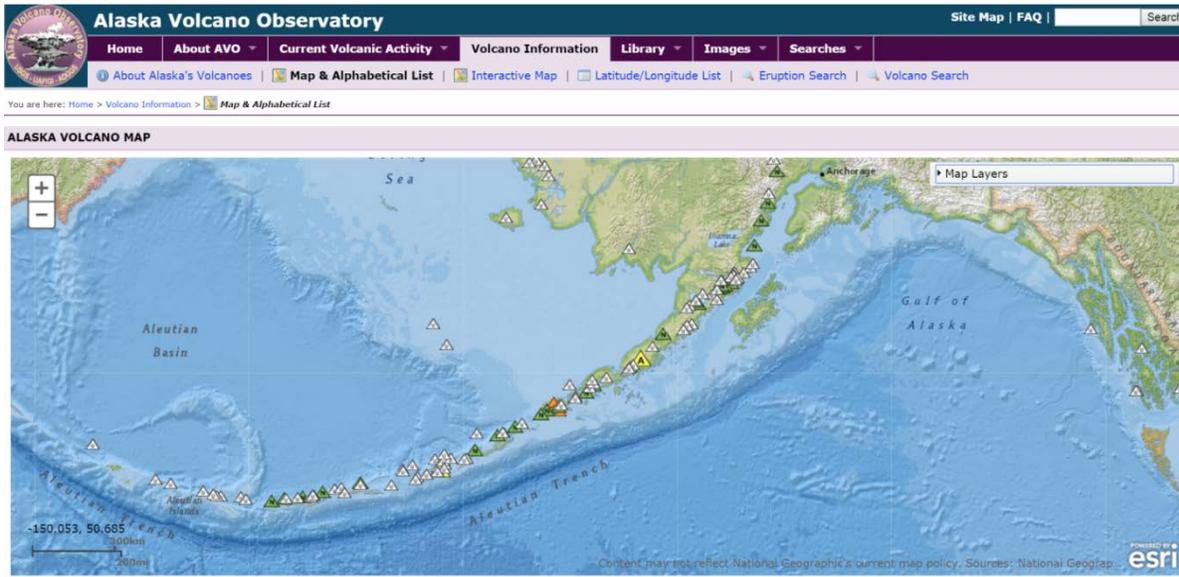


Figure 23: Alaska Volcano Map

The Alaska Volcano Observatory maintains an interactive map of Alaska's volcanoes, accessed at <https://www.avo.alaska.edu/volcanoes/index.php>

The Alaska Earthquake Center provides a map that shows earthquakes along the Aleutian Chain resulting from the Pacific Plate being forced below the North American Plate, creating the Aleutian Megathrust (Figure 24) (Alaska Earthquake Center, 2006).

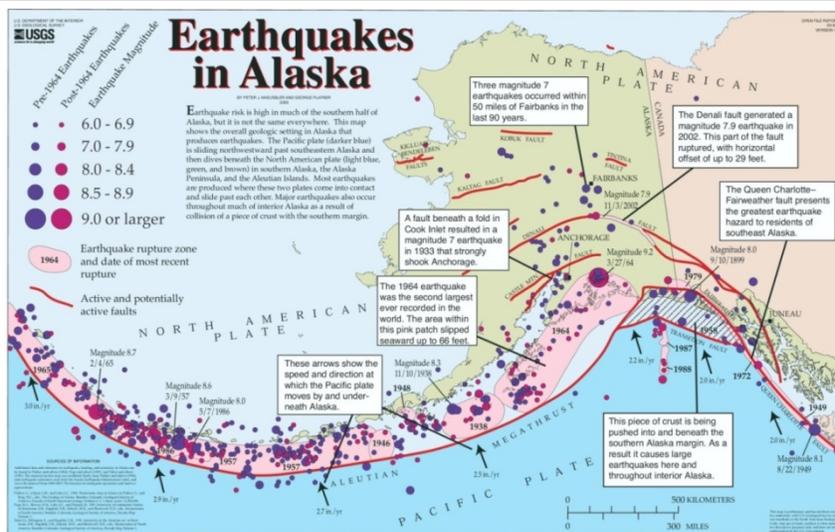


Figure 24: Earthquakes in Alaska

Two tectonic plates meet along the Aleutian Chain, resulting in multiple earthquakes. This tectonic activity forces islands upwards, counteracting sea level rise brought about by global warming. (Alaska Earthquake Center, 2006).

Climate change is impacting maintenance costs statewide, and one key issue is funding of repairs. In FY2016, DOT&PF has \$12 million to address repairs resulting from warming or thawing of permafrost, and this is a fraction of the need. The former Statewide Maintenance and Operations (M&O) Chief, Mike Coffey, said they could spend three times that if they had it. Southwest Alaska is not anticipated to be significantly impacted by sea level rise due to upward thrust between the North American and Pacific Plates, resulting in land rising with sea level (Coffey, 2015). Climate change could affect coastal areas in a variety of other ways. Shoreline erosion, coastal flooding, and water pollution affect man-made infrastructure and coastal ecosystems. Confronting existing challenges is already a concern (EPA, 2014). Federal emergency capital funding is limited to replacement in kind. One coastal road in the Nome area is destroyed every year, and every year is rebuilt the same way. As the Statewide M&O Chief says, "Federal funding regulations keep the State from doing the right thing," (Coffey, 2015). Southwest Alaska has seen a decline in shore ice in the winter, making coastal villages more vulnerable to winter storm wave action. (University of Alaska, Fairbanks [UAF], 2013). Coastal areas are also vulnerable to increases in the intensity of storm surge and heavy precipitation. (Climate Change and the National Academies, 2012(b)).

Avalanches also pose a hazard, but DOT&PF does not actively mitigate avalanches in the Southwest Alaska area. Instead, they respond to clear the area if an avalanche occurs. Kodiak's Pasagshak Road has historically had avalanches between Mileposts (MP) 4 and MP 6, and between MP 7 and MP 9. Future road development in Southwest Alaska will consider avalanche threat during design.

4.5.2 Man-made hazards

Southwest Alaska's geographic position as a coastal region and proximity to resources renders the area vulnerable to shipping disasters that include offshore and onshore spills of hazardous materials, and terrorist activity. While the federal government may be responsible for man-made disaster response, the impacts are profoundly local. DEC is the primary State

agency responsible for Hazardous Material Response, such as an oil spill. Planning for rare events with severe impacts is challenging for communities.

Terrorist activities may target infrastructure not only as a primary target, but in order to interfere with response. Federal budget cuts that impact infrastructure development also impact the federal agencies tasked with response, decreasing the efficiency of detection and response.

Extraordinary melting of sea ice in the Arctic in 2012 shattered the all-time low sea ice extent record set in September 2007. The decline in sea ice has provided new opportunities to the shipping industry to use Arctic waterways for freight delivery between the continents of the northern hemisphere. With an increase in maritime traffic comes an increase in maritime accidents (Weather Underground, 2015). While the USCG is the first responder to a shipping disaster, the impacts could be overwhelming at the local level.

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5.0 ISSUES AND NEEDS

In Phase I, specific transportation concerns and issues were identified through outreach to the public and to local officials, as well as through interviews with key transportation providers and industry representatives. These issues identify the problems to be solved, not specific projects requested.

With the region's dependence on aviation, the desire for longer runways and lower approaches are perennial desires. Below we examine which runways might be candidates for these improvements.

5.1 Runway Length

The current and forecasted fleet of aircraft expected to use an airport drive future runway length. Evaluation of fleet forecasts and future runway length requirements was based on:

- Carrier interviews and public input,
- ALPs and AASP Runway Length Goals, and
- An evaluation of communities with little or no barge service.

