Alaska State Rail Plan

FINAL

Prepared for:

Alaska Department of Transportation and Public Facilities

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Executive Summary

ES-1 Introduction

The Alaska Department of Transportation and Public Facilities (DOT&PF) has developed this State Rail Plan to formulate a vision for rail in Alaska as well as guide the state's rail freight and passenger transportation planning activities and project development plans over the next 20 years.

Alaska's rail system plays an essential role in transporting goods to and from Alaska. Much of the food, consumer goods, and special/oversized equipment is shipped to Alaska on container/trailer ship and transported to destinations by rail. Rail also provides a cost effective, efficient way to transport heavy bulk commodities such as gravel and coal within the state. There is considerable potential for rail to support resource extraction in much of the state. Both of Alaska's railroads provide passenger service, which provides a needed transportation service to the state's residents and supports the state's tourism industry.

In 2008, the United States Congress passed the Passenger Rail Investment and Improvement Act (PRIIA) with the expressed intent of improving passenger rail service in the United States. One of the features of this legislation is the requirement that any state seeking federal assistance for either passenger or freight improvements have an updated state rail plan. Alaska Statutes assign the Alaska Department of Transportation and Public Facilities (DOT&PF) the responsibility to plan for all modes of transportation, including rail. A review of Alaska Statutes dealing with the ARRC and the role of DOT&PF should be undertaken to ensure that there is a rational link between the two and no work efforts are overlapping.

This Alaska State Rail Plan (ASRP) describes the state's existing rail network and rail-related economic and socio-economic impacts. It also describes the state rail plan process, Alaska's rail vision and supporting goals, potential capital improvements, studies, and recommended next steps.

The ASRP is intended to meet the requirements established by the Federal Passenger Rail Investment and Improvement Act to qualify for future federal funding for rail projects.

ES-2 Purpose of the State Rail Plan

The purpose of this comprehensive ASRP is to establish a vision for Alaska's passenger and freight rail system. That vision should be grounded in what the users of the rail system—the rail shippers, the passengers, the communities served, the state as a whole—and the railroads want and need for their rail service. This plan is an articulation of a vision for the Alaska rail system, a description of the process that developed that vision, and a program of improvements over time needed to implement that vision. It is important to note that this is a plan to guide the State of Alaska and DOT&PF's role in future rail transportation in Alaska; it is not a long-term plan for the Alaska Railroad Corporation (ARRC) or the White Pass & Yukon Route (WP&YR).

This ASRP was prepared to comply with the requirements of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA). States are required by PRIIA to submit a State-approved Rail Plan, to be updated no less frequently than once every five years, to the U.S. Secretary of Transportation for approval.

ES-3 Alaska's Rail System

The Alaska Railroad Corporation (ARRC) operates freight and passenger rail service in Alaska on 521 miles of main and branch lines. The White Pass & Yukon Route Railroad (WP&YR), a seasonal tourist railroad, operates passenger rail service in Alaska along approximately 20 route miles of rail line.

ES-3.1 Freight Rail System

In 2015, the ARRC carried more than 4.3 million tons of freight, in 51,400 rail car shipments. The leading freight types are stone, sand and gravel (2.3 million tons), coal (900,000 tons), petroleum product (381,000 tons), chemicals (105,000 tons), iron/steel products (70,000 tons), intermodal [1](123,000 tons), and other (418,000 tons). Overall, ARRC freight tonnage was about 800,000 tons lower in 2015 than in 2013. Petroleum and coal were lower while the other commodities were stable to increasing. The reduction in coal handled reflected the reduction in exports. There are a number of potential resource development projects being considered. If these projects materialize, and if rail is used to ship the resources to market, rail traffic could increase.

Alaska Railroad

White Pass & Yukon Route Railroad

As of publication of the ASRP, the WP&YR does not offer freight service. It did so in the past and it is possible that such service could be resumed.

ES-3.2 Passenger Rail System

Alaska's passenger rail network includes passenger service provided by the ARRC and the WP&YR. The ARRC operates six different passenger trains serving resident, visitor and contract markets, each of which operates over part of the railroad between Seward and Fairbanks. The frequency of each train varies depending on the season. In 2015, approximately 475,034 passengers rode on the ARRC. The WP&YR offers excursions from Skagway to Bennett, Fraser, and White Pass Summit. In 2015, the WP&YR carried 401,905 passengers.

[1] Trailers or containers carried on railcars.

ES-4 Rail Impacts

Rail service is an important part of Alaska's economy. The railroads employ nearly 900 people on a year-round or seasonal basis. In addition to the jobs directly related to the provision of freight and passenger rail service, there are a large number of jobs related to rail users who move goods via the rail system or associated with the tourism industry.

In addition to employment benefits, the availability of rail transport provides cost and logistical advantages. The presence of rail is especially important in areas where mining, military, and other industries move heavy loads of freight over long distances.

Rail is more fuel efficient than truck on the basis of fuel burned per ton-mile transported. Greenhouse gasses are related to fuel consumption, so every ton-mile of freight moved by rail instead of truck reduces related greenhouse gas emissions by up to 75 percent. The movement of freight by rail also improves safety and functionality of the state's highway system.

ARRC passenger rail service connects communities, which is important given the lack of intercity bus service. Through their whistle-stop service, the ARRC also provides the only land access to certain parts of the state. In addition, passenger travel generates income not only for rail operations but also for restaurants, hotels, and other visitor service businesses.

ES-5 Rail Plan Development Process

The ASRP was developed under the guidance of the DOT&PF, which is responsible for planning for all modes of transportation including rail planning transportation in Alaska. The railroads and DOT&PF apply for federal funding for rail improvement projects. The DOT&PF coordinated with other agencies responsible for rail-related functions in the development of the ASRP.

A State Rail Plan Steering Committee and a Technical Advisory Group (TAG) were established to ensure that the ASRP development was guided, reviewed, and supported by a wide range of state public agencies and included representation from both public and private transportation and economic development entities in the state.

The rail plan website: http://dot.alaska.gov/railplan/ was used during the preparation of the ASRP to provide updates on development of the plan and to provide a medium for public review and comment. The Draft ASRP was posted to the website prior to the finalization of the plan, and an on-line "open house" was held to solicit comments on the draft plan.

Both railroads in Alaska were contacted to solicit information about their operations, projects, or other needs as well as their opinions regarding what the public sector could do to assist or improve the efficiency and expansion of rail in the state. Similar interviews were conducted for freight shippers.

A series of seven public meetings were held at different locations around the state to educate stakeholders and the general public regarding the State Rail Plan process, obtain input for developing a rail vision, and provide a forum for discussions of specific rail issues in the state. The public meetings were held in the following communities:

- Skagway – May 21, 2013

- Haines – May 22, 2013
- Wasilla – May 29, 2013
- Seward – May 30, 2013
- Anchorage – June 4, 2013
- Fairbanks – June 5, 2013
- Nome – June 6, 2013

ES-6 Key Rail Issues, Challenges, and Opportunities

Stakeholders and the general public expressed their interest in the value and potential of the state's passenger and freight rail operations.

The key rail freight issues and recommendations expressed during the outreach included the need to:

- Diversify the commodities carried
- Explore future rail extensions/new railroads to support resource development
- Maintain and expand intermodal transport and facilities
- Maintain the existing rail infrastructure

The key passenger rail issues and recommendations were:

- Development of commuter rail in Southcentral Alaska and the Fairbanks area
- Implementation of Positive Train Control (PTC)

ES-7 Rail Vision, Goals, and Objectives

Alaska's rail vision was developed by the Steering Committee and DOT&PF, and refined based on comments received during the plan development process.

Preamble:

> *The pioneering ambition that built Alaska was both practical and visionary; using roads, waterways, air, and rail to haul resources to market and connect communities to each other and the world.*

Vision:

> *The State of Alaska will use rail to foster growth and trade, build prosperity, connect and support communities, and provide safe and efficient freight and passenger services coordinated with other transportation modes, regionally and internationally.*

Goals and objectives aligned with the rail vision were developed based on the rail-related benefits, issues, and obstacles that had been identified. These goals and objectives are as follows:

Goal 1: Promote Economic Development in Alaska

- Objective – Support rail extensions to new locations to serve energy and resource development, general economic development, import/export, and defense needs as well as passenger service that support personal travel and the tourism industry.

- Objective – Support Corridors to Resources. Corridors can include road, rail, pipelines, and utilities such as transmission lines.
- Objective – Support improvements to the rail system that make it more capable of serving existing and new customers and offering more competitive service.
- Objective – Specifically plan for rail support for the Alaska LNG projects, including both addressing the capability and service area of the existing system as well as prospective rail extensions supporting the gas project.

Goal 2: Enhance Safety

- Objective - Implement Positive Train Control (PTC) to comply with federal mandate intended to enhance safety.
- Objective - Separate the remaining at-grade crossings on Alaska's National Highway System (NHS) routes.
- Objective – Separate as many non-NHS at-grade crossings that have significant traffic volume as funding allows.

Goal 3: Encourage Partnership and Collaboration

- Objective - Harmonize State policy on railroads especially right-of-way selection, acquisition, development, and management.
- Objective - Participate in local government land use and transportation planning along existing and potential transportation corridors.
- Objective - Include rail in emergency service planning.
- Objective – Assure state administration involvement and assistance in considering rail service for large-scale projects.
- Objective –Ensure that the rail mode of transportation gets full and balanced consideration in state and regional freight and passenger transportation planning and other transportation-related activities.
- Objective – Continue to participate in Department of Defense's Strategic Rail Corridor Network (STRACNET).

Goal 4: Support Improvements to System Preservation, Efficiency, and Capacity

- Objective - Improve the capability of Alaska rail freight lines and structures to safely and efficiently accommodate rail cars with loaded weights of at least 286,000 pounds per car.
- Objective – Improve efficiency of the rail system through longer passing sidings and tunnel improvements.
- Objective - Implement line relocations to enhance operations, speed, safety, and capacity.
- Objective – Protect and preserve operating railroad ROWs for safety and sustainable economic development.
- Objective – Establish and reclaim corridors to preserve right-of-way for future use.
- Objective – Support railroads' efforts to keep the rail system in a state of good repair.
- Objective – Support railroads' efforts to address deferred maintenance.

Goal 5: Improve Connectivity of the Transportation System

- Objective – Support scheduled public rail passenger service to the Ted Stevens Anchorage International Airport.
- Objective - Pursue enabling legislation that authorizes regional transportation authorities to implement commuter rail service.
- Objective - Emphasize interconnectivity with other planning efforts and modes of transportation.

Goal 6: Enhance Quality of Life and Environmental Sustainability

- Objective – Support community planning to reduce rail related noise.
- Objective - Improve wildlife crossings and culverts for fish passage.
- Objective - Support rail service as a part of an overall energy conservation policy.
- Objective - Support rail service as a means of improving air quality through reduction of emissions resulting from more efficient movement of goods by rail.

Goal 7: Address Community Issues that Arise from Urban Development around Railroads

- Objective – Separate at-grade crossings wherever possible giving the higher priority to those with the worst crash histories.
- Objective –Support a community-based rail plan for the greater Fairbanks area to establish a long-term plan for rail bypass, separated crossings, potential relocation of the rail yard, and other elements.
- Objective – Support the ARRC's vision to relocate their Anchorage railyard to a new location depending on the future of the Knick Arm Crossing.

Goal 8: Establish a Recurring Public Capital Investment Program

- Objective - Fund rail-related projects that solve public problems and create public and private opportunities.
- Objective - Fund rail-related projects that the rail system itself cannot fund but which will be of mutual benefit to the rail system and the public.
- Objective – Establish the rail capital investment program as a routine and reliable element of the state capital budget so that project developers have a steady source of support and several projects can be underway at the same time.

ES-8 Proposed Investment and Future Studies

Based on the identified needs and available funding sources, short- and long-term proposed rail investment programs and projects were developed. The programs/projects identified have been separated into short term (including those projects that are underway at publication of the ASRP or can secure partial funding in years 1-4) and long term (5-20 years). Most projects benefit passenger and freight service but they are only listed once.

Passenger Rail – Short Term

- ARRC Positive Train Control

- US Forest Service Complete Chugach National Forest Whistle Stop Development
- WP&YR Passenger Depot
- WP&YR Acquire New Passenger Equipment
- WP&YR Skagway Depot Passenger Handling Capability Expansion

Passenger Rail – Long Term

- Commuter Rail service in Southcentral Alaska
- ARRC Ship Creek Intermodal Transportation Center
- WP&YR New Intermodal, International Passenger Depot
- WP&YR Continued Upgrades to Avalanche Control System
- WP&YR Expansion of the Railroad Dock

Freight Rail – Short Term

- Seward Marine Terminal Improvements
- MSB Port MacKenzie Rail Extension Project
- ARRC Fairbanks Area Line Relocation - Phase 1
- Cantwell Intermodal Facility
- ARRC South Wasilla Rail Line Relocation
- ARRC Nenana Rail Line Relocation
- ARRC Portage and Divide Tunnels
- Fairbanks Area Rail Plan

Freight Rail – Long Term

- ARRC Anchorage to Seward Track Rehabilitation
- ARRC Whittier Wharf Replacement and Staging Areas
- ARRC Whittier Yard Improvements
- ARRC Northern Rail Extension
- ARRC Healy Canyon Stabilization
- Port of Anchorage Track Improvements
- ARRC Fairbanks Airport Branch and Eielson Branch Staging Areas
- ARRC Fairbanks Freight Intermodal Terminal Rail/Truck Staging Area
- Grade-separation of All NHS At-grade Rail Crossings
- Grade-Separation of Significant Non-NHS at-grade Crossings
- Susitna-Watana Dam Support Spur
- Extending Transportation Facilities to Provide Surface Access to Resource Development Opportunities
- Standardize Alaska's Track to 286,000 Pound Capacity
- WP&YR Construction and Expansion of Docking and Port Facilities (West Basin)

In addition to the projects listed above, projects proposed for economic analysis, periodic re-evaluation, and study include:

- Nenana/Dunbar to Livengood Railroad Extension
- Rail Extension to North Slope
- Alaska-Canada Rail Link (ACRL)
- Island Railroad[2] to Yukon Territory
- Rail Extension to Nome
- ARRC Knik Arm Crossing and new central railyard
- Rail extension to west of the Susitna River

ES-9 Project Findings

Key findings have emerged from the current rail planning effort:

- Maintenance of a strong and fully functional Alaska Railroad and White Pass and Yukon Route will be important to the future economy of the State of Alaska.
- Alaska needs its existing railroads if it is to realize the economic development goals it has as a state and as a society. In fact, some of these State goals may require expansion of the rail system to serve other locations and/or new development.
- Railroads are the most efficient means of overland freight transportation, and they allow some forms of development, such as resource extraction, to be economically feasible.
- Alaska's rail systems typically generate sufficient revenue to operate existing service and perform routine maintenance. The downturn in traffic and revenues that began with the recent economic recession has put pressure on the ARRC's ability to earn sufficient revenues to both operate service and adequately maintain the railroad.
- The existing ARRC ownership structure, with the railroad as a state-owned independent corporation, is appropriate and in the best long-term interest of the railroad and the state.
- Additional funding beyond existing revenues is needed for projects that are beyond the scope of ARRC's existing operations such as expanding the rail system to new destinations and capital improvements.

ES-10 State Rail Plan Recommendations and Next Steps

For the purposes of meeting Alaska's rail vision, goals, and objectives—and to address the identified rail issues and opportunities identified in preparation for future Rail Plan updates—the following actions are proposed:

- The State of Alaska should continue to support the Alaska Railroad's work to develop and implement the federally-mandated, but unfunded, Positive Train Control system. The estimated cost of the system strains the railroad's ability to pay for its development and implementation.
- The State should invest in short and long-term passenger and freight projects that will be of positive economic benefit to the State. This plan and analysis prioritizes and recommends a group of economically promising projects.

[2] An island railroad is a railroad that is not connected to the regional or national rail network. The White Pass & Yukon is an example of an island railroad.

- The State of Alaska should examine in detail the economic benefits and costs of the rail extensions listed above in Section ES-8. Projects that would be economically beneficial and that would provide a financial return to the state competitive with other investment options should be pursued.

ES-11 Summary

The state has undertaken a comprehensive study of its passenger and freight rail network, and identified key issues and opportunities through a wide-ranging rail stakeholder and public outreach process. This State Rail Plan serves to document this information and provide direction for Alaska rail planning and project development into the future while meeting the federal requirements to qualify the state for future federal rail funding.

The development of this state rail plan was paid for with State of Alaska general funding. DOT&PF would like to take this opportunity to thank all the individuals and parties who were involved in this effort and encourages continued public input into Alaska's rail planning efforts in the future.

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List of Acronyms and Abbreviations

Acronym	Title
AAC	Alaska Administrative Code
AADT	Annual Average Daily Traffic
AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
ACRL	Alaska-Canada Rail Link
ADOLWD	Alaska Department of Labor and Workforce Development
AEC	Alaska Engineering Commission
AECRR	Alaska Engineering Commission Railroad
AIDEA	Alaska Industrial Development and Export Authority
Alaska LNG Project	Alaska Liquefied Natural Gas Project
ALCO	American Locomotive Company
AMATS	Anchorage Metropolitan Area Transportation Solutions
AMP	Airport Master Plan
ANWR	Arctic National Wildlife Refuge
ARCA	Alaska Railroad Corporation Act of 1984
ARM	Alaska Rail Marine
ARRA	American Recovery and Reinvestment Act of 2009
ARRC	Alaska Railroad Corporation
AS	Alaska Statute
ASRP	Alaska State Rail Plan
C2R	Corridors to Resources
CAD	Computer Aided Dispatch
CDP	Census Designated Place
CEO	Chief Executive Officer
COFC	Containers on Flat Cars
CR&NW	Copper River and Northwestern
CTC	Centralized Traffic Control
CWR	Continuously Welded Rail

Acronym	Title
DBTT	Dunbar-Brooks Terminal Trail
DCCED	Alaska Department of Commerce, Community, and Economic Development
DMU	Diesel Multiple Unit
DNR	Alaska Department of Natural Resources
DOT&PF	Alaska Department of Transportation and Public Facilities
DPD	Division of Program Development
EDA	Economically Distressed Area
EIA	U.S. Energy Information Administration
EOT	End of Train Device
EPA	Environmental Protection Agency
FAF	Freight Analysis Framework
FERC	Federal Energy Regulatory Commission
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FMATS	Fairbanks Metropolitan Area Transportation System
FNSB	Fairbanks North Star Borough
FONSI	Finding of No Significant Impact
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FY	Fiscal Year
G7G	Generating for Seven Generations
GDP	Gross Domestic Product
GPS	Global Positioning System
HSIP	Highway Safety Improvement Program
ISER	Institute of Social and Economic Research, University of Alaska Anchorage
ITC	Intermodal Transportation Center
JBER	Joint Base Elmendorf-Richardson
JPARC	Joint Pacific Area Range Complex
LNG	Liquefied Natural Gas
LRTP	Long Range Transportation Plan

Acronym	Title
MASCOT	Mat-Su Community Transit
MHz	Megahertz
MOA	Municipality of Anchorage
MP	Milepost
mph	Miles Per Hour
MPO	Metropolitan Planning Organization
MSA	Metropolitan Statistical Area
MSB	Matanuska-Susitna Borough
MTP	Metropolitan Transportation Plan
NHS	National Highway System
NPR-A	National Petroleum Reserve-Alaska
O&M	Operations & Maintenance
PCE	Personal Consumption Expenditures
PRIIA	Passenger Rail Investment and Improvement Act of 2008
PHMSA	Pipeline and Hazardous Materials Safety Administration
PTC	Positive Train Control
R2R	Roads to Resources
RS	Revised Statute
RSIA	Rail Safety Improvement Act of 2008
RTA	Regional Transportation Authority
SCLF	Seward Coal Loading Facility
SCORT	Standing Committee on Rail Transportation, AASHTO
SCTG	Standard Classification of Transported Goods
SEP	Stakeholder Engagement Plan
SRPAA	State Rail Plan Approval Authority
STCC	Standard Transportation Commodity Code
STRACNET	Strategic Rail Corridor Network, Department of Defense
SWLRTP	Statewide Long Range Transportation Plan
STIP	Statewide Transportation Improvement Program
TAG	Technical Advisory Group

Acronym	Title
TAPS	Trans Alaska Pipeline System
TIGER	Transportation Investment Generating Economic Recovery
TIP	Transportation Improvement Program
TOFC	Trailer-on-Flatcar
TSA	Transportation Security Administration
TVRR	Tanana Valley Railroad
TWC	Track Warrant Control
UAA	University of Alaska Anchorage
USC	United States Code
USDOT	U.S. Department of Transportation
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
VHF	Very High Frequency
VMT	Vehicle Miles of Travel
WP&YR	White Pass & Yukon Route

1 The Role of Rail in Statewide Transportation

In 2008, the United States Congress passed the Passenger Rail Investment and Improvement Act (PRIIA) with the expressed intent of improving passenger rail service in the United States. One of the features of this legislation is the requirement that any state seeking federal assistance for either passenger or freight improvements have an updated state rail plan. The Alaska State Rail Plan (ASRP) is intended to formulate a state vision for future rail and strategies to achieve that vision and to satisfy the requirements of PRIIA. For this purpose, the ASRP was developed with extensive public participation and involvement by the state's railroads and rail users.

The purpose of this chapter is to illustrate the current and proposed future role of rail in Alaska's multimodal transportation system. This chapter includes a description of how the state government is organized to provide political, legal, and financial support to rail development.

1.1 Purpose of the Plan

The mission of the Alaska Department of Transportation and Public Facilities (DOT&PF) is to "Keep Alaska Moving through service and infrastructure." The ASRP is an important part of DOT&PF's mission and the multi-modal Alaska Statewide Long-Range Transportation Plan (SWLRTP). The ASRP will endeavor to answer questions such as:

- "What role does rail play in our state transportation system?"
- "How does rail freight affect our economy?"
- "Where should expansion take place?"
- "How should Alaska's rail systems evolve in the 21st century?"

The purpose of this comprehensive ASRP is to establish a vision for Alaska's passenger and freight rail system. That vision should be grounded in what the users of the rail system—the rail shippers, the passengers, the communities served, the state as a whole—and the railroads want and need for their rail service. What appears in this document is an articulation of a vision for the Alaska rail system, a description of the process that developed that vision, and a program of improvements over time needed to implement that vision. It is important to note that this is a plan to guide the State of Alaska's role in future rail transportation in Alaska; it is not a long-term plan for the Alaska Railroad Corporation (ARRC) or the White Pass & Yukon Route (WP&YR). Both railroads have their own process for identifying and determining their future needs and priorities. However, the ASRP may share many of the same goals and priorities as the operating railroads.

A comparison of this vision to current rail service and facilities will result in identification of a program of improvements required to realize the state's rail vision. These improvements can be prioritized as near-term and longer-term improvements. Justification for these projects will rely on the public benefits that they generate, including creation or preservation of jobs, enhancement of crossing safety, reduction of emissions, and improved general quality of life, among others.