5.1.1 Carrier Interviews and Public Input

During interviews, the primary carriers serving the region provided information on their current and potential fleet mix. Carriers were asked whether runway length limits the type of aircraft flown or payload. Most carriers had no specific plans to change aircraft in the foreseeable future or were unwilling to disclose that information due to competitive reasons.

One carrier suggested the ATR-42 or ATR-72 as a possible future cargo aircraft to serve the region. This aircraft requires an approximately 4,375 foot takeoff length and 2,300 foot landing length with a fully loaded aircraft. All Regional Class airports in the region could be served by this aircraft without changes to runway length. Most of the village airports in the region could accept landings from a fully loaded ATR, while takeoffs would be restricted to

less than maximum takeoff weight in many cases. Since most airports receive cargo and do not ship out cargo, this aircraft could become widely used in the region at both Regional Class and multiple smaller airports, when larger size shipments justify the aircraft.

Alaska Airlines will be eliminating Boeing 737 combi aircraft service, switching to an all-cargo B737-700 and all-passenger B737-800 aircraft. Runway length is adequate for these aircraft in locations served by Alaska Airlines, but Dillingham could benefit from a small extension. Alaska/Horizon Airlines has not indicated that they plan to introduce the Bombardier Q-400 to locations in Alaska beyond the service already provided seasonally at Kodiak and Fairbanks. However, if Q-400 service expands, it would be more likely to serve existing Regional Class airports already being served by Alaska Airlines, rather than provide service to new airports. The desired runway for the Q-400 is paved, 4,500 to 5,000 feet in length, and 100 feet wide.

Carriers commented on whether any new airport hubs should be developed to encourage more efficient routing of aircraft in the region. No new hubs were proposed by the carriers interviewed. Both carriers and communities expressed support for well-developed Regional Class airport facilities because these airports support air service to most airports in the region.

When asked about runway extension needs at specific airports, carriers made the comments below, based on their current aircraft fleet:

- **Chignik Lagoon** – 1,800 feet long, the existing length can restrict payloads.
- **Chignik Lake** – 2,800 feet long, it is the most feasible for extension among the three Chignik Airports.
- **False Pass** – At 2,150 feet long, there are mixed opinions on the need for extension. It is adequate for small airplane flights from Cold Bay, but not ideal for Pilatus from Anchorage. A mountainous obstruction in one approach could become a greater conflict with an extension.

- **Karluk** – 2,000 feet long, it needs to be extended to 2,600 to 3,000 feet for the Islander.
- **Kokhanok** – At 3,300 feet, it should be extended to 3,500 to 4000 feet plus for the DC-6.
- **Larson Bay** – At 2,690 feet, it is recommended to be extended to 3,200 to 3,700 feet for the Caravan/King Air.
- **Levelock** – Extension of this 3,821 foot runway might help with fish shipment.
- **Nondalton** – This 2,800 foot airport could be extended to 3,000 to 3,500 feet for the DC-4, or extend to 3,500 to 4000 feet plus for the DC-6.
- **Old Harbor** – The existing 2,750 foot runway is being extended to 4,700 feet.
- **Pedro Bay** – This 3,000 foot runway could be extended to 3,500 to 4000 feet plus for the DC-6.
- **Port Lions** – At 2,200 feet, this airport could be extended to 2,600 to 3,000 feet for the Islander.
- **Unalaska** – At 4,100 feet, this runway could be extended to 5,000 feet to better accommodate passenger aircraft (**Figure 25**).

The general public was also asked about runway extension needs. Most comments either favored longer runways at Regional Class airports or supported extensions that would support flying out fish from Community Class airports. Other comments supported runway extensions but did not provide specific justification. In general, both carriers and the public commented that smooth, safe runway surfaces, operable lighting systems, and lower approach minimums were higher priorities than extending runways. Some noted that surfacing and lighting projects are much less expensive than runway extensions, and when funding is limited, they should be given a higher priority than expensive runway extensions.



Figure 25: Tom Madsen Unalaska Airport

Extending Unalaska's airport would benefit airline operations, but is relatively expensive due to fills in deep water at either end.

5.1.2 Airport Layout Plans and AASP Runway Length Goals

The AASP has established a goal of 3,300 feet for Community Class Airports, when local conditions support the need for a longer runway.

The table in **Appendix H** shows how the airport's current runway length compares to the length recommended in the ALP. In almost every case the current runway length is very close to the recommended length on the ALP. The "Comments" column in the table also shows when runways were built and extended. Most of the airports have had their runway lengths evaluated and improved over the last 15 years. Airports that are not at least 3,000 feet typically have low populations, are connected to a longer runway by road, or have terrain or other issues making an extension impractical.

Runways for airports in the Regional Class meet their ALP runway length goal except for Dillingham and Unalaska. Dillingham has a planned runway shift to address runway safety area deficiencies. Any extension of that runway would likely coincide with the planned runway shift. Unalaska recently extended its runway as part of a runway safety area project. Additional extensions would be constrained by the high costs of extending the runway into deep waters off the runway ends.

5.1.3 Communities with Limited or No Barge Service

Communities that do not receive deep-draft barge service are more dependent on air service for delivery of provisions. Air shipment of heavy freight and fuel is generally more expensive than barge shipments, especially if runways are short and smaller aircraft are used. The Alaska Barge Landing System Design Statewide Report (U.S. Army Corps of Engineers [USACE], 2009) outlines community barge facilities and which ones may be substandard for fuel delivery. Airline interviews provide insights on which communities might benefit from longer runways. For the discussion below, population information was accessed through the State of Alaska Department of Commerce and Community Economic Development (DCCED) Community Database (DCCED, 2015).

5.1.3.1 Iliamna Lake Area Communities

Iliamna Lake area communities of Igiugig (population 53), Kokhanok (population 167), Pedro Bay (population 47), Newhalen (population 207) and Nondalton (population 164) have no direct deep draft barge service to the communities, primarily because deep draft barges are unable to navigate the shallow Kvichak River. Each of these communities has slightly different freight and fuel delivery conditions, as summarized in **Appendix I**.

Igiugig, Kokhanok, and Pedro Bay receive heavy freight from barges that deliver to Williamsport on Cook Inlet. Heavy freight is trucked 14 miles on the unimproved Williamsport Pile Bay Road, to Pile Bay on Iliamna Lake. Trucking adds time and expense and is further complicated by transfers between barge to truck, tide delays, poor road conditions and small volumes. Once



Figure 26: Iliamna Barge Service

Fuel is delivered to Iliamna by airplane, then barged to other communities on the lake. Other heavy freight is hauled over Williamsport Pile Bay Road and distributed to lake communities through Pedro Bay.

cargo reaches Pile Bay, it is transferred from truck to lake barge and then transported on Iliamna Lake to the communities. Like most rural communities, general freight (not heavy) is received by air. While heavy freight is delivered over land from Williamsport in Cook Inlet to Pile Bay on Iliamna Lake, fuel is delivered by air to Iliamna and then distributed to lake communities via barge (**Figure 26**).

Newhalen receives heavy freight via the Williamsport Pile Bay Road, as described above. Once the freight is barged to Iliamna, it is trucked to Newhalen. General freight is shipped by air to Iliamna and trucked from Iliamna to Nondalton. Fuel is also shipped by air to Iliamna and delivered to Nondalton by pipeline and truck.

According to the 2009 USACE Report, fuel barge operators previously delivered some fuel by barge to Iliamna Lake communities, via the Kvichak River. These braided flats are about three miles from Igiugig, and impact seven miles of the river. They continue to become shallower, currently limiting access to vessels with drafts less than two feet. Because fuel has to be transferred from deep draft to shallow draft barges, combined with the low volume of fuel



Figure 27: Road from Iliamna to Nondalton

Heavy freight is trucked along this road from Iliamna to a crossing on the Newhalen River, where residents move the freight via skiffs or on small barges across the river. Freight is then trucked to Nondalton.

delivered and multiple trips required by smaller shallow draft barges, it became more cost-effective to fly fuel into Iliamna and the surrounding communities. The fuel barge operators do not expect that improving the road from Pile Bay to Williamsport would improve efficiency enough to stop delivering fuel by airplane.

Nondalton is not on a barge accessible river or Iliamna Lake. Nondalton receives heavy freight via the

Williamsport to Pile Bay Road, by barge on Iliamna Lake to Iliamna, and then trucked via gravel road to the Newhalen River (**Figure 27**) where residents haul the cargo across the river with skiffs or small barges and truck it to Nondalton. A bridge has previously been considered to improve passenger and freight access to Nondalton, but the environmental analysis has been halted while the DOT&PF consider project funding. All fuel is flown to Nondalton.

Because of the short runway length, air fuel deliveries are limited to summer-only deliveries by Douglas DC-4 aircraft.

There are two proposed projects that, in conjunction, would improve access between Cook Inlet and Bristol Bay – the Williamsport Pile Bay Road and the Kaskanak Road. Both projects are described in Section 8.0, and the Williamsport Pile Bay Road is further described in **Appendix M**.

5.1.3.2 Nushagak River Communities

Koliganek (population 231) is 65 miles up the Nushagak River. Freight and fuel are delivered by barge, but low water levels on the Nushagak sometimes limit barge deliveries. Portage Creek (population 1) is a community on the Nushagak, with similar limited barge delivery.

5.1.3.3 Chignik Lake

Chignik Lake (population 70) receives freight that is lightered with shallower draft boats from Chignik Lagoon (population 72) via the shallow Chignik River. Fuel is delivered to Chignik Lake by air because of the shallow river access.

5.1.4 Air Carrier Comments

Several air carriers were interviewed about freight and fuel delivery to the above communities that have limited or no barge access. Comments were primarily directed toward fuel delivery because that is where there is greatest need for consideration of runway length increases. Both fuel carriers commented that fuel delivery costs are reduced when there is competition between carriers of fuel. Comments are summarized below:

- Everts Air Cargo
 - Delivers fuel with a Douglas DC-6, with a minimum runway length requirement of 3,500 feet and an ideal runway length of over 4,000 feet. The aircraft can carry 5,000 gallons of fuel.

- Delivers fuel with a Curtiss C-46, with an ideal runway length of 3,500 feet. The aircraft can carry 2,000 gallons.
- If Nondalton, Pedro Bay, and Kokhanok were extended, Everts could bring in a Douglas DC-6, but currently is able to serve them with smaller loads on a Curtiss C-46.
- Alaska Air Fuel
 - Delivers fuel with a Douglas DC-4, with a minimum runway length of 3,000 feet and an ideal length of 3,500 feet. The aircraft can carry 3,000 gallons.
 - Very short runways at least 1,600 feet long are served with multiple trips with a Beech 18 carrying 400 gallons of fuel.
 - Nondalton could be extended to at least 3,000 feet. Service to Nondalton is limited to summer operations and is further limited in the summer when breaking is poor.

5.1.5 Runway Length Recommendations

Recommended runway lengths in **Appendix J** are based on the above investigations, discussions with DOT&PF, and prior studies. The recommended extensions at many airports follow the guidance from previously completed ALPs. In many cases the recommended ultimate runway lengths are not near term needs, but are considered in light of socioeconomic changes. Community population, economic trends, and aircraft use should be revalidated before initiating runway extension projects, particularly in lower population communities. In some cases, runway extensions are warranted, but terrain, water, or other local conditions prevent a cost effective extension.

5.2 Approach Improvements

The DOT&PF, FAA, and stakeholders have been completing a statewide evaluation of priorities for new or improved approaches for Alaska's airports as part of the AASP. Site conditions shape preliminary determinations on new approach feasibility. Also considered were what infrastructure or aeronautical surveys were required to implement new approaches. **Appendix K** lists the Southwest Alaska airports that were evaluated for new approaches, the type of approach, whether the airport was proposed for an approach in the near term, and whether an air carrier has submitted comments in favor of the approach. The table also documents whether an aeronautical survey has already been completed to support the approach, whether any infrastructure is needed, and any other feasibility considerations.

Airports recommended for near term approach improvements have completed aeronautical surveys and no known terrain issues. They have other required infrastructure such as a certified weather station, adequate runway length, and runway edge lights needed to support the new approach. Airports lacking these features were not recommended, but should be re-evaluated when improvements are made.

Airports listed with "Approach Recommended by AASP" marked are being considered by the FAA for either a Localizer Performance with Vertical Guidance (LPV) or a Localizer Performance (LP) approach. LPV and LP approach procedures are specific types of instrument flight procedures that rely on Wide Area Augmentation System (WAAS) and on-board receivers. The LPV approach procedure provides both vertical and horizontal guidance to the pilot, and can provide a minimum descent altitude as low as 200 feet. The LP approach procedure is a non-precision approach, providing horizontal guidance but not vertical guidance. LP approach procedures will provide the lowest possible minimum descent altitude (MDA) at airports where obstructions and/or infrastructure prevent an LPV procedure, and can provide a minimum descent altitude as low as 300 feet.

The following Southwest Alaska airports are not feasible for a LPV or LP approach.

- Unalaska
- Port Lions
- False Pass
- Chignik
- Old Harbor
- Chignik Lagoon
- Pedro Bay
- Perryville
- Larsen Bay
- Karluk
- Chignik Lake
- Akhiok

5.3 Other Issues and Needs

Many issues and needs will influence transportation decision-making, reflecting transportation's interaction with many aspects of society. Below we list some of the issues and needs collected in Phase I. Many of these ideas shape how we approach transportation, and deserve consideration during project development.

GENERAL

Economic Growth: Transportation improvements should support the region's economy. Fishing is the top economic driver for the region. Potential future economic opportunities cited included oil and gas development, mining, and tourism.

Cost of Living: Improve transportation systems to reduce transportation costs and mitigate the rising cost of living. Fuel prices significantly impact the cost of living in this region, since fuel, freight, and people move over long distances via aviation and marine systems. The high cost of living impacts community sustainability and the potential for economic development.

Isolation: Southwest Alaska is still largely a frontier, and the transportation system is still being developed. Communities have long-standing projects and plans to further develop the system to meet freight and passenger demands.

Hazard Mitigation: Infrastructure may need to be “hardened” to better withstand or mitigate natural disasters. Redundant systems improve disaster resilience, as does practice of disaster response drills.

Safety and Security: In addition to infrastructure condition concerns, municipal governments are responsible for infrastructure security requirements, emergency planning, and incident management and response. Emergency response capabilities may not be adequate to the needs of increasing international marine traffic and outer continental shelf oil exploration.

Climate Change: The impacts of climate change create some uncertainty in the transportation sector. Alaska is heavily dependent on aviation and marine transportation which both have large carbon footprints per traveler compared to highway use.

Intermodal Transportation: Focus funding on intermodal system development to increase transportation efficiency and reduce costs (Figure 28).

Hubs: State resources should be focused on regional and sub-regional transportation hubs, and opportunities to link more communities to hubs via road should be



 ***Figure 28: Intermodal Transportation***

This boat launch area in Aleknagik illustrates how multiple modes come together in one place.

investigated.

Maintenance: There was explicit support for prioritizing maintenance of existing infrastructure (as opposed to building new) as federal funding declines. Design elements that reduce maintenance costs were also encouraged.

Transportation Funding: Develop a strategy to address shifting funding opportunities, including agency partnering on projects of mutual interest, private-public partnerships, and assistance to smaller communities. The LRTP will address this issue at a statewide level.

Transportation Equity: Clarify the State's role in ensuring some basic level of essential transportation service for all communities. The LRTP will address this issue at a statewide level.