The ASRP is a product of the rail plan development effort and contains both freight and passenger components. The original Alaska Rail Plan was developed by DOT&PF in 1985, following the transfer of

the Alaska Railroad from the federal government to the State of Alaska and the creation of the ARRC. The Alaska Rail Plan was updated and amended in 1990. This ASRP was prepared to comply with the requirements of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA; Public Law No. 100-432, Division B). States are required by PRIIA to submit a State-approved Rail Plan, to be updated no less frequently than once every five years, to the U.S. Secretary of Transportation for approval. The 2015 reauthorization of PRIIA, passed as part of the "Fixing America's Surface Transportation Act", or FAST Act, increased the frequency that State Rail Plans need to be updated, to at least every 4 years. Ultimately, this and other state rail plans will become components of a national rail plan being formulated by the Federal Railroad Administration (FRA).

This ASRP is being developed by the DOT&PF in consultation with the ARRC and WP&YR. DOT&PF hired HDR and CDM Smith to assist them with the development of the ASRP.

1.2 Federal State Rail Plan Requirements

PRIIA reauthorized the National Railroad Passenger Corporation (Amtrak) and strengthened the United States' intercity passenger rail network by tasking Amtrak, the U.S. Department of Transportation (USDOT), FRA, states, and other stakeholders with improving service, operations, and facilities, and authorizing funding for these activities. Section 303 of PRIIA (49 United States Code [USC] Chapter 227) provides for enhanced state involvement in rail policy, planning, and development efforts, including requiring states to develop FRA-accepted state rail plans in order to be eligible for the capital grants authorized in the Act. All such plans must reflect both the primarily private ownership of the rail network and that some form of private/public partnership arrangement characterizes state planning for, and investment in, that network.

In order to be eligible for these grants, PRIIA requires that the state establish or designate a state rail transportation authority to develop state rail plans that: 1) set policy involving freight and passenger (e.g., intercity and commuter) rail transportation within their boundaries, 2) establish priorities and implementation strategies to enhance rail service in the public interest, and 3) serve as the basis for federal and state rail investments within the state. PRIIA also requires USDOT to establish minimum standards for the preparation and periodic revision of State Rail Plans.

In summary, state rail plans should address a broad spectrum of issues, including an inventory of the existing passenger and freight rail transportation system, rail services, and facilities within the state. State rail plans should also include: 1) an explanation of the state's passenger and freight rail service goals and objectives in the context of the state's overall transportation system, 2) an analysis of rail's public benefits, and 3) a long-range investment program for current and future freight and passenger rail infrastructure in the state. These plans are to be coordinated with other state transportation planning programs and clarify long-term service and investment needs and requirements. Wherever appropriate, state rail plans should also be coordinated with the transportation planning programs of neighboring states.

PRIIA requires that new rail intercity passenger projects be included in a state rail plan to qualify for the federal financial assistance provided in the legislation. Congress exempted grant funds provided through the American Recovery and Reinvestment Act of 2009 (ARRA) from this requirement. As of

publication of the ASRP, there is no specific requirement for future federal funding for rail projects that requires a project to be included in a state rail plan. However, it is likely that any prospective federal rail program would require evidence that a potential project fit into the applicable state rail plan goals, including evidence that the project is included on a prioritized long-term rail program. Existing and prospective projects included in state rail plans would meet those objectives.

According to PRIIA, at minimum, a state rail plan is required to include:

- A profile of the existing freight and passenger services in the state
- A statement of passenger rail services objectives for the state
- A summary of the economic and environmental impacts of rail service in the state
- A long-term investment program for freight and passenger rail service
- A statement of public financing issues for all rail projects and service in the state
- Outreach to major rail service stakeholders to identify rail infrastructure issues in the state
- A review of major passenger and freight intermodal connections in the state, including river and seaports, and prioritized options to maximize service integration and efficiency
- A review of public funded projects within the state to improve rail transportation safety and security
- A performance evaluation of passenger rail services and potential strategies for improvements
- A compilation of studies and reports on high speed rail corridor development
- A statement that the state is in compliance with 49 USC 22102, which prescribes what a state needs to do to qualify for federal assistance for rail projects

The ASRP includes all of these elements. In addition to meeting the federal requirements, the ASRP is intended to establish a state vision for rail in Alaska and to identify projects and activities to achieve that vision. For this purpose, the ASRP was developed with extensive participation and involvement by the state's railroads, rail users, other rail stakeholders in both the public and private sectors, and the public.

1.3 Best Practices

In November 2009, the American Association of State Highway and Transportation Officials (AASHTO) Standing Committee on Rail Transportation (SCORT) published a manual of "State Rail Planning Best Practices." That manual provided a framework for developing comprehensive state rail plans, incorporating the guidance from FRA up to that date. The manual focused on three core components of a state rail plan: vision and goal setting, rail system inventory and assessment, and planning. State rail plans completed using this approach include Kansas, Mississippi, Ohio, New York, and South Carolina. Several plans recently developed are also utilized this approach. They include Illinois, California, Oklahoma, Texas, Idaho, Louisiana, Alabama, Wyoming, West Virginia, Georgia, and Arkansas.

1.4 Federal Guidance

FRA published "Final State Rail Plan Guidance" in the *Federal Register* on September 17, 2013. This additional guidance provides an explanation of the process to be followed in developing state rail plans; FRA's procedure for review and acceptance; the standardized state rail plan format; and a list of the minimum state rail plan content requirements. The recent FRA guidance specified that when a final

draft state rail plan has been approved by the state, it should be submitted for review to FRA. FRA will confirm the plan meets the minimum requirements established in the Act. If the plan does not meet the minimum requirements, FRA will send a letter to the state describing the deficiencies. In order to become eligible for grants available under the Act, the state must make the necessary revisions, and approve and resubmit an improved final draft plan that addresses the deficiencies noted by FRA. Upon confirmation from FRA that the minimum requirements have been met, the State Rail Plan Approval Authority (SRPAA) may finalize the plan and notify FRA.

1.5 The State's Goals for the Multimodal Transportation System

The current Statewide Long Range Transportation Plan (SWLRTP) is called *Let's Get Moving* 2030 and was approved in February 2008.[3] DOT&PF is updating the SWLRTP and completion is expected in 2016. The ASRP will become part of the updated SWLRTP. The following are goals of the SWLRTP:

- Complete the modernization of the National Highway System (NHS) to current standards to address safety and connectivity
- Address demand-driven urban capacity on the most congested highways in Alaska
- Add strategic new system links to improve connectivity and efficiency
- Replace ferries and transit vehicles that are old and no longer cost-effective
- Improve selected Alaska Highway System links to enable economic development
- Other strategic capital needs and committed projects: Alaska Gasline Inducement Act project improvement, removal of spring weight restrictions, and NHS rehabilitation

The 2008 SWLRTP estimated it would cost at least $5.5 billion to meet these goals.

1.6 The Role of Rail within the State's Transportation System

While rail plays an important role in any state's transportation system, this is especially evident in Alaska. Alaska has two railroads: ARRC and WP&YR. ARRC is unique as it provides both passenger and freight service. The ARRC's passenger service is heavily used by cruise ship companies to provide shore excursions and transport passengers for portions of their tours, such as from the Anchorage airport to the cruise ship terminal in Seward or Denali National Park. Transporting passengers by rail takes tour buses off the highways, reducing congestion and emissions, as well as increasing safety for the traveling public. In addition to providing regularly scheduled passenger service, the ARRC also provides the only ground transportation access to certain remote, roadless areas in the Railbelt.

The ARRC's freight service is also a vital part of Alaska's transportation system. Much of the food, consumer goods, and special/oversized equipment is shipped to Alaska by rail barge or container/trailer ship and transported to destinations by rail. Rail also provides a cost effective, efficient way to transport heavy bulk commodities like gravel and coal within the state.

[3] The SWLRTP's recommended strategies and actions were based on data tabulated through 2006. The SWLTRP was updated in 2010 to include 2007 and 2008 data. A new version of the SWLRTP is in development.

The WP&YR functions as a tourist railroad and is one of the most popular visitor activities in Alaska. As of publication of the ASRP, it does not haul bulk commodities or general freight. Both routes allow people to see and reach parts of the state that are not accessible by road.

1.7 Vision

DOT&PF has developed the following preamble and vision statement for rail transportation in Alaska. This vision has been adopted by the ASRP Steering Committee.

Preamble:

> *The pioneering ambition that built Alaska was both practical and visionary; using roads, waterways, air, and rail to haul resources to market and connect communities to each other and the world.*

Vision:

> *The State of Alaska will use rail to foster growth and trade, build prosperity, connect and support communities, and provide safe and efficient freight and passenger services coordinated with other transportation modes, regionally and internationally.*

1.8 The State's Goals for Alaska's Rail Transportation System

To implement the state's vision, the project team[4] identified the following preliminary goals based on a review of existing plans; coordination with DOT&PF, the Steering Committee, and Technical Advisory Group (TAG); and a review of all the public input. Issues identified through that input formed the basis for the goals. Goals are the broadest expression of the desired outcome and give direction to the plan. The goals were developed to help frame the issues to be addressed in the ASRP. Goals are concerned with the long-term and often describe ideal situations. For each goal, specific objectives to guide state action in the development of its rail system were also identified. These objectives are more specific statements that will help implement the plan.

Goal 1: Promote Economic Development in Alaska

This goal is to increase opportunity and investment in the rail system to expand Alaska's economy.

Objectives for this goal are:

- **Support rail extensions to new locations to serve energy and resource development, general economic development, import/export, and defense needs as well as passenger service that supports personal travel and the tourism industry.** Pursuit of this objective means a continuous monitoring of known extension ideas, periodic re-evaluation of them, and continuing to be open to new extension ideas as opportunities are revealed.
- **Support Corridors to Resources.** Corridors to Resources are an important part of Alaska's resources because they support economic and community development as well as emphasize intermodal connectivity. Corridors can include road, rail, pipelines, and utilities such as transmission lines.

[4] The project team consists of DOT&PF staff and the consultants hired to develop the ASRP.

- **Support improvements to the rail system that make it more capable of serving existing and new customers and offering more competitive service.** Such improvements include track speed upgrades, heavier capability track and structures, double stack container capability, additional sidings, longer sidings, and double track mainline sections to reduce train "meet" waiting times. There are several rail projects ideas that will improve the system, but they are so expensive that implementation will depend on opportunities that may or may not yet be evident.
- **Specifically plan for rail support for the Alaska LNG project including both addressing the capability and service area of the existing system as well as prospective rail extensions supporting the gas project.** Construction of an LNG project requires moving large quantities of pipe and other materials best supported by rail.

Goal 2: Enhance Safety

Safety is a top priority for the State and the railroads. Projects that improve railroad operational safety as well as the safety of the traveling public will always be an important goal of the State.

Objectives for this goal are:

- **Implement Positive Train Control (PTC) to comply with federal mandate intended to enhance safety.** Failure to comply with PTC will result in the ARRC being subject to fines and could potentially result in the elimination of passenger service[5]. Support for the ARRC's efforts to implement PTC is needed to meet the federal deadline and to protect ARRC's passenger service.
- **Separate the remaining at-grade crossings on Alaska's National Highway System (NHS) routes.** The NHS refers to a network of roads that are important for the country's economy, defense, and mobility. They provide important connections to airports, ports, and ferry terminals. They often have high summer traffic volumes. Due to the importance of these routes, and the potential traffic volumes, grade separation of at-grade crossings on NHS routes are a priority.
- **Separate as many non-NHS at-grade crossings that have significant traffic volume as funding allows.** Replacing at-grade crossings with grade-separated crossings improves safety. Grade-separated crossings also improve roadway capacity and reduce delay for both motor vehicle and rail traffic.

Goal 3: Encourage Partnership and Collaboration

DOT&PF needs to partner and collaborate with rail system operators, other state departments, local governments, and other stakeholders to support a successful rail system.

Objectives for this goal are:

- **Harmonize state policy on railroads** especially right-of-way selection, acquisition, development, and management**.** State policies should be reviewed to identify areas that may hinder the state's ability to implement its vision for rail in Alaska. In particular, policies regarding the use of state land for new rail corridors should be reviewed, clarified, and made consistent.

[5] WP&YR is not required to implement PTC.

- **Participate in local government land use and transportation planning along existing and potential transportation corridors.** Transportation access shapes land development and land use influences travel patterns and transportation facilities. Railroads should coordinate with communities to ensure they consider future passenger and freight rail activity in their decision making processes.
- **Include rail in emergency service planning.** Rail can play an essential role in emergency preparedness and response activities including the delivery of supplies and the evacuation of large numbers of people, especially in Alaska with few redundant transportation facilities.
- **Assure state administration involvement and assistance in considering rail service for large-scale projects.** The state has an interest in the development of large energy and resource development projects. Moving materials by truck has a negative impact on the existing highway system and on communities adjacent to the highway. The state should work with project sponsors to determine how rail can meet project needs.
- **Ensure that the rail mode of transportation gets full and balanced consideration in state and regional freight and passenger transportation planning and other transportation-related activities.** Rail is an important component of the state's transportation network that should be included in the state's ongoing short and long-term planning.
- **Continue to participate in Department of Defense's Strategic Rail Corridor Network (STRACNET).** STRACNET is a way to ensure the Department of Defense's minimum rail needs are identified and coordinated with transportation authorities. The ARRC provides rail service to Joint Base Elmendorf-Richardson, Fort Wainwright, and Eielson Air Force Base. The ARRC connects the military installations to each other and to ports which allows them to move supplies and equipment as needed to support their mission.

Goal 4: Support Improvements to System Preservation, Efficiency, and Capacity

This goal would ensure Alaska's transportation system is operating efficiently and providing modal choices. For the rail system, the goal would be to increase system reliability, capacity, and reduce travel times while maintaining a state of good repair.

Objectives for this goal are:

- **Increase ARRC rail line capacity to the rail industry standard of 286,000 pounds per car.** Increasing capacity to the industry standard will both make the interchange of loaded cars simpler and boost efficiency through greater load weight per car.
- **Improve efficiency of the rail system** through longer passing sidings, and tunnel improvements**.** The ARRC has been increasing train length to improve efficiency; longer passing sidings will allow trains to pass each other with less delay. Increased tunnel heights between Whittier, Seward and Anchorage will allow the use of double-stack container cars, which also increase efficiency.
- **Implement line relocations to enhance operations, speed, safety and capacity.** The ARRC was built nearly 100 years ago. Similar to the work already done between Anchorage and Eagle River, realigning the track will allow the ARRC to further reduce travel times between Seward and Fairbanks.

- **Protect and preserve operating railroad rights-of-way for safety and sustainable economic development.** Alaska's railroads need to preserve existing rights-of-way for future use, including the possibility of multiple tracks, and to maintain adequate setbacks from rail operations.
- **Establish and reclaim corridors to preserve right-of-way for future use.** A significant challenge to developing new transportation corridors is right-of-way acquisition. Corridor preservation can be used to protect an identified transportation corridor from being developed in a manner that is inconsistent with the future transportation improvement.
- **Support railroads' efforts to keep the rail system in a state of good repair.** A well-maintained railroad is less expensive to operate than a poorly maintained system. Similarly, a railroad in good condition will be ready to support future resource development and tourism projects and contribute to Alaska's long-term well-being.
- **Support railroads' efforts to address deferred maintenance.** Deferred maintenance is maintenance that was not performed when it was scheduled to be done. Maintenance is often postponed to save costs or stay within budgeted funding levels. Not being able to complete routine maintenance on time can lead to minor deficiencies evolving into more serious issues.

Goal 5: Improve Connectivity of the Transportation System

This goal is to promote and enhance an efficient rail system that is connected to other transportation modes.

Objectives for this goal are:

- **Support scheduled public rail passenger service to the Ted Stevens Anchorage International Airport.** Many attendees at the rail plan public meetings expressed their desire to be able to use rail to reach Ted Stevens Anchorage International Airport from nearby communities. Appendix C explores the feasibility of commuter rail in Southcentral Alaska, including service to the airport.
- **Pursue enabling legislation that authorizes regional transportation authorities to implement commuter rail service.** Public interest in commuter rail as an alternative to long auto commutes is increasing. Enabling legislation that allows the creation of regional transportation authorities is an essential next step in the implementation of commuter rail.
- **Emphasize interconnectivity with other planning efforts and modes of transportation.** Most people and freight are not transported by rail for their entire journey; one or more other modes are often involved. Planning efforts need to consider the interconnectivity of Alaska's transportation system to ensure the needs of the state and transportation users are met.

Goal 6: Enhance Quality of Life and Environmental Sustainability

Investments in the rail system should enhance livability and quality of life for Alaska residents and support healthy and sustainable communities. Investments should also protect the natural environment.

Objectives for this goal are:

- **Support community planning to reduce rail related noise.** FRA regulations require trains to sound their horn at crossings unless a quiet zone is in place. Minimizing conflicts between rail service and communities will become increasingly important as rail activity increases. In addition, rail re-alignments at Nenana and Wasilla will shorten the rail lines through these communities and will reduce exposure to rail noise.
- **Improve wildlife crossings and culverts for fish passage.** Improving wildlife crossings will increase railroad safety by reducing the number of wildlife/train interactions and reduce rail-related wildlife fatalities. Improving culverts specifically to improve fish passage will improve fish habitat and fish stocks.
- **Support rail service as a part of an overall energy conservation policy.** Rail service is an important element of an overall energy conservation policy. Rail freight is more energy efficient, and uses less fuel, than trucks or airplanes. Reducing energy consumption helps keeps transportation costs, and thus the goods being transported, competitive.
- **Support rail service as a means of improving air quality through reduction of emissions resulting from more efficient movement of goods by rail.** Compared to trucks, rail produces less pollution and carbon dioxide emissions per ton mile of freight.

Goal 7: Address Community Issues that Arise from Urban Development around Railroads

As rail-related activity and community development increases, conflicts may arise. It is important that communities engage in rail planning with the railroads to ensure growth and development occurs in a compatible manner.

Objectives for this goal are:

- **Separate or eliminate at-grade crossings wherever possible, giving the higher priority to those with the worst crash histories or crash potential and those most likely improve operating efficiencies for both rail and highway traffic.** Except in quiet zones, trains are required to sound their horn which generates conflict with surrounding residential land uses. Reducing train-related noise is an additional benefit of replacing at-grade crossings with grade-separated crossings.
- **Support a community-based rail plan for the greater Fairbanks area to establish a long-term plan for rail bypass, separated crossings, potential relocation of the rail yard, and other elements.** The close proximity of the Fairbanks rail yard to downtown Fairbanks has created a number of land-use and functional issues. While several improvements are being considered, solutions have not been identified that do not create other complications. A comprehensive, long-term study to identify the rail-related issues in the Fairbanks area and solutions is needed.
- **Support the ARRC's vision to relocate their Anchorage rail yard to a new location depending on the future of the Knik Arm Crossing.** Relocating the rail yard would allow the ARRC to develop a yard that in size and function is suitable for 21st century rail operations. The existing rail yard could then be redeveloped with uses more appropriate for the Anchorage downtown area.

Goal 8: Establish a Recurring Public Capital Investment Program

Alaska does not have a designated sustainable funding source for transportation improvements. Funds are needed to study future rail connections, fund improvements, and provide matches for federal grants. Consideration of publically acceptable ways to fund Alaska's rail needs is an essential part of this plan.

Objectives for this goal are:

- **Fund rail-related projects that solve public problems and create public and private opportunities.**
- **Fund rail-related projects that the rail system itself cannot fund but which will be of mutual benefit to the rail system and the public.**
- **Establish the rail capital investment program as a routine and reliable element of the state capital budget so that project developers have a steady source of support and so that several projects can be underway at the same time**.

1.9 Institutional Structure

This section describes the institutional structure of the state rail program. The most visible and well-known element is the Alaska Railroad Corporation (ARRC). The ARRC is a state-owned corporation that is operated like a private business. ARRC must generate enough revenues from train and real estate services to cover workforce, operations and infrastructure maintenance expenses. Alaska Railroad employees are not part of the state personnel system. ARRC is a public corporation and is an instrumentality of the State.[6] Recognizing the essential role the railroad serves to develop and sustain the state's economy, the State Legislature established ARRC within the Department of Commerce, Community, and Economic Development (DCCED). The DCCED oversees a variety of programs, services, and agencies that promote a healthy economy, create jobs, attract investment, and encourage community development. ARRC is described in greater detail later in this plan.

The governance structure in Alaska is different from other states in that the ARRC, the state's primary railroad, is owned by the State of Alaska. It was purchased by the State from the FRA of the USDOT. The Alaska Railroad Corporation Act of 1984 (ARCA) established the ARRC to operate and manage the railroad and to provide the framework for the ARRC's organization and operation. ARCA is codified in (Alaska Statutes [(AS] Title 42, Chapter 40 [(AS 42.40]). has been updated several times since its creation. The powers of the corporation are vested in the board of directors consisting of the commissioners of DCCED and DOT&PF and five members appointed by the governor and confirmed by the legislature.

Other rail-related State of Alaska regulations may be found within Alaska Administrative Code (AAC) Title 17, Chapter 15, Article 4. The majority of AAC rail-related regulations became effective in 1982.

[6] While state ownership of railroads is rare, it is not unique. Several other states (for example North Carolina, Michigan, New Hampshire, South Dakota), own rail lines (track, roadbed and structures) which they license for use by operating railroads.

However, amendments have since been made to the railroad accommodation regulation (17 AAC 15.481), the eligibility for relocation and reimbursement regulation (17 AAC 15.501), and the engineering standards (17 AAC 15.551).

As part of the purchase and assumption of the Alaska Railroad by the State, ARRC was established as a corporate agency under the Alaska Department of Commerce, Community, and Economic Development (DCCED), the State's lead economic development agency.

There have also been a number of rail-related bills that have been sponsored and adopted into Alaska State law since 1999; several are summarized in Table 1-1. Most legislation relates to Alaska Railroad land leases, transfers, and acquisitions, or involves funding sources and revenue bonds. Other important rail-related legislation that should be noted is as follows:

AS 42.40.560. North Slope Natural Gas Pipeline.

The corporation may provide financing for the acquisition, improvement, maintenance, equipping, and operation of a natural gas pipeline and related facilities for the transportation of natural gas recovered from the North Slope of this state without regard to whether the facilities are or will be owned in whole or part by the corporation or located on land owned by the corporation.

AS 42.40.460. Extension of the Alaska Railroad.

AS 42.40.465. Extension of the Alaska Railroad to Connect With the North American Railroad System.

Table 1-1 Summary of Railroad-related State Legislation Enacted, 1999-2013

Bill Number*	Current Status	Effective Date	Subject	Title
HB 314	CHAPTER 35 SLA 12	05/23/12	Alaska Railroad Land Leases	"An Act extending the time period for which the Alaska Railroad Corporation may lease land without reserving the right to terminate the lease; and providing for an effective date."
HB 146	CHAPTER 21 SLA 12	05/16/12	Land Transfer from State and Alaska Railroad	"An Act authorizing the transfer of land from the State of Alaska and the Alaska Railroad Corporation to property owners along the Eielson Spur Line; and providing for an effective date."
SB 165	CHAPTER 52 SLA 09	07/09/09	Authorizing Transfer of Railroad Land	"An Act authorizing the transfer of two parcels of land from the Alaska Railroad Corporation to the Municipality of Anchorage; and providing for an effective date."
SB 142	CHAPTER 22 SLA 09	05/25/09	Transfer Railroad Land to DOT&PF-Fairbanks	"An Act authorizing the conveyance of certain land of the Alaska Railroad Corporation to the Department of Transportation and Public Facilities; and providing for an effective date."
SB 308	CHAPTER 28 SLA 06	05/18/06	Alaska Railroad Revenue Bonds	"An Act authorizing the Alaska Railroad Corporation to issue revenue bonds to finance rail transportation projects that qualify for federal financial participation; and providing for an effective date."