AVIATION

Air Service Capacity and Reliability: Capacity is inadequate, particularly during the busy fishing season and summer. Passenger and cargo service is often unreliable, most notably during busier seasons. This concern is a private industry issue, and not under the direct control of DOT&PF.

Economic Impacts on Aviation: National and state economic trends could have a negative effect on aviation demand, though regional development may mitigate those impacts.

Technology: The opportunities associated with new aviation technologies need to be balanced with implementation costs.

Runway Length: New aircraft may be serving the region, and their requirements will be compared to the runway length available. Longer runways may be needed for communities that lack reliable barge service.

Other Airport Infrastructure: Some stakeholders suggested other improvements to runway and apron environments and lease area improvements.

Population: As noted earlier, population for the Southwest Region is forecasted to decline. Passenger enplanements and cargo tonnage is forecasted to remain relatively flat, with the greatest growth being in cargo at Regional Class airports like Unalaska, Kodiak (Figure 29), and Dillingham that serve regional needs and support the regional fishing industry.



Figure 29: Kodiak Airport

Regional Class airports like Kodiak are expected to see the greatest growth in enplanements and cargo.

MARINE

Limited Harbor Funding: The Alaska Municipal Harbor Grant Program is the primary funding mechanism for ports and harbors in Alaska (**Figure 30**). Funding available under this program is approximately \$5 million annually.

Technology: New technologies are available that could improve safety in congested waterways.

Marine Service Capacity and Reliability: Vessel safety would be improved with these services provided locally, with repair work being performed in Alaska.

Economy: International, national, and state economic trends could have a negative effect on marine demand, though regional development may mitigate those impacts.

Maintenance and Improvements: Ports and harbor repairs and improvements should be prioritized based on the level of regional impact.

AMHS Service Congestion Points: Travelers between Kodiak and Homer can absorb all the space available on the ferries, preventing access for travelers to more distant ports. An analysis of ferry system options and challenges can be found in **Appendix L**.



Figure 30: Sand Point Harbor

The primary funding mechanism for harbor improvements is through the Alaska Municipal Harbor Grant Program. Section 3.1 of this report provides more information on this source.

LAND

Intermodal and Community Access: Roads in Southwest Alaska primarily provide access within communities and to marine and aviation services, which provide access over long distances.

Bridges: Most bridge concerns regarded specific pieces of infrastructure, such as Williamsport Road bridge needs, Alaska Peninsula Highway bridge upgrades, or Naknek bridge construction.

Trails and Sidewalks: As noted above, the area has communities where transient seasonal workers increase the community's population tenfold. These transient workers do not typically have vehicles. Trail and sidewalk access aid in keeping pedestrians off of busy streets and limits conflicts with other motorized vehicles (such as ATVs) that use road shoulders. In some communities, trail networks serve transportation needs in the same way that roads do in more developed communities.

Transit: Dillingham, Kodiak, and Unalaska are interested in transit development and noted that operational funding during start-up would aid in getting the program started. Kodiak has one bus serving mostly cannery workers and seniors.

6.0 INVESTMENT REPORT

Any plan for the future needs to consider current conditions, and assess how previous plans were implemented. Below we recognize the accomplishments since the 2004 update to the SWATP.

6.1 Aviation Investment Report

Since 1982, the FAA has invested approximately \$569 million in Southwest Alaska aviation (administered by DOT&PF), either in planning, design or construction projects (airport development). This represents an average of \$17.8 million per year, of which approximately \$390,000 per year spent on planning, and \$17.4 million per year spent on airport development (Table 2).

Table 2: FAA Airport Funding of Southwest Alaska Airports – FFY 1982 – 2013

	Airport Development	Planning	Total
Total	\$556,990,000	\$12,460,000	\$569,450,000
Annual Average	\$17,406,000	\$389,000	\$17,795,000

New Southwest Alaska airports account for nearly 20 percent of this historical FAA funding, most notably, the recently constructed new airport at Akutan. Table 3 outlines federal funding spent for new airports since 1982.

Table 3: New Southwest Alaska Airports – FFY1982 – 2013

New Airport	AIP Grant Year	Amount (Millions)
AKUN / AKUTAN	2013	\$44.3
CLARKS POINT	2004	\$7.7
EGEGIK	1993	\$3.6
LEVELOCK	2000	\$2.9
MANOKOTAK	2006	\$13.0
NEW STUYAHOK	2006	\$14.8
OUZINKIE	2011	\$16.3
PILOT POINT	1999	\$3.0
SAINT GEORGE	1991	\$7.0
Total AIP Expenditures for New Airports		\$112.7

Over the last four years the Southwest Region airports have received approximately 26 percent of all federal AIP Funding spent in Alaska for rural airports. The \$36.5 million average spent statewide over the last four years (**Table 4**) is over twice as much as the 30 year historical annual average of \$17.8 million (**Table 2**).

Table 4: Airport Spending in Southwest Alaska, 2009-2013

	Average Spent Over Last 4 Years	% of Statewide Total for Rural DOT&PF Airports
Regional Class	\$20.0 Million/Year	25%
Community/Local Class	\$16.5 Million/Year	29%
Total	\$36.5 Million/Year	26%

6.2 Surface Investment Report

Land transportation improvements are largely multi-modal in Southwest Alaska because of the region's dependence on marine and aviation transportation networks. **Table 5** summarizes projects recommended in the 2004 report and a summary of their status. A more detailed discussion of each project follows.

Table 5: 2004 Recommended Project Status, Surface Transportation

Project Name	Planning Est.	Invested	Status	Carried forward?	Reasoning
Aleknagik Wood River Bridge	\$25M	\$25M	Construction	N	Complete
Chignik Inter-Village Road	\$43M		Conceptual	N	Not cost effective
Chignik Port Improvements	\$8.6M		Construction	N	Complete
Iliamna/Nondalton Connection	\$30M		Environmental	N	On hold
King Cove/Cold Bay Connection	\$21M		Environmental	Y	Pending DOI action
Kodiak Dock Improvements	\$13.6M	\$13.2M	Construction	N	Complete
Kodiak Road to Launch Complex			Conceptual	N	Launch Complex reorg
Naknek/S Naknek/ King Salmon Road Link and Area Aviation Study	\$37M		Planning	N	Complete
Williamsport Pile Bay Improvements	\$72M		Study Complete	Y	Multi-year development
Winter Trail Marking for Bristol Bay	Variable	\$400K	Ph 1 Complete	N	Maintenance funding
Unalaska Dock Improvements			Conceptual	Y	Continuing Priority

Aleknagik Wood River Bridge: A bridge over Wood River was completed in 2015, and an additional \$6.3 million is programmed to improve Suavak Road from Aleknagik Lake Road to Wood River Bridge (Figure 31).

Chignik Inter-Village Road: This road would link the communities of Chignik Bay, Chignik Lake, and Chignik Lagoon by a gravel road. Estimated costs in 1997 were \$26 million. Assuming a three percent yearly inflation rate, the project would cost \$43 million in 2015, and serve 246 people. This project was considered during the plan development process, but the cost was determined to not be proportionate to benefit.

Chignik Port Improvements: Municipal dock improvements include uplands development with a riprap face, sheet pile dock, and fendering system. The project addresses AMHS safety concerns, and positions the community for economic development through port services. Construction was slated to begin in 2015.



Figure 31: the Grand Opening of the Aleknagik Wood River Bridge

Pictured from left to right: DOT&PF Commissioner Marc Luiken, Mayor Jane Gottschalk, Senator Lyman Hoffman, and Representative Bryce Edgmon. Photo credit: Jim Chapman.

Iliamna/Nondalton Connection: Work on the environmental document has been suspended, while DOT&PF reviews funding availability.

King Cove/Cold Bay Connection: Alaska's congressional leadership continues to push for this project. In December of 2013, the Interior Secretary rejected a Record of Decision in support of the project. More information is available in Section 8.0 of this plan.

Kodiak Dock Improvements: Moving the municipal dock was considered, but the State instead put out a Request for Proposal for ferry dock improvements that included reconstruction of the existing Pier 1 multi-use facility. AMHS safety concerns are addressed with the project.

Kodiak, Road to Launch Complex: The previous plan recognized the complex as a possible source of economic development, but the complex is not financially sustaining. In February of 2015 the Alaska Aerospace Corporation, formed by the State of Alaska to develop aerospace in the state, was returning major state project funding and looking toward privatization. The road was not developed and is not carried on into this plan.

Naknek/South Naknek/King Salmon Road Link and Area Aviation Study: In 2006, the Naknek Crossing Intermodal Economic and Airport Use Study was completed. A low estimate for bridge construction from Fishery Point is \$26 million in 2005. Using three percent annual inflation, current costs would be \$37 million. The bridge is not being carried over into this SWATP because the earmark was not sufficient to construct the bridge.

Williamsport Pile Bay Road:

This project was extensively examined in the 2007 Iliamna Regional Transportation Corridor Analysis. Project scope can be broken into elements, including road improvements, and port improvements in both Williamsport and Pile Bay. A 2012 project repaired the bridge over the Iliamna River, and a bridge replacement project is in design. More information on this project can be found in Section 8.0 of this report, and in **Appendix M (Figure 32)**.



Figure 32: Williamsport Pile Bay Road

This road connects Cook Inlet and Lake Iliamna communities. Improvement studies were recommended in the 2004 plan, and further study and development is carried over into this plan.

Winter Trail Marking for Bristol Bay: Some initial trail mapping has been done by the BBNA. Funds for extending the service or maintaining current markers does not have a statutory source, but is provided by the State as available. A well-developed scope for continuing this project is outlined in the Dillingham Comprehensive Plan Update and Waterfront Plan (City of Dillingham, 2010).

Unalaska Dock Improvements: Unalaska has a 2005 High Priority federal earmark (Section 1702, number 400) for construction of an AMHS ferry terminal including approach, staging and uplands improvements. More information can be found in Section 8.0 of this report.

7.0 FOLLOW-UP STUDIES

This plan should be updated in approximately five years. In the meantime, additional studies could better position future decision-makers to manage limited transportation funds. These possible studies include:

- *Coordinated Transportation, Energy, and Health Plan:* This study would focus primarily on coordinated policy and projects relating to community development. Sub-area plans may be an effective place to start, with later consolidation into a region-wide plan.
- *Access to Health Care:* The public commented on frustration about scheduling air carrier transportation for medical appointments. Currently, people request a trip and then receive Medicare funds. By the time they receive the funds, flights tend to be booked up, especially in the busy summer season. A coordinated study with Health and Social Services and airlines might determine a strategy for making Medicare travel more efficient. Possible solutions include reserving a number of seats for Medicare transportation, or some sort of advance reservation system that holds a reservation until a number of days before travel, allowing time to receive funds and pay for the ticket.
- *Commercial Fishing and its Impact on the Local/State Economy:* This analysis would determine the impact of commercial seafood harvest jobs. Most harvesters are self-employed, and work for just a few months a year, making the collection of this data difficult to capture. An additional question is where and when licensed crew fish. See page 12 of the Phase 1 report (DOT&PF, 2014). This economic information would aid in making informed decisions about transportation infrastructure development and how to best support this industry (**Figure 33**).

- Fish Haul Out Study:* This study would analyze the specific communities/airports that support fish haul out activities, the existing runway length vs. requested runway extension. Throughout the SWATP, several communities requested longer runways to support fish haul out activities; however, there is not currently enough data to support such requests. This study would provide a balanced analysis of how these extensions or improvements would improve revenues, how much revenue would be made because of the improvements, and a detailed cost/benefit analysis.



Figure 33: Unalaska Fishing Gear Storage

Commercial fishing is an economic driver for the Southwest Alaska area, but some aspects have not been formally studied and are difficult to capture because of seasonal self-employment.

- Cost Savings from Transportation Efficiencies:* Projects are regularly proposed to improve transportation efficiency for providers (air carriers, barge companies), with the assumption that any savings from these efficiencies will be passed on to the customer. Verification of whether this is the case in the SWAK, where limited population results in fewer competitors, is required.

- Cost Savings from Project Efficiencies:* This study would provide an analysis on how transportation improvements with the highest efficiencies would impact funding available for other projects. This study would also provide an analysis on the negative impacts a project passes on by not being complete on time. Concerns about the amount of time it takes to get through the funding, environmental, and design

process for projects were brought up during public outreach. When a project gets stalled, it appeared to commenters that developers have to start over from the beginning again. In particular, the environmental permitting process seems to take too long and the same issues, such as Stellar Eider, keep getting studied repeatedly over a long period of time and at great expense. By the time a project gets built, project costs have escalated considerably.

- *Hub delivery of services:* Study is required to verify transportation and economic hubs make delivery of services such as education and health care more cost effective.
- *Regional Public Transit:* This study would document the public transportation conditions in the region and provide project and funding recommendations for communities to access public transit dollars either through the State of Alaska or the FTA.
- *Bicycle and Pedestrian Facilities:* This study would document the existing conditions of the bicycle and pedestrian facilities in the region, focusing mainly on the transportation hub communities. The study would provide project and funding recommendations for communities to access bicycle and pedestrian facilities dollars through state, federal, community, for-profit and non-profit sources.
- *Regional Trail System Plan:* Southwest communities currently use their trail systems as an alternative to fully-developed roads (**Figure 34**). A trail system study could look at trail standards for different levels of use, classifications (predominantly transportation versus predominantly recreational), maintenance responsibilities, and funding issues.



Figure 34: Kokhanok Trail System

The trail system outside of Kokhanok is extensive, and used to travel between communities and to access subsistence areas.

- *Kodiak LRTP:* A LRTP will help to address Kodiak Island transportation needs. While the community has a Borough-funded transportation analysis, it was oriented toward island-wide ferry service, which is not feasible at this time and it did not evaluate other transportation needs.
- *Pile Bay Freight Hub:* Part of the Williamsport Pile Bay Corridor development includes development of Pile Bay as a freight hub. A study would assist to verify what facilities are needed or how recommended improvements can be phased.
- *Medical Evacuation (MEDEVAC) Statistics:* This study would identify the number of MEDEVAC's that occur each year, and analyze how many deaths, if any, are attributable to lack of medical service, either local capability or MEDEVAC capability. This study would show if transportation infrastructure adequately supports MEDEVAC service.
- *River Navigation Hazards:* This study would document existing conditions of hazards along the rivers to help barge operators and system users navigate river waters safely. A map or study of hazards on approaches to barge landings – trees, stumps, sunk

skiffs, etc., has been recommended through public comment. It might be valuable to create a Geographic Information System keyhole markup language (KMZ) file that could be downloaded into Google Earth or some Global Positioning Systems (GPS). Note that the State has assumed mapping responsibilities for the “Capstone” program, which provides GPS mapping for terrain, which is then viewable in real time by aircraft pilots using the technology.

Anticipated airport studies include:

- *Port Lions Airport Master Plan*
- *Unalaska Airport Master Plan (update existing)*
- *King Salmon Airport Master Plan (Update existing, Figure 35)*
- *Dillingham Airport Master Plan (Update existing)*

Master plan studies include an environmental analysis and an airport layout plan.



Figure 35: King Salmon Main Runway

The AASP includes the King Salmon airport among the Southwest Alaska airports slated for Master Plans.