Bill Number*	Current Status	Effective Date	Subject	Title
SB 31	CHAPTER 45 SLA 04	06/04/04	Railroad Utility Corridor to & in Canada	"An Act relating to a transportation corridor for extension of the Alaska Railroad to Canada and to extension of the Alaska Railroad to connect with the North American railroad system."
HB 12	CHAPTER 12 SLA 99	05/06/99	Rail/Utility Easement to AK-Canada Border	"An Act relating to a utility corridor and railroad right-of-way between the Alaska Railroad and the Alaska-Canada border."

* HB = House Bill; SB = Senate Bill

Source: Alaska State Legislature 2014

1.9.1 Department of Transportation and Public Facilities

While Alaska statutes, through ARCA, delegated the responsibilities to operate and manage the Alaska Railroad to ARRC, other State statutes assign DOT&PF the responsibilities to "plan, design, construct and maintain all state modes of transportation." The powers and duties of the department relative to railroads, as listed in AS 44.42.020, focus primarily on planning – to study, to develop all-mode plans, to promote intermodal connections, to study alternative transportation systems, and to coordinate and develop state and regional transportation systems. While each railroad conducts its own strategic, long and short term capital improvement planning and operational programs, DOT&PF's responsibility is to look at the broader, overall picture and study how all transportation modes work together to meet the state's transportation needs.

To meet these responsibilities, DOT&PF is charged at both the federal (23 USC 135) and state levels (AS 44.42.050) with developing a Statewide Long Range Transportation Plan (SWLRTP) and a Statewide Transportation Improvement Program (STIP).

Federal Requirements

The long-range transportation plan required by federal statute (23 USC 135), is one element of a federally-required continuing, cooperative, and comprehensive statewide transportation planning process if the State wishes to use federal transportation funds. The mandate is to provide a clear link between policy, planning, evaluation, and the investments that are made. The intent is for careful planning and sound evaluation to guide decision making. To do this, each state is required to prepare a statewide, twenty-year long-range plan that addresses all modes of transportation and takes into consideration eight planning factors that are to be addressed in all elements of the planning process.

State Mandate

The long-range transportation plan draws its authority from Alaska Statute (AS 44.42.050.). It directs the Commissioner of DOT&PF to develop a comprehensive, intermodal, long-range transportation plan for the State. Intermodal planning considers all modes of transportation and the connections between the modes.

The Statewide Long-Range Transportation Plan is the overall policy guiding document that will provide future direction for our highways, aviation, transit, rail, marine, bicycle, and pedestrian transportation.

It will inform the area, modal, and metropolitan plans, which then inform the Statewide Transportation Improvement Program (STIP), the Airport Improvement Program, and capital and operating budgets.

Modal plans are applicable statewide and address system needs and structure of a mode or subset of the overall transportation system. System plans help identify system-wide issues, goals, objectives, standards, and processes. Once adopted, modal plans become components of the SWLRTP. The Alaska State Rail Plan is the modal plan addressing rail transportation in the state.

The STIP is another element of the federal transportation planning process. The STIP is a schedule of projects for transportation system preservation and development that the state intends to fund over a four-year period. Before a project can be funded with Federal Highway Administration (FHWA) or Federal Transit Administration (FTA) funds, it must be included in the STIP. Projects and programs in the STIP must be consistent with the SWLRTP. The STIP includes interstate, state, and some local highways, bridges, ferries, and public transportation needs, but does not include airports or non-ferry-related ports and harbors. Rail projects funded with FHWA or FTA funds as well as 'regionally significant' projects financed by other federal sources must be in the STIP. It covers all system improvements for which partial or full federal funding is approved and that are expected to occur during the four-year duration of the STIP.

DOT&PF is charged with planning, developing, and maintaining safe, efficient, and reliable transportation facilities throughout the State of Alaska. The purpose of DOT&PF is to provide safe and efficient movement of people and goods, statewide access and connectivity, and provide access for exploration and development of Alaska's resources. The DOT&PF Vision Statement follows:

- We will strengthen our efficiencies and effectiveness at planning, designing, constructing, operating, and maintaining all modes of transportation.
- We will strengthen our transparency, accountability, innovation, and quality of service.
- We will work as a team, maintaining strong, healthy communications internally and externally.
- We will promote service based management of state-owned transportation assets and facilities.
- We will expand the reach of the transportation system to serve the needs of all Alaskans. This mission is multi-modal in nature and includes statewide rail planning.

Completion of a state rail plan will make the state compliant with Section 22102 of Title 49 (49 USC §22102) concerning state rail plans and state rail administration and PRIIA.

1.9.2 Additional Public Sector Rail Planning in Alaska

While DOT&PF has the primary responsibility for statewide transportation planning and policy, and some rail project development (e.g.; highway rail crossings), a number of other state and local agencies have an interest in the state rail system.

1.9.2.1 Alaska State Agencies

A number of state agencies are dependent on the transportation system, including the rail system, to carry out their responsibilities and objectives. The DCCED oversees a variety of programs intended to create jobs, attract new economic investment, and encourage community development. The ARRC is a corporate agency instrumentality under DCCED. Other agencies with an interest include the State

Division of Homeland Security and Emergency Management, Alaska Industrial Development and Export Authority (AIDEA), and the Department of Natural Resources.

1.9.2.2 Local Government Agencies with Rail Interests

Rail operations are of increasing interest at the local level of government. In many communities, at-grade crossings may be associated with safety and congestion concerns. Local agencies also recognize the important linkage between transportation and economic development, the importance of rail access for certain industries, and the use of rail to ship consumer goods and other materials to and throughout Alaska. Local government also plays an important role in land use decisions including the location of transportation facilities and adjacent compatible land uses.

At the local level, the agencies most involved in the rail mode are Metropolitan Planning Organizations (MPOs)[7]. MPOs are federally mandated and federally funded policy-making organizations consisting of local government and transportation officials. The formation of an MPO is required for an urbanized area with sufficiently dense development and a population over 50,000. A MPO is required to maintain a Metropolitan Transportation Plan (MTP) and Transportation Improvement Program (TIP). A TIP is a multi-year program of transportation projects to be funded with federal and other transportation funding sources. Federally funded projects within each MPO's geographic area, such as a grade crossing improvement project, must be included in the agency's TIP.

Planning activities conducted by some MPOs have also expanded to address the movement of freight and passengers. These include consideration of multimodal solutions, improved intermodal connections, and more specific rail and rail-related projects. MPOs are expected to work cooperatively with area transportation stakeholders to develop these documents. Alaska has two MPOs, which are described below. A summary of rail-related recent plans and projects developed by these agencies and non-governmental entities can be found in Appendix A.

Anchorage Metropolitan Area Transportation Solutions

Anchorage Metropolitan Area Transportation Solutions (AMATS) is a multiagency, federally recognized MPO tasked with planning and funding the transportation system within the Anchorage Bowl and Chugiak-Eagle River areas, the largest metropolitan area in Alaska. AMATS is funded by USDOT programs, State of Alaska appropriations and general obligation bonds, and local municipal taxes and bonds. These funds are expended on items in the AMATS TIP, which implements elements of the *AMATS 2035 Metropolitan Transportation Plan* (MTP), the most recent Anchorage-area transportation plan. AMATS does not operate rail service but coordinates with the ARRC on railroad activities within the AMATS area. The ARRC is represented on the AMATS Technical Committee.

Fairbanks Metropolitan Area Transportation System

The Fairbanks Metropolitan Area Transportation System (FMATS) is the official MPO for the Fairbanks area. FMATS is also funded by USDOT programs, State of Alaska appropriations and general obligation

[7] Municipal land use plans may also contain policies and land use regulations that are important considerations when developing rail projects. As projects are initiated, the project sponsor should coordinate with the appropriate local and regional governments to ensure consistency with applicable plans.

bonds. These funds are expended on items in the FMATS TIP, which implements the FMATS 2040 MTP. ARRC is represented on the FMATS Technical Committee.

Matanuska-Susitna Borough

While not an MPO, the MSB has been very interested in rail transportation. The MSB is the owner of the Port MacKenzie Rail Extension (PMRE) project and is supportive of commuter rail service between the MSB and Anchorage (Hollander 2014; Wellner, 2014).

1.10 State's Authority for Grant, Loan and Public/Private Partnership Financing

The State of Alaska enjoys broad authority to receive and let grants for both capital and operations purposes. Although not common, the state can also make loans to public or private entities, and receive loans, notably from the federal government. Public/private partnership agreements can also be initiated, but would, in most cases, require specific authorization from the Alaska State Legislature.

1.10.1 Alaska Public Rail Funding Programs

The DOT&PF does not have a state-funded rail assistance program. The state has used both federal and state funding programs where rail infrastructure improvements were eligible and appropriate. They have also provided required matching funds for federal financing programs such as grade crossing improvements and separation projects.

As an instrumentality of the State of Alaska, the ARRC has the authority to accept and spend some federal grants. Most federal programs require that the recipients of federal aid be a state or municipal government, or other governmental agency.

1.11 Summary of Freight and Passenger Rail Service

The rail system in Alaska consists of 521 miles of main and branch lines operated by the ARRC and approximately 20 miles operated by WP&YR (an additional 47 miles are operated in Canada). The ARRC is categorized as a Class II railroad[8]. In 2015, it carried 4.3 million tons of various commodities that originated or terminated in Alaska. Details on origins and destinations of freight rail traffic along with the tonnage and value of commodities handled by rail are discussed in Section 3.2.1.3. In 2015, the ARRC also carried 475,034 passengers.

The WP&YR is a seasonal, narrow gauge tourist railroad. As of publication of the ASRP, it does not transport freight. It carried 401,905 passengers during the 2015 May-to-September tourism season.

1.12 Project Findings

Key findings have emerged from the current rail planning effort:

- Maintenance of a strong and fully functional Alaska Railroad and White Pass and Yukon Route will be important to the future economy of the State of Alaska.

[8] 49 CFR 1201 defines a Class II carrier as having annual operating revenues of less than $250 million but more than $20 million after applying the railroad revenue deflator formula.

- Alaska needs its existing railroads if it is to realize the economic development goals it has as a state and as a society. In fact, some of these goals may require expansion of the rail system to serve other locations and/or new development.
- Railroads are the most efficient means of overland freight transportation, and they allow some forms of development, such as resource extraction, to be economically feasible.
- Alaska's rail systems typically generate sufficient revenue to operate existing service and perform routine maintenance. The downturn in traffic and revenues that began with the recent economic recession has put pressure on the ARRC's ability to earn sufficient revenues to both operate service and adequately maintain the railroad.
- The existing ARRC ownership structure, with the railroad as a state-owned independent corporation, is appropriate and in the best long-term interest of the railroad and the state.
- Additional funding beyond existing revenues is needed for projects that are beyond the scope of ARRC's existing operations such as expanding the rail system to new destinations and capital improvements.
- The State of Alaska should appropriately support specific ARRC projects, such as PTC, that are unfunded Federal requirements or that are required to maintain safety and to maintain the railroad in good operating condition.

1.13 State Rail Plan Recommendations and Next Steps

For the purposes of meeting Alaska's rail vision, goals, and objectives—and to address the identified rail issues and opportunities identified in preparation for future Rail Plan updates—the following actions are proposed:

- The State of Alaska should continue to support the Alaska Railroad's work to develop and implement the federally-mandated Positive Train Control system. The estimated cost of the system strains the railroad's ability to pay for its development and implementation.
- The State should invest in short and long-term passenger and freight projects that will be of positive economic benefit to the State. This plan and analysis prioritizes and recommends a group of economically promising projects.
- The State of Alaska should examine in detail the economic benefits and costs of the rail extensions identified in this report. Projects that would be economically beneficial and that would provide a financial return to the state competitive with other investment options should be pursued.

2 The History of Railroads in Alaska

The purpose of this section is to describe the past and present role of rail in Alaska. Included is an historical overview of rail in Alaska and overviews of rail-related legislation, other rail programs and rail-related planning efforts, and financial support programs for rail activities in Alaska. Overall, this section addresses the systems that are in place to support decision making and project implementation as it relates to rail in Alaska.

The history of railroads in Alaska is associated with gold, United States presidents, the military, wars, financial woes, boomtowns, mineral development, and pipeline construction. All of the railroads built in Alaska were developed for general economic development or for extraction of specific resources.

There are two railroads in operation in Alaska today: ARRC and WP&YR. The ARRC operates 521 miles of main and branch lines in the central part of the state, generally extending from Seward to Fairbanks. WP&YR operates 20 miles of track in Southeast Alaska in addition to 47 miles in British Columbia and the Yukon Territory, Canada. Two of the larger railroads no longer in operation are the Tanana Valley Railroad, which was constructed to access mines near Fairbanks, and the Copper River and Northwestern, which was constructed to carry copper ore from mine to tidewater. The Tanana Valley Railroad was eventually incorporated into ARRC. The history of these four railroads is described in this chapter.

In addition, starting with the gold rush at the turn of the 20th century, Nome and the Seward Peninsula also experienced a flurry of railroad development. All of the railroads begun on the peninsula operated only a few years, with the exception of the Seward Peninsula Railroad. The Seward Peninsula was built in 1906 from Nome to Lane's Landing, 85 miles to the north. It operated as a private railroad through 1910, as a community railway until 1920, was purchased by the Territorial Legislature in 1921, the Alaska Road Commission in 1922, and in 1941 by the Army Corps of Engineers who operated it until the end of the Second World War. The line's roadbed was used for portions of the Taylor Highway.

2.1 Alaska Railroad Corporation

2.1.1 Construction of the Railroad

In 1902, a group of Seattle businessmen invested $30 million to build one of the earliest railroads in Alaska, the Alaska Central Railroad, which was to reach the Matanuska Valley coal fields and eventually Fairbanks and the Tanana River from Seward. The Panic of 1907 and the high cost of building and maintaining the railroad forced the Alaska Central into receivership in 1908, after building 50 miles of track north from Seward to Spencer. In 1910, the railroad was reorganized as the Alaska Northern Railway Company, and track was extended another 20 miles to Kern Creek on the Turnagain Arm of Cook Inlet, where goods and passengers could be transferred to water craft. However, the Alaska Northern also suffered financial problems and was not able to build further north.

Congress passed the Second Organic Act of 1912, which organized Alaska as a territory and included the creation of a commission to survey transportation in the Alaska Territory. The commission concluded that a trans-Alaska railroad would need the full resources of the federal government to be successful. Congress passed the Alaska Railroad Act in 1914, which empowered President Woodrow Wilson to

construct and operate a railroad in Alaska. The bill restricted the railroad to 1,000 miles in length and a $35 million budget, and required it to connect a port to the Interior. The Alaska Engineering Commission (AEC) was created to recommend routes, and it offered two alternatives. President Wilson selected the western of the routes, which included the bankrupt Alaska Northern line and extended it to Fairbanks. AEC acquired the Alaska Northern for $16,000 per mile.

Construction of the railroad began in 1915. The standard-gauge railroad was completed in 1923, requiring $60 million to build. Apart from a few gold mining communities, there was virtually no development along the route of the rail line. As a result, construction required that the project create all needed infrastructure and support. The AEC constructed telephone and telegraph lines, built terminal facilities and ocean docks, and opened coal mines to fuel its locomotives. It had to attract its workers to Alaska, select town sites to house them, and operate schools and hospitals in the towns it created. Anchorage was selected as the central railroad construction town and AEC headquarters on Ship Creek in 1915, later becoming Alaska's largest community.

One of the first goals of the government railroad was transporting coal from the coal fields in the Matanuska River Valley around Chickaloon. The first mineral shipment of the railroad, other than the gravel and rock for the building of the railroad itself, was Matanuska coal. It was hoped that the coal would power naval ships in the Pacific, but the transition to oil occurred around the same time the railroad was completed. The rail line reached Chickaloon in 1917.

Railroad construction crews peaked at 4,500 workers in 1917. The bankrupt Tanana Valley Railroad (TVRR) was a 46-mile narrow-gauge line to Fairbanks from the Chatanika mining area to the northwest.[9] The TVRR was bought by the AEC at the end of 1917, mainly to obtain its Fairbanks terminal facilities, and was extended south to Nenana on the Tanana River.

By 1923, the track had reached Nenana, which then became the interior head of navigation for all river traffic on the Tanana and Yukon rivers. Along with the railroad's main line, branch lines were constructed, the longest of which extended from south of Palmer to Sutton and Chickaloon to reach the coal fields. President Warren G. Harding traveled to Alaska to mark the completion of the railroad by driving the golden spike in ceremonies at the Tanana River Bridge on July 15, 1923. The name of the railroad was officially changed a month later from the Alaska Engineering Commission Railroad to the Alaska Railroad.

2.1.2 Early History of the Alaska Railroad

The new federally owned railroad struggled financially, as the nascent economy and small population—54,000 people—along the railroad were unable to generate enough business to cover its costs. In 1938, however, the Alaska Railroad achieved its first year in which revenues exceeded expenses by hauling material and people for the construction of military bases in Anchorage and Fairbanks. In 1934, the railroad's telegraph line, which followed the tracks and allowed train orders and other messages to be sent up and down the line, was connected to a marine cable from Seattle.

[9] See also Section 2.3, Tanana Valley Railway.

2.1.3 World War II and the Whittier Line

The advent of World War II brought substantial increases to the railroad's freight and passenger traffic. However, it also created difficulties, including worker shortages as employees left for military service or for better jobs elsewhere. In response, the United States Army sent more than 1,100 soldiers to help operate the railroad in 1943. The war effort also increased wear and tear on equipment and track. Following World War II, Congress approved $100 million to rehabilitate the railroad.

The war effort resulted in significant congestion at Seward, the only deepwater port connected to the railroad. To relieve the freight backlog, and in support of the war effort, the boring of two tunnels through the Chugach Mountains was begun in 1941 to provide rail access to Whittier. This military port and fuel depot, located 58 miles closer to Anchorage in a more defendable position than Seward, was also under construction at this time. In 1944, Whittier opened as a second railroad port, handling all of the military's freight until the line was turned over to the Alaska Railroad in 1960.

2.1.4 Earthquake and Pipeline

In 1962, the first railcar-barge service was established between Whittier and Prince Rupert, British Columbia. This was followed by rail-barge service between Whittier and Seattle in 1963 and the Alaska Steamship Company's train-ship service in June 1964. These services enabled rail cars from any rail point in the Lower 48 to be shipped to any point along the Alaska Railroad.

On March 27, 1964, the railroad and much of Southcentral Alaska was extensively damaged by a magnitude 9.2 earthquake, the largest earthquake recorded in North America. Railroad reconstruction cost was estimated at $30 million. Freight service from Anchorage to Fairbanks was restored 10 days after the earthquake. Passenger service was back on line April 11, freight service to Whittier resumed April 20, and service to Seward was restored approximately six months later.

Until 1967, the railroad had operated as an agency of the Department of the Interior. With the creation of the Federal Department of Transportation in that year, the Alaska Railroad became part of the FRA. The ARRC was a separate agency within FRA managed by a three member Executive Committee similar to a Board of Directors.

The Alaska Railroad supported construction of the Trans-Alaska Pipeline System (TAPS) during the 1970s by receiving shipped pipe and storing it on railroad land in Valdez, Seward, and Fairbanks. In addition to gravel for the roadbed, the railroad hauled pipe and equipment from Seward to Fairbanks, where it was then trucked to pipeline construction locations further north. The railroad workforce increased to more than 1,000 between 1970 and 1975. During construction of the pipeline, the railroad's business increased to the point that the railroad generated a profit in 1975 and 1976. But from 1977 through 1979, the railroad's deficit increased each year. In 1978, the U.S. Comptroller General issued a report to Congress entitled *The Alaska Railroad: Its Management is Being Improved; Its Future Needs to be Decided*. The report suggested that "the Congress should decide whether the Federal Government should continue to own and operate the railroad."

2.1.5 Transition to State Ownership

During the latter part of the 1970s, the FRA sought to transfer its ownership of the Alaska Railroad to the state. With this in mind, railroad personnel prepared for some kind of transition—to be sold, transferred or dissolved. While revenues declined, the railroad endured an infrastructure-poor and equipment-strapped era as investments declined and ownership options were considered (ARRC 2014). It was not until 1983 that President Ronald Reagan signed legislation authorizing transfer of the Alaska Railroad to the State of Alaska. The U.S. Railway Association set the fair market value of the Alaska Railroad at $22.3 million. In 1984, the Alaska Legislature authorized Governor Bill Sheffield to negotiate with the federal government for the railroad's transfer to the state. Although many in the Alaska Legislature were interested in private ownership and operation of the railroad, a private operator would likely not continue operation of money-losing passenger operations and the state would be less able to influence the direction the railroad might take with regard to future economic development. In the end, the Legislature chose to establish the state-owned railroad as a self-sustaining, quasi-public corporation separate from state government.

In the same year, the governor signed legislation establishing the ARRC and its seven-member board of directors. Frank Turpin, who had come to Alaska to manage petroleum producer Atlantic Richfield's Alaska operations, was appointed the first President and Chief Executive Officer (CEO) of the railroad as a state-owned enterprise, pursuant to the Alaska Railroad Transfer Act. In 1985, the transfer was completed, and the Alaska Railroad became the property of the State of Alaska. After seventy years of operation as a federal agency, the ARRC adjusted to new management with an independent Board of Directors and a relationship with the Alaska State Legislature and administration.

2.1.6 State Ownership and Operation

Under state ownership, the ARRC pursued new freight and passenger traffic more energetically than had been the case under federal ownership. By the end of the 1980s, the railroad had expanded shipments of oilfield pipe and supplies, started shipping logs, and began shipping coal from Healy to Seward for export. New passenger cars were purchased for the daily summer trains between Anchorage and Fairbanks. During this time, the railroad also focused on correcting safety deficiencies identified in the Alaska Railroad Transfer Act. The railroad eliminated aging buildings and upgraded facilities and equipment system wide, creating a safer work environment in half the time allowed by the law. The railroad also negotiated with the seven unions to bring continuity in pay and benefits among the represented work force.

In 1984, hauling private tour railcars began when Tour Alaska attached the first three private dome railcars to the Anchorage-Fairbanks daily train service. Subsequently, cars owned by Princess, Holland America, and other cruise companies were added to the trains. This relationship was significant, as over time the addition of cruise company passenger cars to the trains helped transition what had been a money-losing service into a profitable market for the ARRC. In the same year, construction of the Coal Loading Facility on railroad land in Seward was completed. Funded with a loan from the Alaska Industrial Development and Export Authority (AIDEA), the facility was built to efficiently load coal on ships bound for Asia.

The economic downturn in Alaska in the mid-1980s resulted in a 22 percent drop in railroad employment. In spite of the economic climate, the period following Alaska's acquisition of the railroad was marked by rehabilitation of track and equipment and a new focus on markets. The ARRC purchased new locomotives and railcars, and began to more aggressively market its services. Haulage of petroleum products was emphasized, and overnight piggyback trailer-on-flatcar (TOFC) service was initiated between Anchorage and Fairbanks. More efficient, less maintenance-intensive passenger equipment was purchased to decrease costs. More miles of worn rail were replaced in the year following state acquisition than were replaced following the 1964 earthquake. Through 1989, the state-owned ARRC invested $35.9 million in capital improvements.