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8.0 RECOMMENDATIONS

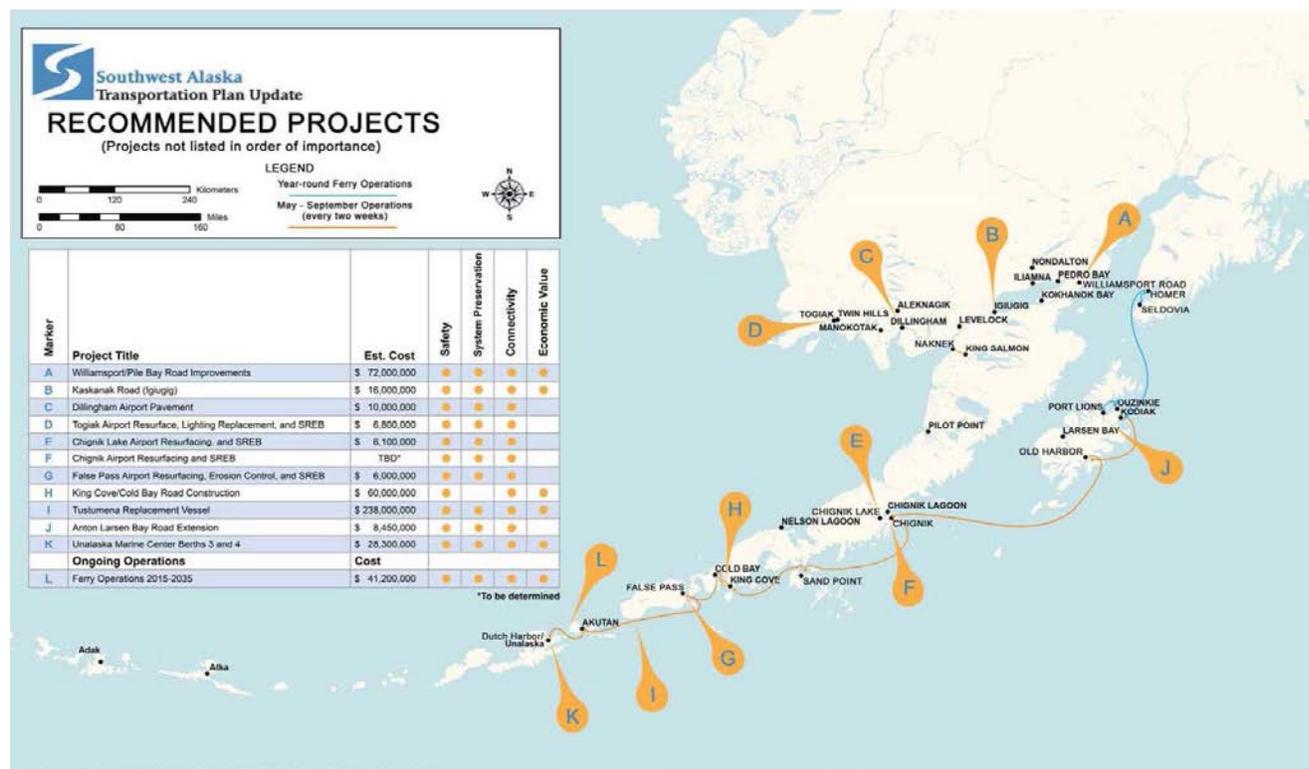


Figure 36: Recommended Projects

These twelve projects will improve regional transportation.

Table 6 summarizes the projects recommended for development over the next 10 to 20 years, and Figure 36 above illustrates their locations. The columns to the right show which goals we hope to accomplish with each project. Below the table are more detailed descriptions of these projects, which will serve as a starting point for investigations and development. As projects are developed, these scopes may be modified, or replaced with other projects that meet the same goals with less expenditure, or show better cohesiveness with the rest of the system.

Table 6: Recommended Projects

Project Title	(\$ 2015) Est. Cost	Safety	System Preservation	Connectivity	Economic Value
A. Williamsport Pile Bay Road Improvements	\$72,000,000	X	X	X	X
B. Kaskanak Road (Igiugig)	\$16,000,000	X	X	X	X
C. Dillingham Airport Pavement Rehabilitation	\$10,000,000	X	X	X	
D. Togiak Airport Resurface, Lighting Replacement and SREB	\$6,800,000	X	X	X	
E. Chignik Lake Airport Resurfacing and SREB	\$6,100,000	X	X	X	
F. Chignik Airport Resurfacing and SREB	TBD	X	X	X	
G. False Pass Airport Resurfacing, Erosion Control, and SREB	\$6,000,000	X	X	X	
H. King Cove/Cold Bay Road Construction	\$60,000,000	X		X	
I. <i>Tustumena</i> Replacement Project	\$238,000,000	X	X	X	X
J. Anton Larsen Bay Road Extension	\$8,450,000	X	X	X	
K. Unalaska Marine Center	\$28,300,000	X	X	X	X

A. *Williamsport Pile Bay Road*: This \$72.2 million estimate is based on the Iliamna Regional Transportation Corridor Analysis (State of Alaska DOT&PF, 2007), which focused on preparing the road for industrial use. This existing road would be upgraded to a two-lane, all-season road between Williamsport in Cook Inlet and Pile Bay on Iliamna Lake. Williamsport would have a new port developed at Diamond Point, to circumvent tidal delivery restrictions. With the Kaskanak project, this would establish a corridor between Cook Inlet and Bristol Bay, reducing open water travel by over one thousand miles. Anchorage is Alaska's largest community and economic hub, and is located in Cook Inlet. Bristol Bay is home to three of the top five fishing ports in the nation. More information on the Williamsport Pile Bay project can be found in **Appendix M**.

B. *Kaskanak Road (Igiugig)*: The Igiugig Village Council has submitted a TIGER grant for \$16 million to complete 11 miles of 26-foot-wide gravel roadway, two minor bridges, and a barge landing to construct a portage around seven miles of flats along the Kvichak River (Figure 37). This intermodal connection would facilitate use of the Kvichak River as a corridor. Iliamna Lake fishermen could access Bristol Bay fisheries, and less expensive fuel shipment could be provided to communities on Iliamna Lake. A reconnaissance study would provide further cost and benefit analysis.

C. *Dillingham Airport Pavement Rehabilitation*: This rehabilitation



Figure 37: *Igiugig*

Igiugig has constructed the initial elements of Kaskanak Road, which is used to portage boats from Lake Iliamna to navigable parts of the Kvichak River.

n project is estimated at \$10 million. DOT&PF and the FAA are currently discussing whether the runway needs to be shifted in order to address current runway safety area noncompliance. An interim pavement rehabilitation project will improve pavement condition in the short term.

D. *Togiak Airport Resurface, Lighting Replacement, Snow Removal Equipment Building (SREB):*

Resurface and replace lighting on the runway, taxiway and apron. Replace the SREB.

E. *Chignik Lake Airport Resurfacing, and New SREB:* Resurface runway, replace the SREB. Some survey, geotechnical analysis and engineering have been completed (Figure 38).

F. *Chignik Airport Resurfacing and SREB:* Resurface and light the runway, taxiway and apron. Expand the existing SREB. The

existing SREB is in the transitional surface of protected airspace – an area to remain clear of buildings to improve safety for approaching and departing aircraft. While a new SREB location would be optional, development would impact historically significant resources at the alternate sites, at great expense. At this time the DOT&PF has opted to minimize impacts to historical resources and expand the existing facility.



 **Figure 38: Chignik Lake Airport**

This plan supports shifting the Chignik Lake runway.

- G. *False Pass Airport Runway Resurfacing, Erosion Control, and Lighting*: Protect runway ends from erosion. Expand the apron and construct a two-bay SREB. Install airfield lighting including a beacon and windsock.
- H. *King Cove/Cold Bay Road*: This project is estimated to cost \$30 million, and would construct a 17.2-mile, single lane gravel road with turnouts. This project would construct a single-lane gravel road between these communities through the Izembek Wildlife Refuge. Alaska's congressional delegation continues to seek solutions to an access impasse to the Wildlife Refuge with the United States Department of the Interior.
- I. *Tustumena Replacement Project*: In 2021 - Replace the *Tustumena* with a "newer" state-of-the-art ferry (*Tustumena* Replacement Project - TRP) and supplement year-round service with the *Kennicott*. The Department is currently designing the TRP (**Figure 39**). The *Tustumena* currently serves the communities of South Central, Kodiak Island and Southwest Alaska. It is one of two ocean class vessels in the AMHS fleet (**Table 7**). Because of its size and design, it is the only AMHS vessel that is capable of serving all 13 ports of call between Homer and Unalaska. While the *Tustumena* has a strong safety record, the vessel is aging, requiring more significant lay-up time and higher costs for repair. Retiring and replacing the *Tustumena* with a vessel that is equally, if not more, versatile and seaworthy will provide reliable marine transportation service well into the future for the communities, residents and businesses in South Central, Kodiak Island and Southwest Alaska. *Tustumena's* replacement will be slightly larger in size and capacity, and have a higher service speed. While the larger size could mean more traffic and more revenue, the number of trips will not be increased, and the population of the region is relatively flat.



Figure 39: Rendering of the Tustumena Replacement

This ocean class vessel is currently in design.

Table 7: AMHS Fleet Serving Southwest Alaska

Existing			Annual M&O (\$millions) ³	
2015-	<i>Tustumena</i>	40 weeks	\$13,197.3	\$20.2M
2020	<i>Kennicott</i>	12 weeks	\$7,045.8	
2021-	TRP	40 weeks	\$13,966.5	\$21.0M
2030	<i>Kennicott</i>	12 weeks	\$7,045.8	

³ Costs are planning level estimates.

J. *Anton Larsen Bay Road Extension*: This project would extend the Anton Larsen Bay Road (Figure 40) 2.1 miles to ice free waters, improving access for Kupreanof Straight communities. The road would improve safety by providing a land alternative to the current 20-mile open water boat commute from Anton Larsen Bay, around the north of Kodiak Island, and to the City



Figure 40: Anton Larsen Bay Road

One of the regional projects in this plan would extend Anton Larsen Bay Road to ice-free waters of Kupreanof Straight.

of Kodiak. The route improves emergency response and facilitates mobilization between the east and west sides of the island. This route addresses access restrictions to critical health and economic resources in the City of Kodiak. Along the road are multiple possible gravel sources which, if developed, would provide jobs and support infrastructure development. Finally, the route improves recreational access to the west side of Kodiak Island. The Ouzinkie Native Corporation subsidiary Spruce Island Development Corporation (SIDCO) received a \$450,000 legislative grant for planning and design, and is working with DOT&PF to finalize routing and develop a cost estimate. The Ouzinkie Native Corporation has agreed to donate road right-of-way (ROW) to DOT&PF when construction funding is obtained (KIB, 2015).

K. *Unalaska Marine Center Berths 3 and 4:* As Arctic ice recedes, Unalaska's port of Dutch Harbor is anticipated to supply transiting ships and provide emergency response. Unalaska's location on the Great Circle navigational route, coupled with their existing infrastructure and maritime services (**Figure 41**), make Unalaska a prime candidate to serve as a crossroads between Arctic and Asian-American routes, serving regional and international economic interests. The UMC has 7 berthing positions. The project replaces Positions 3 and 4 and will provide 940 feet of working dock face at minimum water depth of 45 feet, and will create 1.8 acres of uplands. Position 3 is a wood pile-supported dock that accommodates AMHS, and Position 4 is a steel pile-supported dock with severe erosion problems in areas that cannot be accessed for repair. The deficiencies with Positions 3 and 4 are well-documented in reports from the State of Alaska and inspections conducted by PND Engineers, Inc., the City of Unalaska's engineering firm. This project will add flexibility to the suite of services provided to the marine sector and will expand the capacity for the number of vessels served.



Figure 41: Unalaska

Unalaska's location on the Great Circle route and established maritime support industry position the community as an international crossroads between Asian-American and Arctic shipping routes.

The uplands created will provide staging, storage and area for warehousing. The project will accommodate deeper draft vessels (45 feet) and facilitate increased load capacity for cargo transfers. Current users need the space now; if Arctic development continues, more space will be needed.

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9.0 CONCLUSION

Transportation plans are finalized in an ever-shifting terrain of funding, political will, and project development. This plan is a starting point for project development but current conditions should be carefully evaluated to determine if project assumptions still carry.

One of the most significant challenges for the State of Alaska is maintaining state services in light of reduced oil revenue, and changes to federal transportation funding. The projects recommended in this plan include a variety of transportation elements and modes in order to provide the flexibility to adapt to funding available. Project development partners will be increasingly important in meeting the transportation needs of the area.

The financial challenges facing the State provide an opportunity to critically evaluate the transportation systems in Southwest Alaska through the planning process. By working together to leverage funding and construct projects, we can keep Alaska moving through service and infrastructure.



Alaska Department of

Transportation & Public Facilities

Our mission is to “Keep Alaska Moving through service and infrastructure.”

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10.0 WORKS CITED

Alaska Earthquake Center. October 2006. Fairbanks (AK): University of Alaska Fairbanks [cited 2015 September 11]. Available from:

http://www.aeic.alaska.edu/html_docs/historic_quakes_tectonics.html

Alaska Volcano Observatory. 2014. Volcano Information [internet]. May 5, 2014. Fairbanks (AK). [cited 2015 November 11]. Available from:

<https://www.avo.alaska.edu/volcanoes/index.php>

Anderson, T. 2015 September 9. Alaska Tugs and Barges, Delivering to Alaskans Rain or Shine. Alaska Business Monthly Magazine. Available at:

<http://www.akbizmag.com/Alaska-Business-Monthly/September-2015/Alaska-Tugs-Barges/>

Barge, S.T. 2015. Samson Tug and Barge. Retrieved Thursday, November 11, 2015, from Samson Tug and Barge: <http://www.samsontug.com/>

City of Dillingham. 2010. City of Dillingham Comprehensive Plan Update & Waterfront Plan. Dillingham (AK). October 2010. Total pages 178.

City of Unalaska. 2015. City of Unalaska. Retrieved November 11, 2015, from City of Unalaska: <http://www.ci.unalaska.ak.us/portsandharbors/page/unalaska-marine-center-umc-and-uscg-dock>

Climate Change and the National Academies [Internet]. 2012(b). Washington (DC): The National Academies; [cited 2015 January 7]. Available from: <http://nas-sites.org/americasclimatechoices/sample-page/panel-reports/panel-on-adapting-to-the-impacts-of-climate-change/>

Coffey, Michael J. 2015. Alaska Department of Transportation and Public Facilities Statewide Maintenance and Operations Chief. Personal interview, 9 January 2015.

Maritime Connector [internet]. N.d. Rijeka, Croatia. Cited 2015 November 10. Available from: <http://maritime-connector.com/wiki/ship-sizes/>

Earthquakes in Alaska [Earthquake magnitude]. In: Alaska Earthquake Center website.

Fairbanks (AK): University of Alaska Fairbanks. Peter Haeussler and George Plafker developed this map showing pre- and post-1964 earthquakes in Alaska, depicting the North American and Pacific plates, and Alaska fault lines. Map was not checked for conformity with the USGS editorial standards or the North American Stratigraphic Code. Available from: <http://www.aeic.alaska.edu/vltpage3.html>,
http://www.aeic.alaska.edu/html_docs/images/earthquakes_in_alaska.jpg

Executive Office of the President of the United States, Office of Management and Budget. 14 June 2011. Washington, (D.C.): OMB. [Cited 10/16/2015]. Available from: <https://earmarks.omb.gov/earmarks-public/>

Kodiak Island Borough. 2015. Borough Assembly. 2015, November 05. Kodiak Island Borough Resolution No. FY2016-09: A Resolution of the Assembly of the Kodiak Island Borough Adopting a State legislative Capital Improvement Projects Priority List for the 2016 Legislative Session. Kodiak (AK): Kodiak Island Borough. FY2016-09.
Total pages 4.