In 1988, with an uptick in world oil prices, shipments of petroleum products and pipe for the oilfields nearly doubled, indicating a rebound in the local economy. Export shipments of logs from the Matanuska Valley and the Interior totaled 2.8 million board feet. A new depot was constructed at Denali National Park, a destination for thousands of summer visitors. By 1992, passenger revenues had increased to match expenses. ARRC also actively pursued enhancement of its real estate holdings to encourage tourist business.

In 1996, the ARRC achieved net income of $8 million, the highest to that year. Annual passenger ridership grew to 512,000. In the same year, the ARRC began to qualify for federal funding and received $10 million to replace 87,000 railroad ties. The product of a complex DOT&PF project, the Whittier Tunnel opened to vehicular traffic in 1999 and became the only rail/vehicle shared tunnel in the United States. With the tunnel's opening, the railroad ended operation of the Whittier rail shuttle between Portage and Whittier after 55 years of service. ARRC purchased 16 new locomotives in 2000 and 12 more in subsequent years to increase fuel efficiency and hauling capacity. With 4,000 plus horsepower each, these engines were significantly more capable than the locomotives they replaced.

2.1.7 Improvements since 2000

In 2001, the railroad completed a new freight dock in Seward. The ARRC joined a new partnership with Lynden Transport, Inc. to operate the rail barge service between Whittier and Seattle, in addition to the Canadian National rail barge service operated from Prince Rupert, British Columbia. New tug boats and barges increased efficiency, and along with the new gateway, resulted in a substantial increase in northbound freight traffic. In the same year, the ARRC began construction of a largely federally funded track straightening program between Anchorage and Wasilla to improve safety and efficiency and reduce train transit time by 40 minutes. The straightening is an essential element of proposed Matanuska-Susitna Valley-Anchorage rail commuter service as it allows auto-competitive travel times by rail. At the same time, the improved track has boosted freight train speeds and labor productivity.

In 2005, the new Anchorage Operations Center in Ship Creek was completed and dedicated. The facility serves as the nerve center of the ARRC, bringing dispatch, transportation, safety, and operations together under one roof. The ARRC also dedicated its new Fairbanks Depot, designed for traveler convenience and to meet the ARRC's Fairbanks capacity needs for the next 30 years. The depot's timber frame design, clock tower, and timeless roofline are borrowed from some of the Alaska Railroad's original depots.

Many projects were completed using federal funds, including the rail station at Ted Stevens Anchorage International Airport, Whittier Pedestrian Underpass (traverses under rail yard), side-unloading barge dock in Whittier and Ship Creek Plaza, and pedestrian amenities that include sidewalks and lighting in Anchorage. The ARRC received federal grant support for capital projects—between $30 and $40 million each year—from 2007 through 2010. The funds helped improve the ARRC's fixed plant during a time of lower traffic and revenues resulting from the Great Recession and other factors.

Between 2001 and 2007, passenger traffic increased by 20 percent to a peak of over 560,000 with increased cruise-based tourism, improved passenger facilities, and an on-line reservation system.

The ARRC remains a key Alaska transportation provider. Eighty-two percent of the state's population lives along the Seward to Fairbanks "rail belt." The modern railroad is capable of hauling freight that is too large or heavy for easy transport by highway. Carrying gravel, coal, petroleum products, lumber, and general freight, as well as passengers, the ARRC is a key link in the state's economy. The railroad is also an environmentally friendly way of transporting goods. Per ton-mile, trains produce one-quarter of the emissions that highway trucks produce, and use 25 percent of the fuel required by trucks to haul one ton one mile.[10]

With the onset of the Great Recession and a reduction in cruise visits to Alaska, passenger totals fell through 2010 to about 400,000 before rebounding in 2011. Traffic further increased to an estimated 490,000 passengers in 2013.

A number of resources were used in this section to describe the history of the Alaska Railroad. Sources included ARRC's website (ARRC 2014); the 2012 ARRC annual report (ARRC 2012); Alaska Department of Labor and Workforce Development's (ADOLWD) *Alaska Economic Trends*, The Span of Alaska's Railways; *Rails Across the Tundra* (Cohen 1984); *A Brief History of the Alaska Railroad Corporation* (GALE CENGAGE Learning 2004); *The Span of Alaska's Railways* (Schultz 2012); *Historical Profile of the Alaska Railroad* (Bivens and Associates, Inc. 1980); and *Economic Significance of Alaska Railroad* (Tuck and Killorin 2004).

2.2 White Pass and Yukon Route

White Pass & Yukon Route is a wholly-owned subsidiary of TWC Enterprises Limited, operating under the name "White Pass," is engaged in rail, tourism, and port operations based in Skagway.[11] It is operated by the Pacific and Arctic Railway and Navigation Company (in Alaska); the British Columbia Yukon Railway Company (in British Columbia); and the British Yukon Railway Company, originally known as the British Yukon Mining, Trading, and Transportation Company (in the Yukon).

The rail line originated with the Klondike Gold Rush of 1897. The most popular routes taken by prospectors to the gold fields in Dawson City were difficult routes from the ports in Skagway and Dyea, Alaska[12], across the mountains to the Canadian border at the summits of the White Pass and the

[10] Specifically, 455 ton-miles per gallon for rail and 105 ton-miles per gallon for truck (Rocky Mountain Institute 2011).

[11] In addition to ownership of the WP&YR, TWC Enterprises Limited, operating under the trademark "ClubLink," Corporation is engaged in golf club and resort operations. ClubLink is Canada's largest owner and operator of golf clubs with courses at 42 locations, primarily in Ontario, Quebec and Florida.

[12] Skagway and Dyea are only 10 miles apart by road at the head of Taiya Inlet in Southeast Alaska.

Chilkoot Pass, respectively. However, the Canadian authorities would not allow prospectors to enter Canada unless they each had one ton of supplies. Assembly of the requisite amount of supplies required several trips across the passes. There was a need for better transportation than the pack horses used over the White Pass or human portage over the Chilkoot Pass, and several railroad plans were developed. In 1897, the Canadian government received 32 proposals for Yukon railroads.

2.2.1 Construction of the Railroad

Sir Thomas Tancrede, representing investors in London, and Michael J. Heney, an experienced railroad contractor, met in Skagway. That meeting connected financial resources with engineering and construction experience and vision. In 1898, the Close Brothers of London decided to finance the construction of the White Pass Railroad; however, it was uncertain whether the White Pass was in the United States or Canada. The debate over the international boundary between the two countries was not settled for several years. Because of this uncertainty, in 1898 the WP&YR was incorporated as three companies to ensure compliance with United States and Canadian laws. In Alaska, the railroad was incorporated as Pacific and Arctic Railway and Navigation Company and today still operates under that legal identity. The British Columbia Yukon Railway Company and the British Yukon Railway Company were incorporated in British Columbia and Yukon, respectively. WP&YR served as an umbrella to coordinate the three entities' operations. Establishment of the international boundary placed roughly 20 miles of the railroad in Alaska, 42 miles in British Columbia, and 58 miles in the Yukon Territory.

In 1897, George A. Brackett, an engineer and former mayor of Minneapolis, Minnesota, was approached by a coalition of Skagway boosters to help build a wagon road from the city over the White Pass summit. Work on what would be known as "Brackett's Wagon Road" began on November 8, 1897. Although the group that convinced Brackett had promised to raise the funds needed to build the road, it did not do so, and Bracket paid the startup costs himself. By the end of the year, eight miles of road had been opened up, but by then Brackett was broke. He tried to charge a toll ($1 per person, $1 per pack animal, and 25 cents per dog or sheep), but the mass of stampeders overran the toll gates. In early 1898, the WP&YR paid Brackett $60,000 for the right-of-way over White Pass.

The steep topography and challenging grades of the White Pass resulted in the decision to build a narrow gauge railroad. The rails were three feet apart on a 10-foot-wide road bed and could be constructed at less cost than a standard gauge route.[13] On May 28, 1898, construction began but encountered difficulty in dealing with the Skagway city government and the town's crime boss, Jefferson Randolph "Soapy" Smith. The railroad's President, Samuel H. Graves, was elected as chairman of the vigilante group organized to expel Smith and his gang. On the evening of July 8, 1898, Soapy Smith was killed in a shootout on Skagway's Juneau Wharf. The railroad helped block off the escape routes of the gang, and thus aided in their capture. With the local environment rendered more supportive, construction proceeded. On July 21, 1898, an excursion train carried passengers four miles out of Skagway.

Construction reached the 2,885-foot summit of White Pass by February 20, 1899. The line features steep grades of nearly 3.9 percent, 16 degree curves, roadbed carved out of rock walls, two tunnels, and

[13] Standard gauge is 4 feet, 8.5 inches, and nominally requires a 15-foot-wide roadbed.

numerous bridges and trestles. On July 6, 1899, the railroad reached Lake Bennett, British Columbia, and the beginning of the river and lakes portion of the route. During the summer of 1899, construction also was begun on the 43 miles of line north from Carcross to Whitehorse. Working simultaneously, construction crews also advanced the line from Bennett along a difficult lakeshore to Carcross the next year. The last spike was driven there on July 29, 1900 by Samuel Graves. Rail service started on August 1, 1900, but by then much of the gold rush fever had died down. The railroad originally planned to extend the rail line further north to Carmacks, but chose instead to purchase most of the riverboats operating on the Yukon River. These riverboats provided a steady and reliable transportation service between Whitehorse, Dawson City, and other points along the Yukon.

2.2.2 Early Operations

Following the Klondike gold rush, the railroad hauled freight inland to Whitehorse and the Yukon as well as ore from Canadian mines to tidewater at Skagway, where it was loaded on ships for transport elsewhere for processing. In June 1914, the WP&YR had 11 locomotives, 15 passenger cars, and 233 freight cars. The railroad was profitable, generating $68,368 in passenger revenue and $257,981 in freight revenue, while operating expenses totaled $100,347.

The Klondike evolved from the gold diggings of the first stampeders to mining operations by large corporations that eventually gained control of mining in the Klondike. While ores and concentrates formed the bulk of the traffic, the railroad also carried passengers and other freight. There was no easier way into the Yukon Territory and no other way into or out of Skagway except by sea until the completion of the Klondike Highway that connects Skagway with Whitehorse in 1978.

2.2.3 World War II and Transition to Diesel

Over time the WP&YR became a fully integrated transportation company operating docks, trains, stage coaches, sleighs, buses, paddlewheelers, trucks, ships, airplanes, hotels, and pipelines. It provided essential infrastructure for servicing the freight and passenger requirements of the Yukon's population and mining industry. During World War II, the railroad was operated by the United States Army and was a chief supplier for the Army’s Alaska Highway construction project. The WP&YR later gained international renown as an excursion railroad. The WP&YR proved to be a successful transportation innovator and pioneered the intermodal (ship-train-truck) movement of containers long before it became the international standard for freight movement.

Close Brothers sold WP&YR in 1951 to Canadian investors who financially restructured the railway. While most other narrow gauge systems in North America were closing around this time, the WP&YR remained open. The railroad was operated by steam until 1954 when the transition to diesel-electric locomotives was made. WP&YR was one of the few North American narrow gauge railroads to make this transition.

2.2.4 Recent History

The Faro lead-zinc mine, located north of Whitehorse, Yukon Territory, opened in 1969. In order to haul the ore from Whitehorse to Skagway, the WP&YR was upgraded with seven new diesel locomotives, new freight cars, ore containers, a loader at Whitehorse to transfer ore to the railroad from the railway's

new fleet of trucks, a new ore dock at Skagway, and assorted work on the rail line to improve alignment. In the fall of 1969, a new tunnel and bridge were built to cross Dead Horse Gulch. These replaced the tall steel cantilever bridge, which could not support the weight of the ore trains.

The WP&YR suspended operations in 1982 when the Yukon's mining industry collapsed due to low mineral prices. The railway was reopened in 1988 as a seasonal tourism operation and served 37,000 passengers in that year. The WP&YR is one of Alaska's most popular cruise ship shore excursions, carrying 401,905 passengers during the 2015 May-to-September tourism season. As of publication of the ASRP, operations used the southern 67.5 miles (Skagway to Carcross, Yukon Territory) of the original 110-mile line.

In late June 2010, the railroad and the City of Skagway entered into an agreement whereby the two would jointly advocate for the restoration of freight service on the line, including the revival of the trackage north of Carcross and the possibility of constructing new track north to Carmacks. The expansion would require government support and, if completed, would serve the region's mining industry. However, TWC Enterprises, Ltd. decided in 2013 not to pursue the restoration of freight service when given a proposal to restore ore haul from Whitehorse to Skagway by a company that would not have used the service for longer than five years. See Section 3.2.2.3 for further discussion of the WP&YR prospects for freight in the future.

Historical information about the WP&YR came from the WP&YR website (WP&YR 2014), and the National Postal Museum website (National Postal Museum 2014).

2.3 Tanana Valley Railway

Falcon Joslin and Martin Harrals initially envisioned the TVRR as a railway from Fairbanks to Nome. The entrepreneurs, who were living in Dawson, Yukon Territory, learned of the gold strikes in the Chena and Chatanika river basins. Residents of the area needed a dependable, year-round means of transportation to move people and supplies to and from the mines. In 1903, Joslin and Harrals traveled to the Tanana Valley to evaluate the possibility of building a railroad from the Tanana River to Fairbanks and the gold fields. Returning to Dawson, they laid plans and secured financial backing from British investors who had financed several small industrial railroads in the Dawson area along with the WP&YR.

The railroad began as the Tanana Mines Railway. TVRR's three-foot narrow-gauge operation extended from Chena, on the Tanana River, to Fairbanks and included a branch to Chatanika. The total length of the railroad at its greatest extent was about 46 miles. Later the TVRR became the northernmost portion of the Alaska Railroad.

2.3.1 Construction of the Railroad

Initial construction began in the late summer of 1904 at Chena[14] (Figure 2-1) with the erection of a sawmill, rail yard, and other supporting facilities. Roadbed grading and track laying began, but soon came to a halt due to unforeseen problems. Ground that appeared flat and firm became soft and

[14] Chena was located on the Tanana River just west of the confluence with the Chena River, about 11 miles west and south of Downtown Fairbanks (see Figure 2-1).

swampy as soon as the ground cover was disturbed due to the thawing of the underlying permafrost. When it refroze in winter, tools designed for dirt and gravel made little headway in the frozen ground. Nonetheless, by July 1905, the tracks reached Fairbanks in time for the arrival of the railroad's first locomotive.

Problems building a suitable subgrade, along with a general shortage of special equipment and supplies needed for construction, caused progress to proceed in fits, dependent on the arrival of riverboats that waited for ice breakup on the Yukon and Tanana rivers. The initial shipment of supplies that came in 1904 was used that summer. Additional supplies and materials arrived in mid-May 1905, and construction activity resumed. The golden spike, minted from gold from the surrounding area, was driven on July 17, 1905. Construction continued on the Chatanika Branch up the Goldstream Valley through Fox, and was completed as far as Gilmore in September 1905.

Figure 2-1 Historic Tanana Railway

In 1907, the railroad was refinanced under a new name, the Tanana Valley Railroad. On May 15, 1907, construction began on the second phase of the railroad, an extension of the Goldstream Valley branch to Chatanika. The route was originally planned to go over Cleary Summit, but new mining activity in the Dome, Vault, Ridgetop, and Olnes areas caused the railroad to be routed up the Fox Creek Valley to meet the needs of the new communities. On September 29, 1907, the construction crew reached Chatanika after building an additional 19.2 miles of railroad in four months, including over a mile of trestles and bridges.

2.3.2 Early Operations

Freight, passenger service, and revenue continued to grow through 1909. At one time, the railroad operated three mixed trains daily in each direction, in addition to special trains. Using the railroad,

instead of horse or mule-drawn wagons, the citizens of the area were able to save an estimated $300,000 a year in freight costs. Occasionally, severe winter storms would bring operations to a halt, but the trains usually resumed operation within a few days.

2.3.3 Acquisition by the Alaska Engineering Commission

Beginning in 1910, due primarily to the arrival of the automobile, revenues began to drop. On November 1, 1917, the TVRR was sold at a bankruptcy sale for $200,000. The buyer resold the TVRR to the AEC for $300,000 on December 31, 1917. The route became the Fairbanks line of the AEC Railroad (AECRR), as did the narrow-gauge Chatanika Branch. All of the equipment was renamed to reflect the new ownership, and the TVRR became history.

As operations continued, AECRR built an extension to Nenana to meet the track coming north from Anchorage. This new section was completed on November 7, 1919. It was then widened to standard gauge as soon as the bridge over the Tanana River at Nenana was completed in February 1923.[15] By May 8, 1923, the standard-gauge trackage had reached Happy, where the original TVRR route branched off to go up Goldstream Valley toward Fox. The railroad laid an additional rail parallel to the narrow-gauge track From Happy to Fairbanks to create dual-gauge, allowing both the narrow-gauge and the new standard-gauge equipment to use the same railbed. The standard-gauge addition reached the northern terminus in Fairbanks during the first week of June, 1923. Through traffic from Fairbanks to tidewater at Seward began immediately.

Narrow-gauge operations continued on the Chatanika Branch, the old TVRR, and for a few years the Alaska Railroad was able to keep it in operation. However, competition with motor vehicles intensified, and the economy slid into the Great Depression. Facing continual losses on the branch, the Alaska Railroad decided to close down the line, and on August 1, 1930, the last scheduled train returned to Fairbanks. In 1931, the track was torn up and salvaged, and the structures were scrapped or converted to other uses. Locomotive No. 1 was rebuilt by volunteers in 2000, and the little locomotive now chugs around Fairbanks' Pioneer Park on special occasions.

Information regarding the Tanana Valley Railway (TVRR) came from *Alaska's Tanana Valley Railroads* (Osborne 2013)*, Sketches of Alaska* (Bonnell 2014), and the "The Tanana Valley Railroad - Some History and Engine No 1" (Bonnell 2011).

2.4 Copper River & Northwestern Railway

The Copper River and Northwestern (CR&NW) Railway, owned by the Guggenheims and J. Pierpont Morgan, was built between 1907 and 1911 by the Alaska Syndicate to haul copper ore from Kennicott to Cordova, a distance of 196 miles. There was initial competition between routes from Valdez, Katalla, and Cordova. While the Alaska Syndicate began work from Katalla to provide access to the Bering River coal fields, Michael J. Heney, engineer of the WP&YR, started a line from Cordova as he felt the route had significant advantages. The Alaska Syndicate bought Heney's line in 1906, but continued to work

[15] The bridge over the Tanana River was the last major structure completed on the Alaska Railroad, and marked the completion of the line from Seward to Fairbanks. In 1974, the bridge was named in honor of Fredrick Mears, chief engineer during construction of the Alaska Railroad. See also Section 2.1, Alaska Railroad Corporation.

from Katalla until a massive storm destroyed their breakwater and facilities there. Work was moved to Cordova, and Heney was then enlisted to build the railroad.

2.4.1 Construction of the Railroad

Design and construction involved significant engineering challenges, including crossing the Copper River three times and threading the rail line between glaciers, through canyons, and over unstable soils. The line included 129 bridges, including the Million Dollar Bridge, which actually cost $1.4 million. In all, about 15 percent of the line was built on trestles or bridges. The total cost of the railway was $23.5 million, a great sum at the time, but it provided the means to transport $200 million in copper ore to tidewater.

The last spike in the construction, a copper spike, was driven on March 29, 1911 at Kennecott by Chief Engineer E.C. Hawkins and Superintendent Samuel Murchison. Michael J. Heney, the railroad's first Chief Engineer, had passed away on October 10, 1910, before the railroad was completed. The first train from Kennecott arrived in Cordova on April 8, 1911, to a huge celebration.

2.4.2 Twenty-seven Years of Operation

The initial plan was to extend the railroad from Chitina to Fairbanks, using the Bering River coal fields as an inexpensive source of fuel. However, the federal government had imposed a 160-acre limitation on coal claims. When the Alaska Syndicate attempted to circumvent the law by consolidating groups of holdings, President Theodore Roosevelt withdrew all coal lands in Alaska from entry. This federal action caused the Alaska Syndicate to abandon plans to extend the line any further, and resulted in conversion of the CR&NW locomotives from coal to oil burners. In addition, the copper ore was originally to be smelted in Alaska, but without coal, the smelting was located outside of Tacoma, Washington. The relationship between the Alaska Syndicate and the Roosevelt and subsequent administrations is a separate, interesting episode that includes the rationale for the government purchase of the Alaska Northern and building north from Cook Inlet rather than extending a railroad north from the CR&NW at Chitina.

Full production of the mine was reached in 1916, when 120 million pounds of ore with a value of $32 million was shipped. The Great Depression affected copper prices and demand, resulting in the mine and railroad closing during the winter months. Copper production ceased in 1938, and the last train ran on September 11 of that year. In 1941, the Kennecott Corporation donated the bridges and the rail right-of-way to the United States government to be used as a highway route. The northernmost 60 miles of the roadbed from Chitina to McCarthy were converted to the McCarthy Road. The 48-mile section of right-of-way from Cordova to the Million Dollar Bridge was converted to a road that leads past the Cordova airport to many sightseeing opportunities, particularly in the vicinity of the Million Dollar Bridge. The road ends just north of the bridge where construction on what was to be a road linking Cordova with the Alaska road system halted after the 1964 earthquake. More recently, the main channel of the Copper River changed course and cut the highway several miles short of the Million Dollar Bridge.

Historical information on the Copper River and Northwestern was obtained from “The Copper River and Northwestern – Alaska’s Bonanza Railway” (Bleakley 1999), *The Copper Spike* (Janson 1975), and *Big Mike Heney, Irish Prince of the Iron Trails* (Tower 2003).

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3 The State's Existing Rail System

3.1 Introduction

This chapter provides an overview and inventory of Alaska's existing rail system as a baseline for planning and decision-making. Discussed below are a description of the existing rail service, rail service trends and forecasts, and needs and opportunities.

3.2 Existing Rail Systems

This chapter provides a profile of the two active railroads in Alaska: the ARRC and the WP&YR. The two railroads are not directly connected to each other. The ARRC connects with other railroads in the Lower 48 and Canada through port facilities that link marine and land transportation modes (Figure 3-1). This profile will provide an overview of their current operations, an inventory of their track, rolling stock and facilities, usage, and economic conditions.

Figure 3-1 Active Railroads in Alaska

3.2.1 Alaska Railroad

2015 Operations

Passenger ridership: 475,034
Freight tonnage: 4.29 million tons

The Alaska Railroad was completed and began operations as a federally owned railway in 1923.[16] In 1985, the State of Alaska purchased the railroad, and subsequently operates it as a state-owned corporation. Unlike other state agencies, the ARRC acts as an independent entity that owns and operates the railroad and manages railroad property. The ARRC receives no operating funds from the state and is expected to, and does, generate enough revenue to cover its expenses. It is governed by a seven-member board of directors appointed by the governor.

The ARRC is a Class II railroad. It provides regularly scheduled freight and passenger services between Seward and Fairbanks. That the ARRC provides both regularly scheduled public transportation passenger service and freight service makes it unique in the United States. Freight is moved by many private companies over mostly privately owned track in the Lower 48 but almost all passenger rail service is operated by either Amtrak or state or locally governed transportation agencies.

3.2.1.1 Infrastructure

Infrastructure generally refers to fixed plant, or the tracks, signals, stations, buildings, electrical wires, etc., necessary to operate a railway. Rolling stock refers to all vehicles that move on a railway and usually includes powered and unpowered vehicles such as locomotives, railroad cars, and maintenance-of-way equipment.

Track

Track Data

Miles of mainline: 467
Miles of branch line: 54
Miles of yards and sidings: 135
Total miles of track: 656

The ARRC is the owner, or has exclusive use easements, of its track in Alaska, and operates a total of 656 miles of track, including 467 miles of mainline, 54 miles of branch line, and 135 miles of yard and siding track. The mainline runs from Seward to Fairbanks. According to the 2010 ARRC Track Chart, branch lines include Palmer (A0-A7), Suntrana (D0-D4.8), Whittier (F0-F13), Eielson Air Force Base (G0-G29.38), Fairbanks International Airport (H0-H10) and Anchorage International Airport (J0-J2.5). Trackage is standard gauge[17] and primarily single, mainline track with the exception of several miles of double track in the Anchorage area and a number of 6,000- to 8,000-foot passing sidings on the mainline.

The FRA regulates rail speed limits in the United States, and has developed a classification system that helps determine the maximum possible running speed for freight and passenger trains. Other factors that affect speed include route geometry, locations of facilities, track condition, grade crossings, and

[16] For a short history of the ARRC, please see Section 2.1.
[17] Standard gauge in the United States and much of the world is 4 feet, 8.5 inches.

signaling. The ARRC track ranges from Class 1 to Class 4 (see Table 3-1). The ARRC operates at up to 60 mph for freight service and 65 mph for passenger service.

Table 3-1 Maximum Allowable Operating Speeds

	Maximum Speed (mph)	
Track Type	Freight	Passenger
Class 1	10	15
Class 2	25	30
Class 3	40	60
Class 4	60	80

Railroad abandonments are controlled under federal regulations (49 CFR 1152). As of publication of the ASRP, ARRC has no abandonment reviews underway, nor have there been any since the state assumed ownership of the railroad. The ARRC does not have any rail-banked track. A portion of the Palmer Branch (MP A5.1 to MP A6.7) is out of service as of publication of the ASRP. The Palmer Branch beyond MP A6.7 is under a long-term permit to the MSB for use as a trail. ARRC does not have any acquisition reviews underway as of publication of the ASRP. The ARRC is involved with two major extension projects that are discussed below.

According to Timetable No. 136, track signalization is a combination of Track Warrant Control (TWC) and Centralized Traffic Control (CTC). Approximately 435 miles are controlled by TWC, and 65 miles are controlled by CTC. TWC is a verbal authorization system used to allow trains to occupy a section of track. With TWC, the dispatcher selects the stations or mileposts between which a train can move. With CTC, the dispatcher in Anchorage remotely controls the signals, switches, and train routing.

Crossings, Tunnels and Bridges

According to the FRA public crossing inventory, the ARRC has 439 (323 open and 116 closed[18]) crossings that fall into nine categories (see Table 3-2; FRA 2015). The largest category is at-grade crossings on public roads. Approximately 87 (55 percent) of the open crossings are in this category. Of the total crossings, approximately 39 percent are on the mainline. The remaining crossings are on branch lines or in rail yards. One of the ARRC's corporate objectives is to not add any more at-grade highway/railroad crossings.

There are multiple public road/rail crossings that experience longer than usual delays from railroad activity. Those crossings are:

- C Street (Anchorage) - NHS
- 104th Avenue (Anchorage)
- 100th Avenue (Anchorage)
- Outer Springer Loop (Palmer)
- Grandview Road (Palmer)

[18] A closed crossing is "a location where a previous crossing no longer exists because either the railroad tracks have been physically removed, or each pathway or roadway approach to the crossing has been physically removed, leaving behind no intersection of railroad tracks with either a pathway or roadway. A grade separated highway-rail or pathway crossing that has been physically removed is also considered a closed crossing."

- Whittier Avenue (Whittier)
- University Avenue (Fairbanks) - NHS
- Knik Goose Bay Road (Wasilla) - NHS

Table 3-2 ARRC Road/Trail Crossings

	Number	
Type of Crossing	Open	Closed
Pedestrian at grade	6	4
Pedestrian RR under	2	1
Pedestrian RR over	4	0
Private at grade	99	44
Private RR under	0	0
Private RR over	10	0
Public at grade	176	67
Public RR under	25	0
Public RR over	10	0

Since the ARRC was purchased by the State in 1985, the number of crashes at railroad grade crossings has declined. In 2013, 2014, and 2015 there were no reported vehicle-train crashes or fatalities.

There are 136 bridges on the mainline and an additional 10 bridges on branch lines. The mainline has 543 culverts, and branch lines have an additional 7 culverts. The ARRC also has seven tunnels. The most unique is the Anton Anderson Memorial Tunnel, located on the Whittier branch line, which connects Bear Valley to Whittier. This tunnel, operated by the DOT&PF, is the longest (2.5 miles) combined rail and highway use tunnel in North America. The tunnel, originally built as a rail tunnel during World War II, was reconstructed in 2000 to accommodate motor vehicle traffic in addition to railroad traffic. Vehicle traffic and trains take turns traveling through the tunnel.[19] Most of the ARRC freight trains operate during the evening hours when the tunnel is closed to vehicle traffic. Trains may also operate during the 15-minute period between vehicle traffic openings.

Restrictions

The ARRC is a Plate C limited railroad, which means it can accommodate freight cars that are a maximum of 10 feet, 8 inches wide and 15 feet, 6 inches high. With advance notice, the ARRC does have the ability to accommodate railcars that exceed this capacity. These are known as “high-wide” loads, which may operate at limited speed and may require special railcar equipment.

Double-stack service is limited because two tunnels, Portage and Divide, do not have adequate clearance. Increasing the clearance in these two tunnels would allow the ARRC to operate double-stack trains between Anchorage, Whittier and Seward, which could increase the operational efficiency of the

[19] The tunnel only accommodates one lane of vehicle traffic so each direction of traffic typically has a 15-minute travel window every hour the tunnel is open.

railroad. The cost to improve the Portage tunnel is estimated at $5.0 million and the Divide tunnel is estimated at $0.8 million. North of Portage, there are no obstacles to providing double stack service.[20]

As of publication of the ASRP, the ARRC has a mainline capacity for 263,000-pound gross weight cars. Heavier loads require special handling and reduced train speeds. If a rail car exceeds the 263,000 pound limit or exceeds the Plate C dimensions, the ARRC may be able to handle the load on a special handling basis. Nationally, most Class 1 railroads have a capacity of 286,000 pounds.

Rail Facilities

This section describes the ARRC's rail facilities statewide by community (see Figure 3-3). The railroad uses approximately 12 percent (4,520 acres[21]) of its real estate holdings for yards, depots, etc., and 38 percent (13,738 acres) for track bed and right-of-way. As of October 2014, approximately 2,000 acres are leased.

3.2.1.1.1 Anchorage

In Anchorage, the ARRC has both passenger and freight facilities. The ARRC site located along Ship Creek serves as the railroad's base, and is home to the historic main passenger depot (see Figure 3-2), administrative offices, the principal rail yard, and shop facilities. The passenger depot was built in 1942 and is on the National Register of Historic Places. Amenities at the depot include pay-parking, bike parking, a ticket office, a coffee kiosk, and a gift shop.

Figure 3-2 Anchorage Railroad Depot

The ARRC's main shop facility is located in Anchorage. The facility includes:

- Locomotive repair and inspection
- Car repair and inspection

[20] Double-stack cars (containers stacked two high on a flat car) would still have to be within the Plate C, 263,000 pound gross weight limit. The ARRC is considering single "double stack" railcars which would hold two containers and be within the railroad's weight limit.

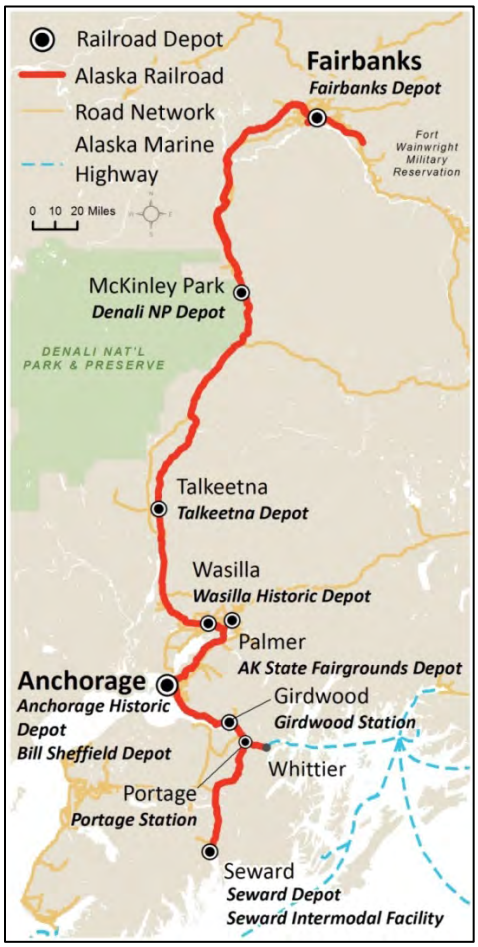
[21] The ARRC's total real estate holdings total approximately 36,228 acres. The right-of-way typically extends 100 feet on either side of the track. The ARRC also owns land in Seward, Crown Point, Portage, Whittier, Anchorage, Talkeetna, Curry, Hurricane, Healy, Clear, Nenana, Fairbanks, Valdez, Birchwood, and Eagle River.

- Back shop[22]
- Electrical repair shop
- Heavy equipment repair
- Locomotive fueling facility
- Wheel shop
- Scaling facility[23]

The Anchorage rail yard is ARRC's major classification yard. A classification yard is where freight trains are disassembled and put together. From the Anchorage yard, the ARRC services a variety of customers, including Port of Anchorage, and Joint Base Elmendorf-Richardson (JBER). Anchorage also serves the ARRC's principal intermodal hub.

A second passenger facility in Anchorage is the Bill Sheffield Depot at the Ted Stevens Anchorage International Airport (see Figure 3-3). As of 2015, the Grandview cruise train and charter passengers use this facility. Several buildings in the Anchorage yard are used by private railcar operators to store railcars.

Figure 3-3 ARRC Passenger Facilities



[22] A back shop is a facility for heavy repair and rebuilding of locomotives.
[23] The scaling facility includes the scale house, scale, and scale pit. A scale house contains the scale used to weigh rail cars.

3.2.1.1.2 Fairbanks

The passenger depot in Fairbanks was completed in 2005 (Figure 3-4). It offers the following amenities: limited free parking, bike parking, ticket sales, a gift shop, and a coffee shop.

Figure 3-4 Fairbanks Railroad Depot

The ARRC Fairbanks facilities include a rail yard, freight house, car shop, locomotive repair shop, and fueling station. To support the Fairbanks North Star Borough's efforts to improve air quality, and to reduce fuel expenses, the ARRC moves locomotives into the shop buildings, where engines can be turned off rather than idled in the railroad yard. Idling or indoor storage is required in Fairbanks during the winter to prevent the engines from freezing.

3.2.1.1.3 Seward

The Seward Depot includes a ticket office and offers limited free parking (Figure 3-5). It is used primarily during the summer by passengers on ARRC's *Coastal Classic*; winter use is limited to charter/special event trains such as the Holiday Train. Passenger trains serving the cruise ships are backed up adjacent to the cruise ship dock and do not use the Seward Depot.

Figure 3-5 Seward Railroad Depot

The Seward Intermodal Facility is located on the ARRC Seward Passenger Dock. It was remodeled in 2003, is a sizeable 24,000 square feet to accommodate cruise line passengers transferring between ship and train, and is available during non-summer months (October–April) for rental.

ARRC built a new East Dock in 2000, expanded it in 2007, and added a security fence and roller gates in 2011. As of publication of the ASRP, ARRC is expanding the East Dock in phases to improve the safety, efficiency, and capacity of freight intermodal operations.

Seward has the ARRC's only bulk material terminal, which handles coal and gravel but is not handling coal as of publication of the ASRP as a result of the collapse of Alaska's export coal market. ARRC acquired the Seward Coal Loading Facility (SCLF) in 2003 and has made subsequent repairs and improvements to the facility. As of 2014, the SCLF is the only facility available in Alaska to export coal. Approximately 11 train loads (7,000 tons per train) are required to fill a coal ship.

The ARRC has been implementing their *Seward Terminal Reserve Dock Facilities Master Plan, 2014 Update*. The plan calls for significant improvements at the Freight Dock (widening and lengthening the dock, providing additional berthing space, roll-on/roll-off compatibility, and the ability to accommodate larger ships), improvements to the Seward Loading Facility, improved vehicle transportation flow, and creation of additional leasable land.

3.2.1.1.4 Whittier

There are no permanent and/or dedicated ARRC passenger facilities available in Whittier. The *Glacier Discovery* train loads and off-loads passengers in an area across from the cruise ship terminal and the marina. During the summer, this area has a white, tent-like shelter that provides protection from the weather for passengers. The shelter is owned by the ARRC.

Whittier acts as ARRC's connection to the Lower 48 and Canadian Rail systems. It is an interchange point for railcar service and is one of the ARRC's principal container terminals. In recent years, it has been used typically three or four days per week. The ARRC has made several improvements to facilities in Whittier, including building a pedestrian underpass (2002), building an equipment maintenance facility (2002), improving Delong Dock (2002), building barge slip side-loading structures (2002), building a cruise ship passenger spur and platform (2004), improving security (2006-2007), and improving the Barge Slip (2009-2011).

3.2.1.1.5 Other Passenger Facilities

Passenger services are offered at the Wasilla Historic Depot; however, it is not staffed by ARRC. Since 1982, the building has been leased to the City of Wasilla, and it has been occupied by the Wasilla Chamber of Commerce since 1987. The unstaffed building is often closed. Trains only stop at this station if a ticket is purchased with Wasilla as a stop. This station has limited free parking. As of spring 2014, the City of Wasilla is developing the Wasilla Intermodal Facility[24]; once constructed, the current depot will no longer be used for train service.

[24] In April 2014, the City of Wasilla released an Invitation to Bid for site grading for the Intermodal Facility.

The *Aurora* and *Hurricane Turn* winter trains depart from the Talkeetna Depot in downtown Talkeetna (see Figure 3-6). Amenities include limited free parking and ticket sales. During the winter season (mid-September to mid-May), the station is closed; however, winter train service handles passengers at the Talkeetna Section House.

Figure 3-6 Talkeetna Railroad Depot

The Denali Park depot/station is also closed during the winter season (mid-September to mid-May). Station facilities were rehabilitated and expanded in 2003, and there are no additional improvement plans as of December 2015. Amenities at the facility include bus parking, ticket sales, a gift shop, and a coffee shop (see Figure 3-7).

Figure 3-7 Denali Park Railroad Station

The Girdwood station is used only during the summer season and is unstaffed.

The Portage station includes amenities such as ticket sales and a gift shop, although the gift shop is not managed by ARRC.

The South Palmer Station, opened in 2004, includes a rail station, restrooms, parking, access to the State Fairgrounds, and drop-off lanes. As of publication of the ASRP, the station is used as part of the ARRC Fair Service, but it is the ARRC's intent for this depot to be used for future commuter rail service. The station is maintained by the City of Palmer under an agreement with the Alaska Railroad.

3.2.1.2 Rolling Stock

According to the ARRC's 2012 *Equipment Circular,* the 2014 *Alaska Railroad Freight Services Fact Sheet*, and other ARRC information, the ARRC owns approximately[25] 51 locomotives, 44 passenger cars, and 485 freight cars. ARRC-owned passenger and freight cars are summarized in Table 3-3.

Table 3-3 ARRC-Owned Passenger and Freight Cars

Car Type	Description	Number of Cars
	Passenger Fleet	
Business Cars	The restored *Denali Car* and the *Aurora Car* offer unique meeting space.	2
Diner/bar coaches	Dining cars with various seating/dining configurations; most refurbished and/or remodeled 2000-2010.	6
Passenger Coaches	Coaches feature large windows, hand carry storage, and reclining seats facing with a card table in between. Six built 1989 and refurbished 2001-2003; five built 1950 and rebuilt 1982.	11
Vista Dome Coaches	Coaches feature 36-38 reclining seats, plus 24 seats under a dome in the middle that offers 360-degree views. Built in mid-1950s; rebuilt 1988-1998.	6
Low-Level Dome Coaches	Coaches feature large dome glass windows and seats (68-76) arranged around four-top tables, small galley and service bar. Four built 1950s and refurbished 2006; three built 2006-2007.	7
Bi-Level Ultradomes	Double-deck first-class dome cars feature glass-domed upstairs including an outdoor viewing platform and 72 reclining seats. Downstairs includes a full-service kitchen and dining area with 36 seats at tables. Built 2005, 2007, 2008.	6
Bi-Level Diesel Multiple Unit (DMU)	The *Chugach Explorer* self-propelled railcar is suited for whistle stop and commuter services, with 112 seats, kitchen and baggage area. Built 2009.	1
Baggage Cars	Cars store luggage and include generators to supply electrical power to coaches. Built 1961-1962; rebuilt 1982.	5
	Freight Fleet	
Flat Cars	Move trailers and containers, pipe, lumber, and heavy equipment.	354
Air Dumps	Side-dumping railcars used primarily to move ballast and other rock material for track maintenance	31
Open Top Hopper	Move bulk solids, primarily coal and gravel, and unload from the bottom.	358
Covered Hoppers	Move dry bulk including grain, fertilizer, and cement.	51
Gondolas	Open cars with half height walls, move metal products (pipe, sheet pile, rebar) north and scrap south.	10

The railway also transports railcars that are leased or owned by its customers. The 2012 *Equipment Circular* indicates the ARRC has been hauling approximately 300 freight cars and 24 passenger cars for private owners. Most of these freight cars are tank cars owned by the Flint Hills refinery, while the passenger cars are owned by cruise ship companies such as Princess Cruises and Royal Caribbean.

[25] The ARRC has an active fleet management program for the rehabilitation and replacement of their fleet, so the exact number of pieces of equipment can vary slightly at any given time.

Typically, the owners of the private passenger cars contract with the ARRC to haul the cars on the ARRC's existing passenger trains.

3.2.1.3 Freight Service

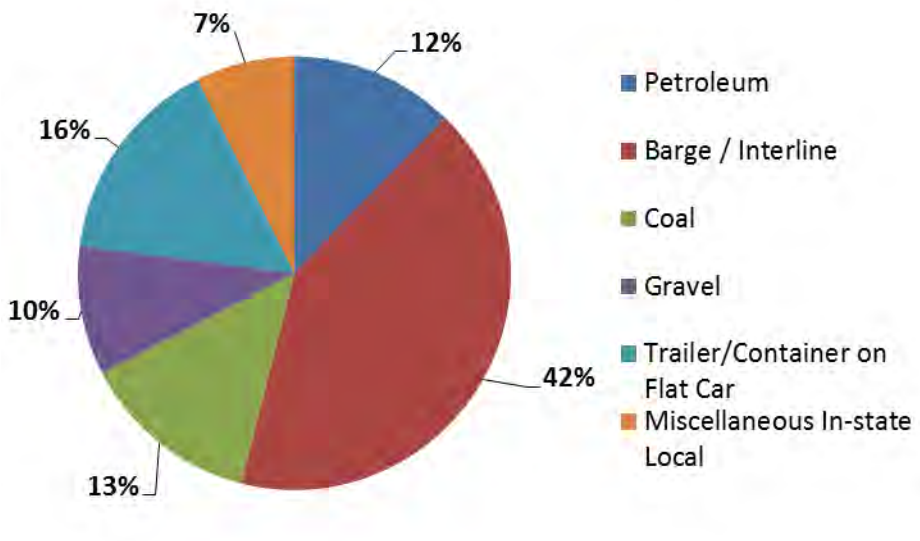
ARRC provides rail freight service within Alaska as well as from shipping points in the Lower 48 and Canada to destinations in Alaska. ARRC-owned port facilities in Seattle, Whittier, Seward, and Anchorage link marine and land routes[26] (see Figure 3-1). Rail yards in Seward, Whittier, Anchorage, and Fairbanks offer centralized distribution hubs. Some rail customers have rail sidings and load/unload directly to rail cars. Others receive trailer or container loads that are trucked for the first and last legs of the trip. Figure 3-8 shows ARRC freight facilities.

Figure 3-8 ARRC Freight Facilities

Freight comprises more than two-thirds (69 percent) of the ARRC's operating revenues (excluding capital grants). In 2015, the types of freight that generated the most revenue for the ARRC were barge/interline services (42 percent), trailer/container on flat car (16 percent), and coal (13 percent). Figure 3-9 summarizes the freight types by percentage of freight revenue generated in 2015.

[26] The ARRC also receives rail barge service from Prince Rupert, but those facilities are not owned or operated by the ARRC.

Figure 3-9 Freight Types by % of Freight Revenue Generated, 2015



Source: ARRC

In 2015, approximately 4.3 million tons of freight were hauled. Stone, sand, and gravel were the largest group of commodities moved by weight (approximately 53.4 percent) in 2015 (Table 3-4). Gravel trains typically bring gravel from extraction sites in the MSB to be processed in Anchorage. The second largest commodity moved by tonnage was coal (21.0 percent). In Alaska, gravel and coal move almost exclusively by rail. The third-largest had been petroleum products as recently as 2013, but is now other commodities (9.7 percent). Fourth-largest was petroleum shipments (8.9 percent), consisted primarily of fuel hauled north from Anchorage to Fairbanks. The longest in-state haul made by the ARRC is the transportation of pipe from the Port of Seward to Fairbanks (approximately 470 miles).

Table 3-4 Freight Movement, 2015

Freight Type	Tonnage (millions)	Total Number of Railcar Trips	Number of Railcar Trips Originated	Number of Railcar Trips Terminated
Stone, sand, gravel	2,288	22,877	22,877	22,877
Petroleum Product	381	5,255	5,255	5,255
Coal	900	9,360	9,360	9,360
Chemicals	105	1,271	0	1,271
Iron/Steel Products	70	1,132	176	956
Intermodal	123	8,262	2,644	5,618
Other	418	3,251	3,251	3,251
Total	**4,285**	**51,408**	**43,563**	**48,588**

Note: "Originated" refers to rail traffic that begins in Alaska and "terminated" refers to rail traffic that ends in Alaska. For example, a railcar of jet fuel transported from North Pole to Anchorage is considered to have originated and terminated in Alaska. A railcar of iron/steel products from the Lower 48 and transported to Alaska via the rail barge is considered to have terminated but not originated in Alaska. Source: ARRC

The ARRC does not operate scheduled freight service, with the exception of the five-times-weekly train that carries containers from Anchorage to Fairbanks. Travel times and mileage for the most common

origin-destination pairs are shown in Table 3-5. Overall, the ARRC freight service meets its performance goals.

Table 3-5 Travel Time on Main Freight Routes

Route	Distance (miles)	Travel Time
Anchorage to Fairbanks	355.7	11 hours
Anchorage to Seward	114.3	4 hours
Anchorage to Whittier	62.5	2 hours
Healy to Fairbanks	112	4 hours
Healy to Seward	358.0	11 hours (Including time to re-crew in Anchorage)

Major Lines of Freight Business

Barge/Interline Services
Alaska Rail Marine (ARM) moves railcar shipments to/from Alaska via Seattle, interchanging with Lower 48 railroads. Containers arriving by ARM barge move from Whittier to Anchorage, Fairbanks, or other destinations by rail. Canadian National Railway barges move railcar shipments to/from Whittier via Prince Rupert, interchanging with Canadian National Railway.