Lockmann, Robert. USPS Hubs. By Thomas Middendorf, DOWL. January 4, 2016.

Matson. 2015. Matson. Retrieved Thursday, November 11, 2015, from Matson:
<http://www.matson.com/matnav/services/alaska.html>

McBride, Rhonda. 2015 January 2. In rural Alaska, gas prices sit above \$6 a gallon. KTVA CBS 11. Available at: <http://www.ktva.com/in-rural-alaska-gas-prices-sit-above-6-a-gallon-407/>

McLaughlin, Peggy. Unalaska Dutch Harbor Port Director. Interviewed by Adison Smith, DOWL. November 10, 2015, in Unalaska, Alaska.

Merriam-Webster [Internet]. 2015. Springfield, (MA). [cited 2015 December 8] Available from: <http://www.merriam-webster.com/dictionary/earmark>

- Meyers, A. (2014, November 11). Alaska Waterways Water Transportation. Retrieved November 11, 2015, from Public Tableau - Alaska Waterborne Transportation: https://public.tableau.com/profile/alan.meyers#!/vizhome/AlaskaWaterborneTransportation_0/portsummary3
- Phelps, Russell. Natural Resources Manager, Bristol Bay Native Corporation. E mail comment on the Draft Final Southwest Transportation Plan. April 1, 2016.
- Rauf, Rebecca, C.M. "SWAK: Requests." E mail to Irene Gallion, DOWL. 14 December, 2015.
- Rawson, Lorianne. Administrator, South Naknek Village Council. E mail comment on the Draft Final Southwest Transportation Plan. April 7, 2016.
- Sharp, Jeff. 2012. VP of Operations for Era Alaska. SW Regional Transportation Plan Aviation Interviews. Ryan Cooper, DOWL. 20 January 2012.
- Smith, Katharine. Community Planner, Chignik Lagoon Village Council. E mail comment on the Draft Final Southwest Transportation Plan. March 30, 2016.
- Southwest Alaska Municipal Conference. 2016. Accessed April 28, 2016.
<http://www.swamc.org/>.
- State of Alaska Department of Commerce, Community, and Economic Development. 2015. Community Database Online. [2015 September 11]. Available from:
<https://www.commerce.alaska.gov/dcra/DCRAExternal/>
- State of Alaska Department of Labor and Workforce Development (DOLWD). 2010. Population Projections: 2010 to 2034, Alaska Economic Trends, December 2010.
- State of Alaska DOLWD 2012. Research and Analysis. Alaska Local and Regional Information. Available at: <http://live.laborstats.alaska.gov/alari>. Accessed September 18, 2012.
- State of Alaska Department of Natural Resources (DNR) Mining, Land and Water. 2015. Juneau (AK). Available from: <http://dnr.alaska.gov/mlw/mining/largemine/pebble/>
- State of Alaska Department of Transportation and Public Facilities (DOT&PF). 2004. Southwest Alaska Transportation Plan, Revised: A Component of the Alaska Statewide Transportation Plan. Alaska Department of Transportation and Public Facilities, Central

- Region. Anchorage (AK): State of Alaska Department of Transportation. Total pages: 230.
- State of Alaska DOT&PF. 2007. Iliamna Regional Transportation Corridor Analysis. N.p., N.p., December, 2007. Web access:
http://www.dowlhkm.com/projects/SWAKTP/new_website/docs/iliamna_reg_transp_corr_final_rpt_12-31-07.pdf
- State of Alaska DOT&PF. 2008. Let's Get Moving 2030, Alaska Statewide Long-Range Transportation Policy Plan. Alaska Department of Transportation and Public Facilities, Program Development. 2008 February. Juneau (AK): State of Alaska Department of Transportation. Total pages 80.
- State of Alaska DOT&PF. 2014. Southwest Alaska Transportation Plan Update, Phase 1: Understanding the Transportation System and Regional Needs. Anchorage (AK). Alaska Department of Transportation and Public Facilities, Central Region. 2014 January. State of Alaska Department of Transportation. Total pages: 185 exclusive of appendices, 256 total.
- State of Alaska Office of the Governor, Office of Management and Budget. 2015a. Budget Review Summary – 2 Scenario Comparison (1587). Juneau (AK), State of Alaska. 1 page. 2015 June 15. Accessed at:
https://www.omb.alaska.gov//ombfiles/16_budget/PDFs/Budget_Review_Summary_UGF.pdf
- State of Alaska Office of the Governor, Office of Management and Budget. 2015b. UGF/DGF/Other/Fed Summary by Component (3 Scenario) (1081) Transportation. Juneau (AK), State of Alaska. 5 pages. 2015 June 30. Accessed at:
https://www.omb.alaska.gov/ombfiles/16_budget/Trans/Enacted/16compsummary3scen_trans.pdf
- United States Army Corps of Engineers (USACE). 2009. Alaska Barge Landing System Design Statewide. Alaska District. 2009 January. Anchorage (AK): USACE. Two volumes, total

pages 332.

United States Department of Commerce, Census Bureau. 2010. 2005-2009 American Community Survey. Washington, D.C.

United States Department of Commerce, National Oceanic and Atmospheric Administration (NOAA). 2010-2013. Fisheries of the United States. Silver Springs, Md. Available from: <http://www.st.nmfs.noaa.gov/commercial-fisheries/fus/fus13/index>

United States Department of Transportation. 2015. Alaskan Subsidized EAS Report for October, 2015. Accessed: <https://www.transportation.gov/office-policy/aviation-policy/essential-air-service-reports>

United States Energy Information Administration, Independent Statistics and Analysis. December 2015. Washington, (D.C.): EIA. [Cited 12/08/2015]. Available from: www.eia.gov/forecasts/steo/report/prices.cfm

United States Environmental Protection Agency (EPA) [Internet]. 2014 August 8. NC, United States Environmental Protection Agency; [cited 2015 January 7]. Available from: <http://www.epa.gov/climatechange/impacts-adaptation/coasts.html>

United States Postal Service. 2012. Intra-Alaska Mail Service by Air: Instructions for Certificated Air Carriers and Bypass Mail. Outlines air carrier responsibilities, rates of compensation, types of service, documentation, and bypass mail responsibilities. Np. USPS. Handbook PO-508. March 2012. Electronically delivered at: https://about.usps.com/handbooks/po508/po508_tl.htm

University of Alaska Fairbanks (UAF). 2013. Regional Climate Projections: Southwest Alaska and Aleutian Islands. Cooperative Extension. 2013 June. Alaska Climate Change Adaptation Series. Fairbanks (AK): University of Alaska Fairbanks. ACC-00115, 2 pages. Available at: <http://www.uaf.edu/files/ces/publications-db/catalog/cred/ACC-00115.pdf>

Weather Underground [Internet]. 2015. NC, Weather Underground, Inc.; [cited 2015 January 7]. Available from: <http://www.wunderground.com/climate/SeaIce.asp>

Varner, Andy. City Administrator, City of Sand Point. E-mail comment on the Draft Final Southwest Transportation Plan. March 15, 2016.

White, Lon. Harbormaster, City of Kodiak. Interviewed by Adison Smith, DOWL. November 4, 2015, in Kodiak, Alaska.

White, Lon. Harbormaster, City of Kodiak. E mail comment on the Draft Final Southwest Transportation Plan. February 18, 2016.