Coal
Coal from Usibelli Coal Mine in Healy moves to Fairbanks, where is it used for power generation.

Gravel
Seasonal (April-October) aggregate products move from the Matanuska-Susitna Valley to Anchorage.

Trailers/Containers on Flat Cars (TOFC/COFC)
TOFC/COFC move north and south between Seward, Whittier, Anchorage, and Fairbanks.

Miscellaneous/In-State Local
Other freight includes specialty movements of very large or oddly shaped equipment and materials as well as in-state shipments of cement, scrap metal, military equipment, and pipe.

Source: ARRC

Operated by Canadian National Railway, the AquaTrain offers a similar service between Prince Rupert, British Columbia, and Whittier. It offers 30-plus round trips each year and can accommodate 45 rail cars on each trip.

3.2.1.4 Passenger Service

As a passenger railroad, the ARRC operates a variety of services for local residents and visitors. The railroad provides six regularly scheduled passenger trains, as well as special event trains and charters. Passenger trains include the *Coastal Classic, Glacier Discovery, Denali Star*, *Hurricane Turn, Aurora,* and *Grandview Cruise* trains. Travel times on passenger routes are shown in Table 3-6.

Table 3-6 Passenger Train Travel Times

Route	Travel Time
***Denali Star* Train**	
Anchorage to Wasilla	1 hour 15 minutes
Wasilla to Talkeetna	1 hour 30 minutes
Talkeetna to Denali	4 hours, 20 minutes
Denali to Fairbanks	4 hours
***Coastal Classic* Train**	
Anchorage to Girdwood	1 hour, 10 minutes
Girdwood to Seward	3 hours
***Glacier Discovery* Train**	
Anchorage to Girdwood	1 hour, 10 minutes
Girdwood to Portage	30 minutes
Portage to Whittier	30 minutes
Whittier to Portage (2nd stop)	30 minutes
Portage (2nd stop) to Spencer WS	20 minutes
Spencer WS to Grandview	1 hour, 25 minutes
***Hurricane Turn* Train (Summer Timing)**	
Talkeetna to Chase	12 minutes
Chase to Curry	23 minutes
Curry to Sherman	15 minutes
Sherman to Gold Creek	15 minutes
Gold Creek to Canyon	15 minutes
Canyon to Chulitna	15 minutes
Chulitna to Hurricane	25 minutes

3.2.1.5 Passenger Service Performance Evaluation

In 2015, the ARRC carried approximately 475,034 passengers. Just under half (48 percent) of these were cruise ship customers. Prior to the onset of the Great Recession, ARRC total annual ridership exceeded one-half million for the years 2006-2008.

See Table 3-7 for a summary of ridership from 2008 through 2015. Ridership on tour company cars declined 39 percent between 2007 and 2012. Ridership on ARRC services declined significantly less at 19 percent between 2007 and 2010 before rebounding to a new high in 2015.

Revenue from ARRC passenger operations in 2014 totaled $27.6 million, while operating expenses attributed to passenger operations was $10.1 million. In 2013, from ARRC passenger revenue totaled $25.7 million, while operating expenses were $9.3 million. For 2012, passenger revenues were $24.0 million, and expenses were $9.8 million. Passenger operations in 2013 generated 172,837 revenue train-miles and 6,529 revenue train-hours.

Table 3-7 ARRC Passenger Ridership, 2008-2015

Line	2008	2009	2010	2011	2012	2013	2014	2015
Denali Star	58,958	51,331	50,556	56,549	60,041	59,133	60,997	64,304
Glacier Discovery (Whittier)	34,397	32,597	25,373	27,911	28,921	31,294	34,912	37,987
Coastal Classic (Seward)	50,457	42,472	41,752	43,861	46,015	51,879	53,240	59,417
Aurora Winter Service	3,164	3,343	3,456	3,932	4,841	6,297	7,234	6,500
Hurricane Turn (Winter)	771	664	901	1,270	1,416	1,852	1,625	1,875
Hurricane Turn (Summer)	4,044	3,168	3,695	3,571	3,764	5,809	6,893	8,267
Charters/Specials	9,901	15,021	5,891	9,883	14,162	11,991	10,516	12,954
ARRC Passengers	**161,692**	**148,496**	**131,624**	**146,977**	**159,160**	**168,255**	**175,417**	**191,304**
Tour Companies*	323,838	264,376	233,160	218,916	211,159	266,105	240,588	226,489
Grandview Cruise	49,997	57,814	40,351	46,419	44,960	55,285	52,656	57,241
Total Passengers	**535,527**	**470,786**	**405,135**	**412,312**	**415,279**	**489,645**	**468,661**	**475,034**

* Refers to cruise ship passengers being transported in a privately owned railcar. Cruise passengers that are travelling on ARRC- owned railcars are listed as part of the statistics for that rail line. Source: ARRC

Passenger Trains

Coastal Classic
Daily summer service between Anchorage and Seward

Glacier Discovery
Daily summer service between Anchorage, Whittier, and Chugach Forest; whistle stops at Spencer Glacier and Grandview

Denali Star
Daily summer service between Anchorage, Talkeetna, Denali, and Fairbanks

Hurricane Turn
Unique flag stop service offered monthly in winter between Anchorage and Hurricane; offered Thursday-Sunday in the summer between Talkeetna and Hurricane

Aurora
Winter weekend service between Anchorage and Fairbanks

Grandview Cruise
Chartered summer service for cruise company passengers traveling from Whittier or Seward to Anchorage

ARRC reports on-time performance for three trains. For 2013, the last full year of data reported, the northbound *Denali Star* averaged on-time performance as follows:

- 73 percent departing Anchorage;
- 78 percent arriving at Denali; and
- 84 percent arriving at Fairbanks.

Southbound, the train's on-time performance averaged:

- 78 percent departing Fairbanks;
- 100 percent arriving at Denali; and
- 85 percent arriving at Anchorage.

The *Glacier Discovery* averaged on-time performance as follows:

- 88 percent departing Anchorage;
- 91 percent arriving at Whittier; and
- 95 percent arriving at Anchorage.

The *Coastal Classic* averaged on-time performance as follows:

- 90 percent departing Anchorage;
- 68 percent arriving at Seward; and
- 59 percent arriving at Anchorage

The average on-time percentages above allow for zero variance from scheduled times.

Commuter Rail

While the ARRC offers regularly scheduled year-round public transportation in Southcentral Alaska, rail commuter service is still under development. The railroad has undertaken many projects to make the initiation of commuter rail in Southcentral Alaska possible. Commuter rail routes that are under consideration include service between Anchorage and the Matanuska-Susitna Valley as well as Anchorage and Girdwood. An update of the most recent analysis of MSB-Anchorage commuter service is provided in Appendix C. Infrastructure improvements completed to implement commuter-type service include:

- A depot at the Ted Stevens Anchorage International Airport;
- A depot at the Alaska State fairgrounds;[27]
- An upgraded intermodal transportation facility in Ship Creek;[28]
- Track straightening between Anchorage and the MSB,[29] which allows higher-speed operation;

[27]The ARRC operates a Fair Train from Anchorage to the Alaska State Fairgrounds during the State Fair. To provide commuter rail service to Palmer, an additional track would be required to provide sufficient speed and to bypass gravel trains that can block the Palmer Branch line for several hours at a time.
[28] As of 2013, only Phase 1 and 2a have been completed. Phase 2b and 3 improvements have not been completed.
[29] Curves near Beach Lake Park, Birchwood, Eklutna, and South Wasilla (Fairview Loop) still need to be eased or eliminated.

- Evaluation of a regional transportation authority;[30] and
- Purchase of a single commuter-style self-propelled railcar (a Diesel Multiple Unit, or DMU) that meets federal criteria for operating on track shared by freight and passenger trains.

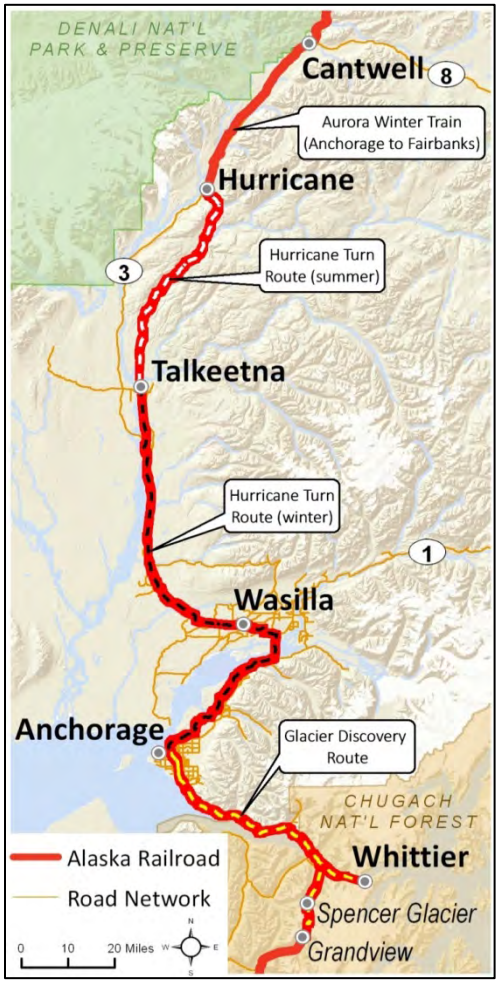
Roadless Area Service

Parts of Southcentral Alaska served by the ARRC are not accessible by road. To provide access to these areas, the ARRC offers two whistle stop[31] services (see Figure 3-10). The *Hurricane Turn* service serves the roadless area from Talkeetna north to Hurricane and is often used by residents of the area to get to/from their property. The service operates from Talkeetna to Hurricane four days per week during the summer and from Anchorage to Hurricane once a month during the winter season. The *Aurora* Winter Train provides service to this area on weekends during the winter; the train goes northbound on Saturday and southbound on Sunday. Service was expanded in the winter of 2014-2015 to include mid-week service from mid-February to mid-March. The *Glacier Discovery* service on the Kenai Peninsula provides access to the Grandview-Spencer Glacier area during the summer season in partnership with the Chugach National Forest. This service, begun in 2007, provides access to a new system of recreational trails and huts.

[30] A regional transportation authority (RTA) has been the recommended entity to operate commuter rail in Southcentral Alaska. The RTA would need approval by the state legislature before it can be formed.

[31] Whistle stop, also known as flag stop, service means the train stops on an as-requested basis. Passengers are able to board/disembark the train anywhere along its route. Passengers are requested to stand apart from the rail along as straight a stretch as possible and attract the Engineer's/Conductor's attention by waving a flag, light, etc.

Figure 3-10 ARRC Roadless Area Service



Charter Train Service

Cruise ship companies charter ARRC passenger services in different ways. The companies can book space for their passengers on regular ARRC passenger cars. Or, they can contract with the ARRC to pull a privately owned passenger car as part of a regularly scheduled train. They can also hire the ARRC on a charter basis to move entire trains of cruise company-owned cars. Cruise ship companies, including Princess Cruises, Holland America, and Wilderness Express, use the ARRC passenger service as a means of transferring clients from:

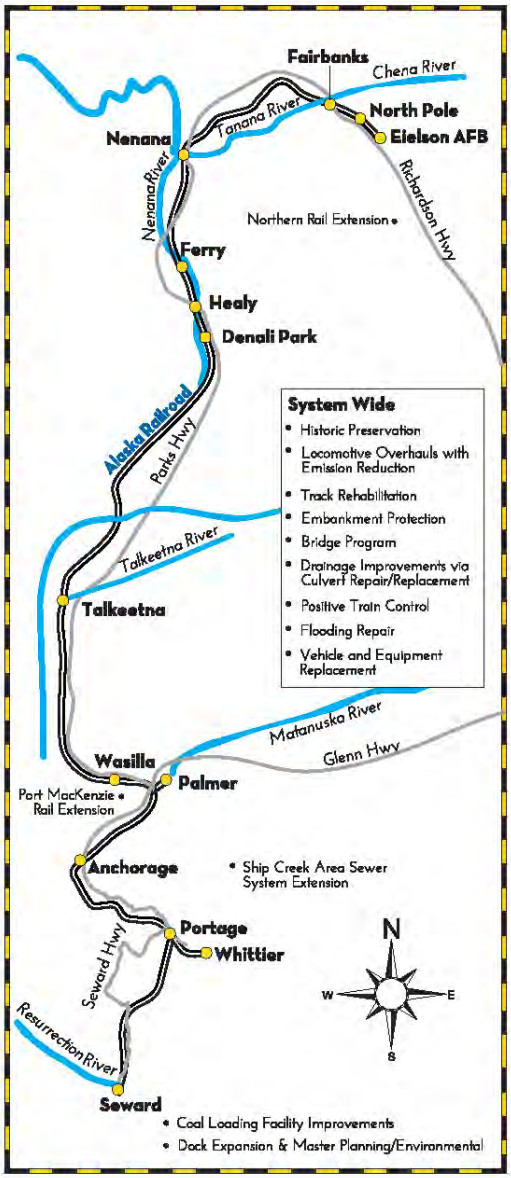
- Ships to lodging facilities
- Lodging facilities to Denali Park
- Lodging facilities to airports
- Transfer service from ships to the Ted Stevens Anchorage International Airport

The train service with the greatest number of cruise ship clients is the *Denali Star,* which carries cruise clients from Anchorage to Denali National Park, from Denali to Fairbanks, and the reverse.

3.2.1.6 Planned Improvements

The ARRC is continually upgrading its infrastructure and rolling stock to better meet the needs of their customers and to meet current regulations. In 2015, the ARRC budgeted approximately $32 million in new spending for capital improvement projects. Sources of funds for capital improvements include federal funds/grants and ARRC internal funds (generated from freight, passenger, and real estate revenues). Figure 3-11 summarizes the ARRC's capital projects for 2015.

Figure 3-11 In Progress/Planned Capital Improvements, 2015

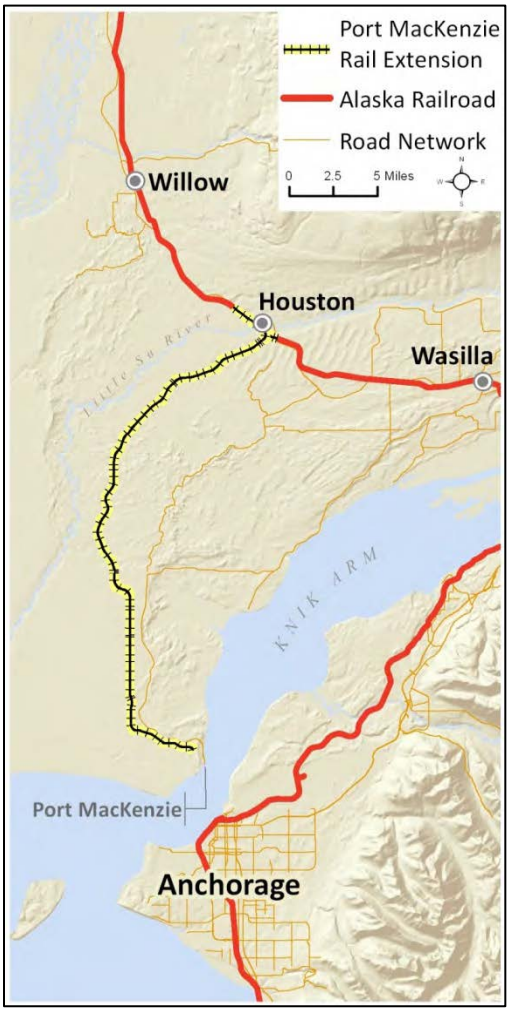


Source: ARRC

The Port MacKenzie Rail Extension project is an MSB project being constructed in cooperation with the ARRC. The project is building a new 32-mile track connecting Port MacKenzie on Knik Arm of Cook Inlet to the ARRC mainline track near Houston (see Figure 3-12). When complete, the new rail line will

operate as part of the ARRC system. The port lies about 30 miles southwest of Wasilla and about 5 miles due north of Anchorage, across Cook Inlet. The selected route involves 32 miles of new rail line extending from Port MacKenzie to the ARRC's mainline just south of Houston. Port MacKenzie has a deep-draft dock (60 feet at low tide) that requires no dredging and can serve the world's largest ships. The port's 8,940 upland acres and 1,300 tide-land acres provide ample room to accommodate bulk resource storage, transport, and processing facilities, as well as rail and terminal facilities for efficient train loading and unloading. As of publication of the ASRP, the project is under construction. A September 2014 estimate indicated that the project cost will exceed $300 million[32]. All of the funding has come from state grants. As of 2015, the project was under construction and scheduled to be completed by 2018 depending on availability of funding.

Figure 3-12 Port MacKenzie Rail Extension

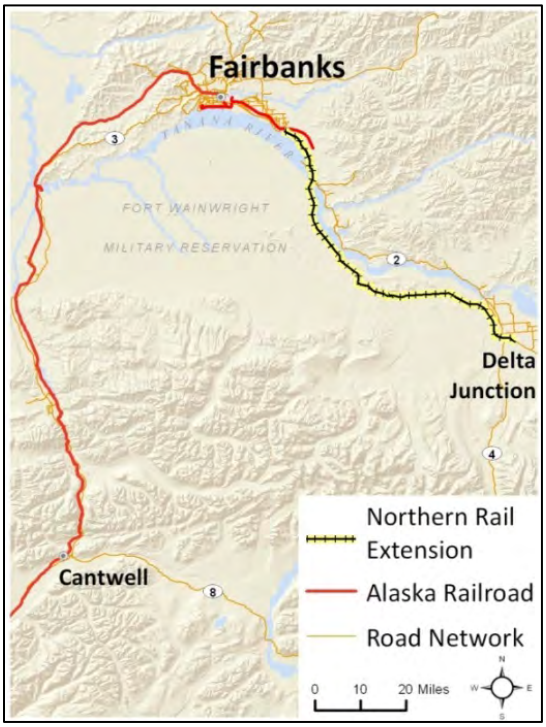


The Northern Rail Extension would construct approximately 80 miles of new rail line from the existing Eielson Branch rail line near North Pole/Eielson Air Force Base to Delta Junction and Fort Greely (see Figure 3-13). The project would provide commercial freight service to the corridor, support military training and

[32] As reported by PMRE Executive Director, Joe Perkins, at an August 5, 2014 meeting of the MSB Assembly and reported by KSKA on August 6, 2014.

equipment movement (by providing year-round access to the military's Joint Pacific Area Range Complex), provide an alternate route to the Richardson Highway for passengers, and support the region's tourism. The project is being built in four stages. The first phase of this project, a bridge over the Tanana River, began construction in 2012 and was completed in 2014. Phase 2 (rail construction from Moose Creek to Salcha crossing), Phase 3 (rail construction from Salcha crossing to Donnelly Military Training Area), and Phase 4 (rail construction from Donnelly to Delta Junction) are unfunded as of publication of the ASRP. The cost of the remaining rail line extension is approximately $1.05 billion. As of 2014, funding sources included the Department of Defense and the state. Funding to complete the project may include federal and state appropriations as well as financing through the sale of revenue bonds.

Figure 3-13 Northern Rail Extension

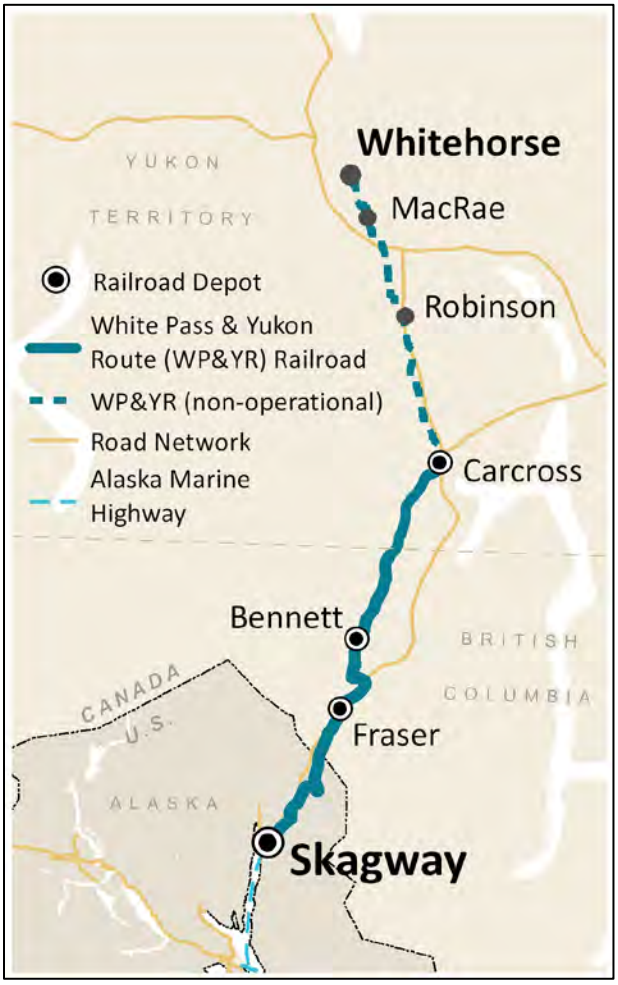


3.2.2 White Pass and Yukon Route Railway

Operated by the Pacific and Arctic Railway and Navigation Company in Alaska, the WP&YR is a narrow-gauge excursion railway.[33] Based in Skagway, Alaska, WP&YR offers trips from Skagway, Alaska to White Pass Summit and Fraser, British Columbia and Carcross, Yukon Territory (see Figure 3-14). It has no connection to any other railroad. WP&YR's season lasts approximately 150 days,[34] with trips starting in early May and ending in late September. The WP&YR has operated in this fashion since 1988 when it reopened after suspending freight operations in 1982. The WP&YR markets itself as the "Scenic Railway of the World" and has been designated as an International Historic Civil Engineering Landmark. Construction of the WP&YR began in 1898 with rail service starting in August 1900.

[33] The White Pass & Yukon Route is a wholly owned subsidiary of TWC Enterprises Limited. The railway is operated by the Pacific and Arctic Railway and Navigation Company (in Alaska), the British Columbia Yukon Railway Company (in British Columbia), and the British Yukon Railway Company (in Yukon).
[34] The length of the season is linked to the number of days that cruise ships visit Skagway.

Figure 3-14 White Pass and Yukon



3.2.2.1 Infrastructure

Track

The WP&YR operates approximately 67.5 miles of single track main line between Skagway and Carcross. Of these, approximately 20 miles[35] are in the United States, and the remainder is in Canada. The WP&YR ascends nearly 3,000 feet in 20 miles and features steep grades of up to nearly 4 percent and curves of up to 16 degrees. The WP&YR has taken out of service an additional 42.9 miles of track between Carcross and Whitehorse. This section has been out of service since 1982, when the railway ceased freight operations; the track is still in place, but is unusable without major rehabilitation. Resource exploration in the Yukon has generated interest in this portion being reopened for freight service. In late 2012, the WY&PR decided not to pursue development of freight service; the company wanted instead to concentrate on the existing excursion service. In 2012, the WP&YR reported that it did not have any plans to abandon or acquire any new rail line.

[35] The United States-Canadian Border is located at MP 20.4.

The WP&YR track is Class II, 3-foot, narrow-gauge[36] track. The line has a maximum allowable speed of 25 miles per hour. Typically, the WP&YR develops a train schedule for each day of operation based on the number of cruise ships in Skagway. The number of cars on the train varies depending on the number of pre-sold tickets. The railroad is run according to the day's schedule. Delays do not happen on a regular basis; those that occur are typically the result of equipment failure, rock slides, or avalanches.

Track Warrant Control (TWC), a verbal authorization system, is used by the railway as its primary dispatching and safety system.[37] The railway also stations flagmen at crossings when trains approach, and it strictly adheres to operating rules so as to ensure the safety of passengers.

Crossings, Tunnels and Bridges

According to the WP&YR, there are four active grade crossings on the railway and two tunnels located at MP 16.0 and MP 18.8. Protection at each crossing may include warning bells, horns, and train crew flagging. Crossing-guard protection is also done during high-traffic times. There are 24 bridges along the active portion of the railway: 14 in Alaska, three in British Columbia, and seven in the Yukon Territory. The locations of the bridges in Alaska are shown in Table 3-8.

Table 3-8 WP&YR Bridges in Alaska

Description	Location (MP)
Bridge 2A	2.3
Bridge 5A	5.8
Bridge 7A	7.2
Bridge 7B	7.4
Bridge 7C	7.4
Bridge 9A	9.5
Bridge 12A	12.5
Bridge 14A	14.2
Bridge 14B	14.3
Bridge 15A	15.5
Bridge 15B	15.6
Bridge 15C	15.7
Bridge 17A	17.7
Bridge 18A	18.8

[36] This gauge was selected because it permitted sharper curves than standard-gauge track and was not uncommon for railroads in mountainous terrain at the time of the construction of the WP&YR.
[37] Track Warrant Control (TWC) authorizes a dispatcher to verbally instruct train movements between two named points (often mileposts or stations).

Restrictions

The WP&YR is a Plate C limited railroad, which means it can accommodate freight cars that are a maximum of 10 feet, 8 inches wide and 15 feet, 6 inches high. The car load limit is 220,000 pounds with special movements up to 286,000 pounds.

3.2.2.2 Rolling Stock

As of 2013, the WP&YR operates 20 diesel-electric locomotives. Most of these are General Electric units from the 1950s and American Locomotive Company (ALCO) units from the 1960s. The WP&YR is repowering their 90 Class locomotives. The repowered locomotives will provide more pulling power and durability, improve fuel economy, and generate lower emissions. The eleventh and last GE locomotive to be repowered was back in the fleet with the commencement of the 2014 season. WP&YR continues to remanufacture their other locomotives.

The WP&YR operates two steam locomotives: Engine 69 and Engine 73 (see Figure 3-15). They have also restored a third steam locomotive for display, Engine 52, believed to be the first engine to reach White Pass summit in 1899.

Figure 3-15 Engine 69

Source: WP&YR.com

As of 2014, the WP&YR had 82 passenger cars and a car accessible by those with disabilities. The three new cars entered service in 2014. As of 2014, the average age of the passenger cars/coaches was 43.9 years, with the oldest built in 1883 (the Lake Emerald #244) and the newest built in 2014.

3.2.2.3 Freight Service

There has been interest in reviving the WP&YR's freight service due to the recent growth in the Yukon's mining sector. The WP&YR could be used to transport mineral resources (typically ore) to Skagway where the resources would be transferred to a ship or barge and sent to market. Using rail instead of truck to transport ore would reduce the need for roadway improvements and reduce noise and pollution, as well as minimize increases in traffic and border wait times. To make freight service possible, WP&YR would have to repair track and structures, purchase freight cars, and hire additional

staff. The port in Skagway would also need to be improved. As of spring 2016, the WP&YR did not have plans to resume freight service.

3.2.2.4 Passenger Service

During its summer season (May through September), the WP&YR offers regularly scheduled train service with as many as 11 trains per day, including:[38]

- White Pass Summit Excursion – daily service between Skagway and White Pass Summit;
- Fraser Meadows Steam Excursion – twice-weekly service between Skagway and Fraser Meadow;
- Bennett Scenic Excursion – Tuesday to Saturday service between Skagway and Carcross; and
- Bennett Backpack Excursion – weekly service between Carcross and Bennett

The record for the most passengers carried on WP&YR trains in one day is 7,009 on July 23, 2008.

Source: ClubLink Enterprises 2011

The WP&YR also offer a small number of special event trains and charters.

3.2.2.5 Passenger Service Performance Evaluation

A summary of WP&YR ridership for the period between 2008 and 2015 is included in Table 3-9. Since most of WP&YR's passengers are on cruise-ship tours, their ridership declined between 2007 and 2010 as a result of the recession, but ridership has increased since. A 15-car train carries approximately 580 passengers at 90 percent capacity. The number of trains offered each day is constrained by the capacity of the Skagway Depot. The station has limited capacity to accommodate additional departures or arrivals.

Table 3-9 WP&YR Ridership, 2008-2015

	2008	2009	2010	2011	2012	2013	2014	2015
April	-	-	-	19	-	-	-	-
May	57,691	48,689	49,021	46,524	48,262	50,796	52,266	54,736
June	99,012	95,038	90,121	90,995	88,941	91,028	93,395	97,712
July	114,913	103,027	88,257	96,386	97,371	105,330	98,061	103,263
August	102,200	92,921	89.878	100,761	98,120	94,253	98,689	92,093
September	63,844	56,461	50,925	47,356	51,907	53,051	59,730	54,101
Total	**437,660**	**396,136**	**368,172**	**382,041**	**384,601**	**394,458**	**402,141**	**401,905**

Source: WP&YR

In 2014, railroad revenues were $29.4 million, up 5.2% from 2013. Railroad revenues in 2013 totaled $27.9 million, up 3.2 percent from $27.1 million the previous year. Rail operating expenses are reported as consolidated with tourism and port operating costs. This figure totaled $18.4 million in 2014 which

[38] WP&YR also offers several train/bus combinations that are not listed separately here because the train component is part of the excursions.

was up 1.0% from 2013. In 2013, this figure was $18.2 million, up 5.2 percent from $17.3 million in 2012. The majority of operating costs are presumably attributable to rail operations.

While not reporting on-time performance metrics, the railroad indicated that, if delays occur, they are typically due to equipment failure, rock slides, or avalanches rather than to routine interruptions.

According to its 2013 Annual Report, WP&YR consistently ranks very high in customer service, with a 96.3 percent passenger satisfaction rate in the year.

Commuter Rail

The WP&YR does not offer commuter rail service.

Other Passenger Service

Most of the passengers on the WP&YR are from the many cruise ships that visit Skagway. To ensure that cruise ship traffic is accommodated, WR&PR operates on the Ore Dock, Broadway Dock, and Railroad Dock, allowing the railway to serve up to four cruise ships at a time. The number of rail trips made each day is variable depending on the route, as well as the number and capacity of cruise ships in town.

During the 2012 season, approximately 385,000 passengers traveled on the WP&YR's 1,238 excursions (ClubLink Enterprises 2012). The most popular was the *Summit Excursion*, which carried 60 percent of the season's passengers. An additional 35 percent of passengers traveled beyond White Pass Summit to Fraser, where they could connect to buses for rail-highway combination tours. The *Fraser Meadows Steam Excursion* was offered 30 times and carried 1 percent of passengers. *The Bennett Scenic Excursion*[39] runs the full 67.5 miles of track between Skagway and Carcross and accounted for 4 percent of passengers.

3.2.2.6 Rail Facilities

This section summarizes the WP&YR passenger and maintenance facilities. All of the WP&YR maintenance facilities are located in Skagway.

Passenger Facilities

The WY&YR operates four passenger rail facilities that are described in Table 3-10. In addition, passengers are also loaded and unloaded at the cruise ship docks. Occasionally, passengers are also loaded or unloaded from their Skagway maintenance shops.

[39] Sometimes referred to as the *Yukon Adventure*.

Table 3-10 WP&YR Passenger Facilities

Facility	Amenities	Special Notes
Skagway Depot (Alaska)	Ticket office, gift shop, coffee shop, public restroom, parking lot that can accommodate approximately 15 employees and 15 tour buses, and administrative offices	Planned improvements include the addition of a second floor and a renovation of the interior
Fraser Station (British Columbia)	Public restrooms	
Bennett Station (British Columbia)	Public restrooms, commercial kitchen, dining area, and employee housing	Boarding or alighting point for Chilkoot Trail hikers
Carcross Depot (Yukon)	Ticket office, gift shop, and public restroom	The depot is a Heritage Building[40]

Source: WP&YR

Maintenance Facilities

The WY&YR maintenance facility includes a diesel and steam locomotive maintenance shop, a gas shop, and a paint shop. The facility is approximately 20 acres in size (see Figure 3-16).

Figure 3-16 WP&YR Maintenance Facility

3.2.2.7 Planned Improvements

The WP&YR also plan to conduct bridge/trestle rehabilitation work and continue the repowering of their locomotives.

[40] The depot is subject to the Canadian Heritage Railway Stations Protection Act. A railroad may not alter, demolish, or transfer ownership of a designated heritage railway station without the authorization of the Governor in Council.

3.3 Rail Transportation Economic and Environmental Impacts in Alaska

The rail transportation system has impacts on Alaska's business and industry, as well as on the general public. This section discusses these impacts on the state's economy, air quality, noise, land use, energy, and communities. It also includes a summary of rail safety and security issues in Alaska.

3.3.1 Economic Impacts

The operation of both the ARRC and the WP&YR provides substantial economic benefit to Alaska. This section discusses the economic impacts of both railroads.

3.3.1.1 Alaska Railroad

Although the ARRC is an instrumentality of the state, it is funded primarily by freight and passenger revenues, which are used to fund daily railroad operations. In 2015, freight generated 46 percent of the ARRC's revenue, while passengers, real estate, other revenue, and grant sources provided 17, 7, 1, and 28 percent of the total revenue, respectively (ARRC 2015). Ongoing operations and maintenance of the railroad are funded by operating revenues. Special projects, such as track realignments and new rail extensions, are typically funded by a mixture of federal grants, the railroad's retained earnings, and borrowed money. A summary of the ARRC's finances in 2015 is shown in Table 3-11.

Table 3-11 ARRC 2015 Financial Summary

	Millions
Total Assets	$1,114.1
Total Revenue	$179.0
Operating Expense	$164.4
Net Income	$10.9

Source: ARRC 2015

In 2015, ARRC received Federal Transit Administration (FTA) formula funding to support capital projects (which includes the 20 percent local match provided by ARRC). For capital projects that are not eligible or selected for federal funding internal funds have been reserved. A total of $16.6 million ($13.3 million from the FTA and $3.3 million from the ARRC) will be allocated to repay bonds sold in 2006 and 2007 that funded accelerated track rehabilitation efforts (ARRC 2013).

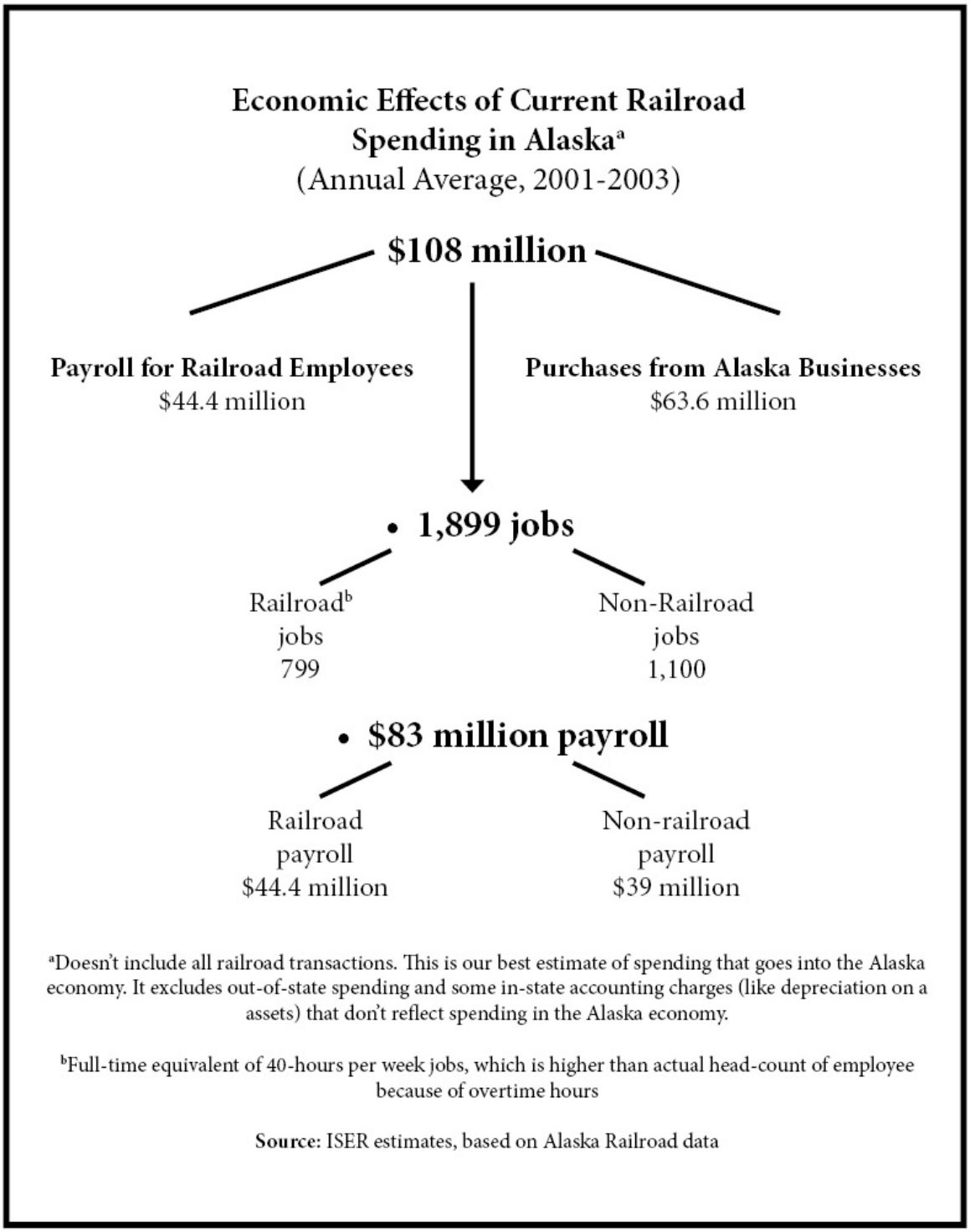
According to the ARRC, as of mid-2012, the ARRC had received a total of $862.2 million in federal funding since Fiscal Year (FY) 1996 via federal government-related programs, such as the FTA, the FRA, the FHWA, U.S. Forest Service (USFS), U.S. Fish and Wildlife (USFWS), Federal Emergency Management Agency (FEMA) Disaster/Mitigation funding, and the Transportation Security Administration (TSA) Port Security. In addition, the ARRC received $84 million from the State of Alaska for the construction of the Tanana River Crossing in 2011 and 2012. The Department of Defense also provided $104 million for the crossing. The ARRC has also received $88.3 million in state funding via programs such as the State Department of Homeland Security, the State Training Employment Program, Seward Dredging, and the Northern Line Extension.

There are significant quantifiable and unquantifiable economic benefits provided by the railroad. In 2004, the Institute of Social and Economic Research (ISER) at the University of Alaska Anchorage (UAA) conducted a study to determine the economic significance of the ARRC. By analyzing the effects of railroad spending, the study found that "most [of the] money the Alaska Railroad spends to operate trains and build facilities stays in Alaska, supporting close to 1,900 jobs and $83 million per year in payroll" (Figure 3-17; Tuck and Killorin 2004).

The ISER study concluded that operations spending alone "directly generates 677 railroad jobs, $38 million in railroad payroll, and $27 million in purchases form Alaska businesses… [which then generates] an additional 650 jobs and $21 million in payroll" (Tuck and Killorin 2004). As of February 2014, the ARRC had 604 year-round employees and 100 seasonal employees. While this study is over 10 years old, the conclusions regarding ARRC's impact on the Alaska economy are still thought to be a reasonable illustration of how the railroad fits into the economy.

The railroad also generates jobs in other sectors of the economy. ISER found that capital spending projects often result in a substantial increase in the number of construction jobs. Conversely, new operations spending often results in additional jobs in healthcare, grocery stores, department stores, or other retail trade businesses (Tuck and Killorin 2004).

Figure 3-17 Economic effects of Alaska Railroad spending



Source: Tuck and Killorin 2004

The ARRC contracted with the McDowell Group to measure the impacts of the railroad's passenger service (McDowell Group, Inc. 2014). The study found that approximately 1,970 jobs were connected in some way to ARRC's passenger service. Of these, approximately 270 are associated with Alaska Railroad

spending (179 jobs were directly involved in providing rail passenger service with another 91 indirect and induced jobs in other organizations), 800 are associated with visitor industry partners, and the remaining 900 are from non-resident passenger spending. This employment is associated with approximately $50 million in labor income. In 2013, the railroad received $28.7 million in FTA grants for which the ARRC would not be eligible if passenger service were not provided. These funds are a substantial component of ARRC's capital and preventative maintenance programs which benefit rail operations. These grant funds also have an impact on employment and payroll. The study indicated that $40 million in railroad-related construction projects would account for about 500 jobs. The ARRC's passenger service is associated with much additional economic activity on the part of cruise lines, excursion and tour operators, national parks, and others. Some of this activity would be negatively affected if the ARRC were to cease rail passenger operations, but the McDowell Group study did not estimate the extent of such impacts.

3.3.1.2 White Pass & Yukon Route

The WP&YR is a privately owned railroad. In 2012, the WP&YR had operating revenue of $36.8 million with operating income of $19.5 million (in Canadian dollars). Their operating expense in Alaska was approximately $16 million, of which approximately $2.2 million was spent on maintenance of way (track and structures).

Being the most popular shore excursion for cruise ship passengers, the WP&YR has a substantial economic impact on Skagway. The railroad is one of the major employers in Skagway. In addition to their year-round employment, many of railroad seasonal workers move to Skagway for the operating season. The WP&YR had 25 year-round, plus an additional 175 seasonal employees, in 2012.

The WP&YR accounts for approximately one-third of the Municipality of Skagway's property tax revenue (Juneau Empire 2000).

3.3.2 Trade and Economic Development

The construction and operation of the Alaska Railroad made both passenger and freight transportation from ports such as Seward and Whittier to Anchorage, Fairbanks, and other communities located on the railroad faster, easier, and less expensive. The development of commercial passenger transportation by air captured much of the inter- and intrastate passenger market, but the railroad's ability to carry large volumes of heavy commodities made, and still makes, certain economic activity possible or significantly more cost-effective in Alaska. In addition, Alaska's location relative to Asia, combined with available rail transportation, makes the export of coal, minerals, and other materials to many markets economically feasible.

As of publication of the ASRP, the Usibelli Coal Mine ships coal to six Interior Alaska electrical power plants: Fort Wainwright (U.S. Army); Eielson Air Force Base and Clear Air Force Station; Golden Valley Electric Association, Fairbanks' electric cooperative; Aurora Energy, a wholesale supplier of electricity and provider of district heat in Fairbanks; and the University of Alaska Fairbanks power plant (Usibelli n.d.). Approximately 900,000 tons of coal were shipped to Alaska users in 2015.

During the summer construction season, gravel is shipped by rail from the extraction sites near Palmer and Kashwitna in the Matanuska-Susitna Valley to Anchorage.

In addition to coal and gravel, the railroad makes it possible to cost-effectively ship construction equipment and other large, heavy loads from the Lower 48 and Canada to Alaska. These types of freight would be much more difficult and expensive to ship by road, and in many cases impossible or cost-prohibitive to ship by air.

It should also be noted that the existence of the ARRC will serve to improve the economic feasibility of certain development projects. Projects located on an existing rail line, or such that a branch rail connection to the ARRC is possible, will be more likely economically feasible than a project requiring construction of all facilities. The mode selected for a resource development project will depend on the volume of product to be carried, the distance from tidewater or other destination, and the length of time the project will be in operation. The greater the product volume, distance, and life of the development, the greater the relative economic benefit provided by a rail in comparison to a road or air link. The existence of Alaska's railroads provides significant impetus to appropriate development prospects.

3.3.3 Environmental Impacts

This section discusses the environmental impacts of rail in Alaska, including air quality, noise, land use, energy, and community impacts.

3.3.4 Air Quality Impacts

Railroads generate the least air pollution per unit of freight carried over land of all the modes of transportation. Movement of more of the state's freight by rail will reduce emissions within Alaska and improve public health relative to trucks. Moving freight by rail instead of truck can reduce greenhouse gas emission up to 75 percent nationally (Association of American Railroads [AAR] 2014a). If 10 percent of long-haul freight in the United States moved by truck were moved by rail, annual greenhouse gas emissions would be reduced by approximately 11 million tons, with a fuel savings of approximately 1 billion gallons (AAR 2014b).

According to the EPA, national total greenhouse gas emissions in 2010 were 6,822 teragrams (trillion grams) of carbon dioxide equivalents. Figure 3-18 shows that while transportation generates 26.9 percent of greenhouse gas emissions, freight railroads produce 2.2 percent of transportation-related emissions and passenger railroads produce 0.3 percent.

Figure 3-18 Rail Greenhouse Gas Emissions, 2010

U.S. Greenhouse Gas Emissions By Economic Sector: 2010

Economic Sector	Tg CO2 Eq.	% of Total
Electric. generation	2,306.5	33.8%
Residential	365.2	5.4%
Industry	1,394.2	20.4%
Agriculture	494.8	7.3%
Transportation	1,834.0	26.9%
Commercial	381.7	5.6%
U.S. Territories	45.5	0.7%
Total	6,821.8	100.0%

Data are in teragrams of CO2 equivalents.

U.S. Greenhouse Gas Emissions from Transportation: 2010

Economic Sector	Tg CO2 Eq.	% of Transp. Total
Trucking	402.2	22.1%
Freight Railroads	**40.0**	2.2%
Waterborne Freight	26.5	1.5%
Pipelines	38.8	2.1%
Aircraft	131.2	7.2%
Recrational Boats	16.8	0.9%
Passenger Railroads	6.2	0.3%
Cars, Light Trucks, Motorcycles	1,138.1	62.7%
Buses	16.5	0.9%
	1,816.3	100.0%

Source: EPA, *Inventory of U.S Greenhouse Gas Emissions and Sinks: 1990-2010*, Tables ES-7, A-113, and A-114. Totals for "transportation" in the two tables do not match because the table on the left includes emissions from sources considered to be transportation but not considered to be passenger or freight (e.g., lubricants).

Source: AAR 2012b

Local air pollution concerns may exist due to increased idling associated vehicles waiting for trains to pass through at-grade crossings.

Recent actions the ARRC has taken to reduce emissions and improve air quality include:

- Switching to ultra-low sulfur diesel fuel in its locomotives;
- Implementing a Locomotive Idle Reduction Program that moves inactive locomotives indoors during the winter, which avoids unnecessary idling and therefore reduces fuel consumption and emissions;
- Purchasing new, efficient locomotives to replace aging locomotives; and
- Switching some of its motor vehicles with natural gas vehicles.

The WP&YR has been taking part in a locomotive repower project, switching to Cummins QSK45-L1 1500 HP engines, to increase its use of clean diesel technologies and to thereby reduce air pollution.

3.3.5 Noise

Train noise has the potential to influence quality of life along rail lines. The FRA requires train locomotive engineers to sound the train horn at least 15-20 seconds before an at-grade road crossing and to continue sounding the horn until the locomotive occupies the crossing. The FRA allows for the implementation of quiet zones[41] where the locomotive engineer is not required to blow the train horn when approaching the crossing.[42] The criteria under which a quiet zone can be established have been outlined in FRA's *Final Rule on Use of Locomotive Horns at Highway-Rail Grade Crossings* (Final Rule),

[41] A quiet zone is section of rail line that has one or more at-grade road crossings at which train horns are not routinely sounded.

[42] When occupying a quiet zone area, railroads are still required to sound train horns when it is warranted by an emergency situation or it is necessary to comply with federal regulations or railroad operating rules (FRA n.d.).

which was made effective on June 24, 2005 and amended on August 17, 2006. Quiet zones are typically implemented at the request of the community, and they require crossing improvements to enhance safety such as four-quadrant gates, medians on approaches along with gates at the crossings, and street closures.

As of October 2015, the ARRC has installed four quiet zones (36th Avenue, C Street, 120th Street, and Oceanview Road crossings) in the Anchorage area. Other ARRC crossings have noise attenuating equipment such as directional horns. There are no quiet zones on the WP&YR.

3.3.6 Land Use Impacts

There are positive and negative impacts on land use resulting from rail operations. In Alaska, dispersed development has resulted in increased traffic and increased use of the road system. An effective passenger rail service has the potential to improve access to city centers. New or refurbished rail stations can attract commercial activities and residential demand, which support more jobs, payroll, and tax revenue. They can also increase the value of adjacent property, and may also lead to transit-oriented development and increased pedestrian activity near the rail station.

Expanding passenger rail service can sometimes avoid the need to create additional highway lanes, freeing funds to be used for other roadway projects and reducing the amount of land converted to transportation use.

However, rail operations can also create land-use issues resulting from noise, air pollution, and potential hazards. Rail yards sometimes conflict with adjoining residential and commercial areas. Rail is the most economical way to transport bulk commodities and natural resources over land. Rail is commonly used to transport bulk fuels and hazardous materials which can create safety concerns along rail corridors. Freight rail access can create new opportunities, however, especially for industrial use. For example, the recently developed Birchwood Industrial Park is a 160-acre industrial site in the northeast portion of the Municipality of Anchorage (MOA) that has rail access.

3.3.7 Energy Impacts

Rail transportation is considered one of the most energy-efficient modes of transportation used to move freight. Trains are typically 2.5 times more fuel efficient than trucks. According to the AAR, in 2011, 1 gallon of fuel moved 1 ton of freight by train an average of 469 miles (AAR 2014a). In contrast, 1 gallon of fuel will move 1 ton of freight only approximately 150 miles by truck (TTI 2012). If 10 percent of long-haul freight that is moved by truck were moved by rail, annual greenhouse gas emissions would be reduced by more than 10 million tons, and approximately 1 billion fewer gallons of fuel would be burned per year in the United States (AAR 2014a).

Moving more freight by rail would also help reduce roadway congestion by reducing the number of trucks using the highways. A single intermodal train[43] can take up to 280 trucks off the road.

The AAR also notes that railroads are also able to reduce fuel consumption by:

[43] Intermodal freight refers to a type of shipment that uses two or more modes of transportation without handling of the freight when changing modes. Trailers and containers are typical examples.

- Increasing the amount of freight carried in an average rail carload and train;
- Using newer, more fuel-efficient locomotives;
- Using computer software systems such as locomotive monitoring systems to increase fuel efficiency and trip-planning software to optimize routing;
- Providing training for locomotive engineers on fuel efficient practices;
- Reducing idling; and
- Implementing new technologies and operational changes.

Some specific policies and practices the ARRC has implemented include:

- Brake and throttle techniques;
- Shutdown policy for trains that will not be used within one hour;
- Isolation policy so locomotives that are not needed to pull a train do not consume fuel; and
- Idle control systems.

The WP&YR has undertaken a locomotive retrofit program to reduce its fuel consumption and energy use.

3.3.8 Community Impacts

Community impacts related to rail transportation include safety, noise, air quality, energy conservation, and highway congestion relief.

Building and expanding a road system is the historical way to reduce congestion, although current practice includes land use analysis and transportation demand management planning. In some cases, roadway construction leads to more usage (i.e., "build it and they will come"). Shifting traffic to rail could be an alternative way to achieve roadway congestion relief. As cited above, an intermodal freight train can haul many truck trailers. Similarly, a passenger train can remove passenger cars from a parallel road. The ARRC estimates that transportation of petroleum, gravel, and coal by train in Alaska has resulted in 339,387 truck trips and 57,419,082 vehicle miles not driven on Alaska's highways in 2013 (ARRC 2014a). In 2014, their freight rail activity carried the equivalent of almost 350,000 trucks. They transported the equivalent of 304,766 trucks traveling 37.4 million highway miles by moving 44,286 hopper and tanker cars. If all of their 2014 passengers (468,661) traveled by motorcoach, it would take more than 13,000 motorcoach trips to transport everyone[44].

3.4 Trends and Forecasts

3.4.1 Demographic and Economic Growth Factors

This section describes the trends that will impact rail needs in Alaska. Trends that impact rail include demographic and economic growth, transportation, and the future outlook by industrial sector. These factors contribute to the projected demand and growth for passenger and freight rail service. The following discussion provides a basis for Alaska's rail service and identifies parts of Alaska's economy that may be served by rail.

[44] Based on an industry average of 36 passengers per motorcoach. Alaska Railroad *QuickFacts*, 2015.

3.4.1.1 Population

According to the U.S. Census, in 2013, Alaska's population was 735,132, which ranks it 47th within the United States. Since 1980, the population of Alaska has increased 83 percent. Table 3-12 shows the trend in population for the main population centers served by the ARRC and the WP&YR, as well as the State of Alaska for the period from 1980 to 2013. The information below was obtained from the ADOLWD (ADOLWD 2014a).

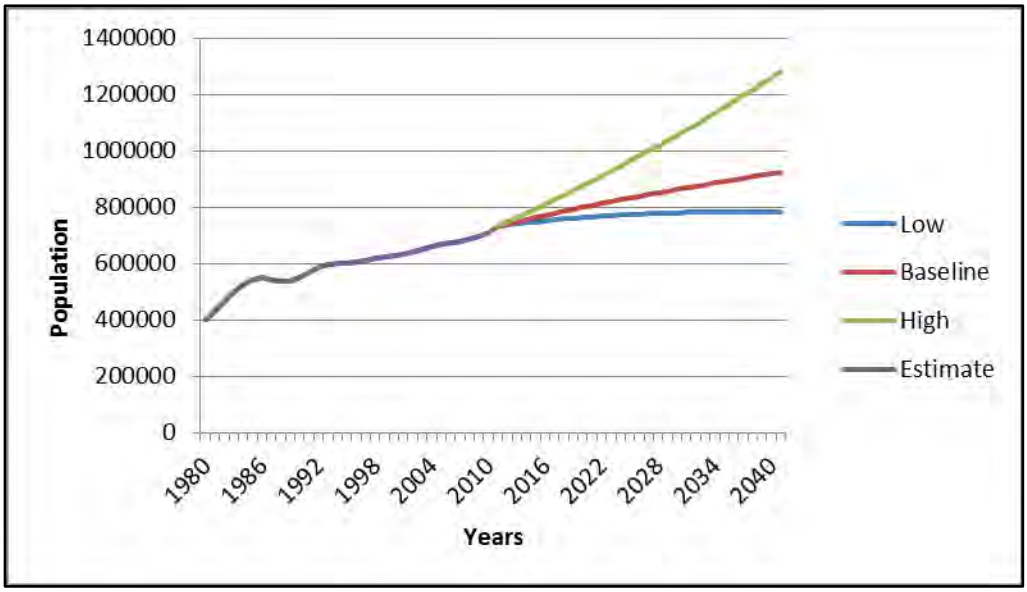
Table 3-12 Alaska Population Growth Trend, 1980-2013

	1980	1990	2000	2010	2012	2013	2014
Municipality of Anchorage	174,431	226,338	260,283	291,826	298,308	300,780	300,549
Matanuska-Susitna Borough	17,816	39,683	59,322	88,995	93,740	95,994	98,063
Fairbanks North Star Borough	53,983	77,720	82,840	97,581	100,243	99,549	97,972
Skagway [a]	768	692	862	920	910	927	983
State of Alaska	401,851	550,043	626,932	710,231	731,191	735,662	735,601

[a] In 2007, the City of Skagway was dissolved and become the Municipality of Skagway Borough. The 2010, 2012, and 2013 populations represent the population of the Skagway Census Designated Place (CDP), which has the closest geographic extent as the City of Skagway. The population in the borough in 2010, 2012, 2013, and 2014 was 965, 959, and 981, and 1,031 respectively.
Source: ADOLWD 2014a

By 2035, Alaska's population is expected to increase even more. The state's population forecasts range from 781,863 (low side), to 885,846 (baseline), to 1,132,642 (high side) (Figure 3-19; ADOLWD 2014b).

Figure 3-19 Alaska Population Growth Scenarios, 1980-2042



Source: ADOLWD 2014a and 2014b

3.4.1.2 Employment

Between 2001 and 2013, employment in Alaska has grown about 14 percent when October 2013 figures are compared to the monthly average in 2001. The figures are shown in Table 3-13.

Table 3-13 Alaska Employment Growth Trends, 2001 and 2013

Wage/Salary Workers	Anchorage/Matsu Economic Region		Fairbanks North Star Borough		Alaska	
	2001 Monthly Avg.	Oct. 2013	2001 Monthly Avg.	Oct. 2013	2001 Monthly Avg.	Oct. 2013
Goods Producing	14,200	18,400	3,500	5,400	38,200	45,500
Services Producing	136,800	160,600	31,100	34,200	250,100	283,800
Total Non Farm	**151,000**	**179,000**	**34,600**	**39,600**	**288,300**	**329,300**

Source: ADOLWD

Statewide, Alaska's total non-farm employment is expected to total 362,200 in 2020, a 10 percent increase over October 2013 (ADOLWD 2013a). The increase equates to a projected average annual growth rate of just less than 1.4 percent over the period.

It is reasonable to assume that Alaska employment will grow in the long term by at least the average annual growth in jobs forecast between 2013 and 2020. Accordingly, the state's total non-farm employment could reach 444,000 in 2035.

3.4.1.3 Personal Income

After a drop due to the Great Recession in 2009, personal income growth has recovered. In 2012, personal income in the Anchorage/Matanuska-Susitna Metropolitan Statistical Area (MSA) was up 11 percent from 2009 (ADOLWD 2013b), growing at a robust 3.7 percent per year. During the 2000–2010 decade, Alaska's personal income grew at an average rate of 4.8 percent. With an inflation rate of 1.8 percent this growth rate yields real growth in personal income (see Table 3-14).

Table 3-14 Personal Income, 2008-2012

Area	2008	2009	2010	2011	2012
Anchorage/Matanuska-Susitna Metropolitan Statistical Area	$48,562	$47,107	$48,442	$50,796	$52,360
Fairbanks North Star Borough	$41,982	$41,705	$41,980	$44,851	$45,432
Municipality of Skagway Borough	NA	NA	NA	NA	$68,730
State of Alaska	$45,145	$44,275	$45,725	$48,114	$49,436
United States	$40,873	$39,357	$40,163	$42,298	$43,735

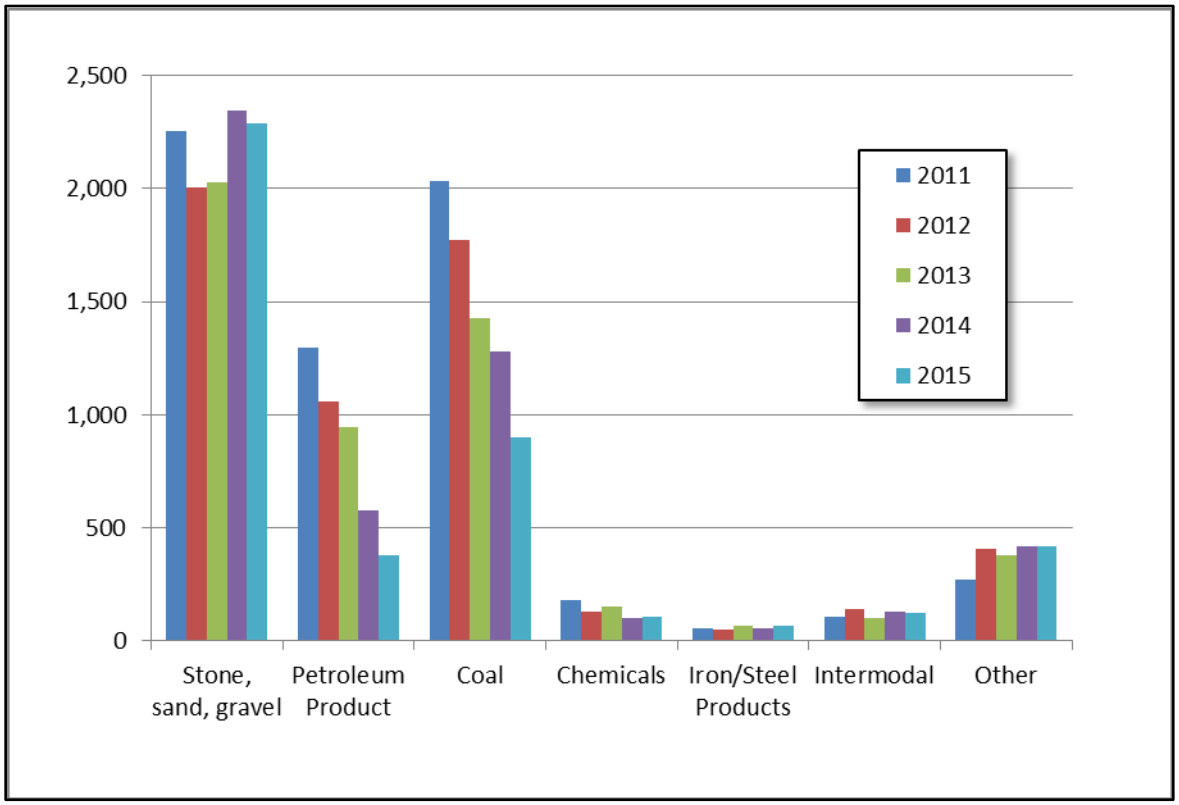
Source: Alaska Department of Labor and Workforce Development, 2013

Based on recent experience, it would be reasonable to assume that personal income in Alaska will grow at a rate roughly comparable to personal income growth in the United States. With most financial forecasters projecting a rate of inflation of 2 percent or less over the next 10 years, continued real income growth, at least in the short term, can be expected. Economic projections of the Federal Reserve Board Members and the Federal Reserve Bank Presidents see a longer term personal consumption expenditures (PCE) inflation rate of 2 percent per year (U.S. Federal Reserve 2013). Accordingly, personal income in the Anchorage/Matanuska-Susitna MSA could exceed $75,000 in 2035.

3.4.1.4 Industrial Outlook by Sector

In recent years, three freight types (stone, sand, and gravel; petroleum products; and coal) have comprised the majority of the tonnage transported by the ARRC (see Figure 3-20).

Figure 3-20 Freight Commodity Tonnage moved by the ARRC, 2011-2015 in Thousands of Tons



Source: ARRC

Outlook summaries for the three largest commodities handled by ARRC in 2013 appear below.[45]

[45] TOFC/COFC is becoming a larger component of the ARRC's revenue stream and is expected compete with petroleum as the third largest commodity for the ARRC.

Stone, Sand and Gravel

During the building season in Alaska, ARRC hauls unit trains of gravel from extraction sites in the Matanuska-Susitna Valley to be processed in Anchorage. The gravel is used for commercial and residential construction, as well as for road construction.

The *2016 Alaska's Construction Spending Forecast* (Goldsmith and Cravez 2016) predicted that construction spending in the state would decrease 18 percent compared to the previous year to $7.3 billion. Of this total, $3.1 billion was forecast for oil and gas construction, a decrease of 25 percent from 2015. Mixed predictions were made for construction sectors served by the ARRC: commercial construction spending to total $0.8 billion; residential construction spending to total $329 million; highway construction spending to total $705 million, and military construction to total $552 million. In the aggregate, spending for these uses would decrease from 2015 levels by about 11 percent.

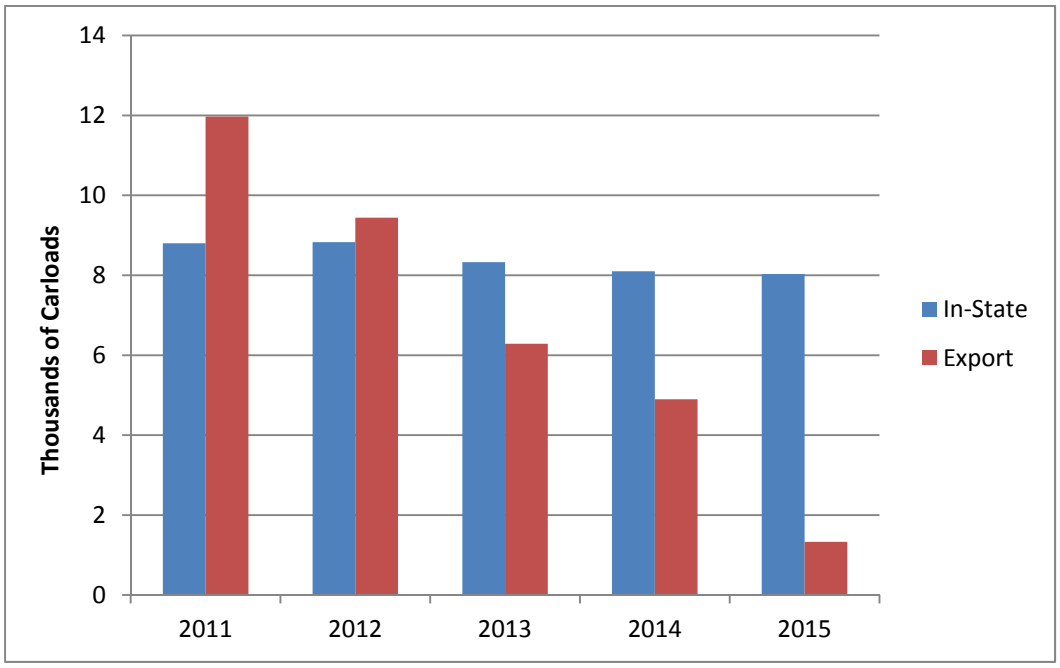
Gravel tonnage handled by ARRC between 2011 and 2015 has fluctuated between 2 and 2.4 million tons with 2014 registering the high year. Depending on the Alaska economy and construction in Anchorage, it is reasonable to assume that overall, gravel shipments can be expected to either remain the same or decrease modestly. The ARRC expects to continue to transport between 2 and 2.5 million tons of gravel for the Anchorage market over the next few years.

Coal

The coal industry is in state of flux in Alaska, and in the United States in general. Coal is one sixth the price of diesel fuel per BTU and is still seen as one of the best fuels for heating and electrical generation, but has lost market to natural gas in the U.S. as gas prices have fallen and the greenhouse gas emissions of energy production have become a focus of concern. There is one producing coal mine in Alaska, the Usibelli Mine near Healy, which supplies six coal-burning plants in the Fairbanks area and has, until late 2015, exported coal via ARRC to the Pacific Rim. In 2015, as recounted elsewhere, the railroad carried 0.9 million tons of coal, about twenty percent of the overall freight by weight carried by ARRC.

Coal consumption and shipment within Alaska has declined slightly, but the erosion of the export market has resulted in coal carloads declining from 20,774 in 2011, of which 57.6 percent were exported (see Figure 3-21), to 9,360 carloads in 2015, of which only 14.2 percent were exported. Exports may resume in the future if natural gas prices increase, making Alaska coal more cost-competitive.

Figure 3-21 Carloads of Export and In-State Coal, 2011-2015



Source: Alaska Railroad 2016

Petroleum Products

Following the construction of what is now known as the Flint Hills refinery in North Pole, jet fuel was loaded on cars at the refinery and off-loaded at the Anchorage fuel rack for commercial aviation at Ted Stevens Anchorage International Airport. The peak year of shipment of petroleum products by rail south from Fairbanks was 2003, when 36,000 carloads containing 800 million gallons were handled. Jet fuel comprised 69 percent of the shipments that year. Volume decreased in subsequent years, to a rate of 17,000 cars per year with 78 percent of the shipments carrying jet fuel in 2012, to nil following the closure of the refinery in 2014.

The PetroStar refinery in North Pole and refineries in Nikiski and Valdez remain, but they either do not have rail service or are not likely to replace the Flint Hills-refined fuel shipped by rail to Southcentral Alaska from Fairbanks. The Flint Hills refinery closure was attributed to the cost of operation in a location without access to natural gas, high cost of Alaska North Slope crude oil as well as the cost of treating contamination that has affected nearby groundwater. The closure has resulted in the shipping of fuels *to* Fairbanks by rail, but not in the quantities that Flint Hills generated.

3.4.2 Freight Demand and Growth

The following section highlights the freight demand and growth patterns for rail in Alaska. The first section provides an overview of the data sources. This is followed by a high level perspective of overall rail movements and commodity flows by direction and then a general picture of the modal movements in Alaska as compared to the United States as a whole. The section concludes with projections for freight rail tonnage growth in Alaska.

3.4.2.1 Freight Demand and Growth

An important function of the ASRP is to identify and analyze the types and quantities of goods that are transported by rail in Alaska. Information about the origin, destination and tonnage of rail freight, in combination with an evaluation of major truck, air, and water movements, facilitates an understanding of intermodal connectivity and the potential opportunities to attract freight movement onto the rail system.

Two primary sources of data were used for this freight and commodity analysis: data provided directly by the ARRC and the FHWA Freight Analysis Framework (FAF).

Alaska Railroad (ARRC): The ARRC is the only freight railroad in Alaska, and it connects to other railroads through port facilities that link marine and land transportation. Data regarding top commodities and rail movements for 2011 through 2015 have been provided directly by the ARRC.

Freight Analysis Framework (FAF): The FAF is a publicly available freight database with geographic coverage of all states and major metropolitan areas. The FAF provides data classified by freight tonnage and freight value as well as mode.[46] It also provides a forecast of freight tonnage and value for each mode. The key limitations are that the FAF has some difficulty with certain sectors such as government movements, and it does not cover through trips. While this latter deficiency can be significant for some states, it is less so for Alaskan rail as the freight rail line does not connect to any other states. There is some uncertainly regarding the results of the FAF data as some of it does not match ARRC information. ARRC data is used for this analysis whenever possible. When ARRC data was not available, FAF data was used to complete the analysis to comply with rail plan requirements.

All freight data provided by the ARRC and FAF classify freight using a two digit commodity code system, which identifies the type of freight moved and assigns commodity descriptions. The remainder of this section provides a description and analysis of freight demand in terms of commodity and geography as well as commodity growth projections. Directional and multi-modal flows will be based on the FAF data, and freight volumes will be based on information provided by the ARRC. Growth projections are based on the FAF forecast with growth rates applied to the ARRC freight tonnages.

3.4.2.2 Overall Rail Movement

The ARRC has provided information on freight rail movements for 2012 through 2015. The data are shown in Table 3-15 below. The 2012 and 2015 information related to rail movement and commodity types is also included in the table.[47] The 2015 data will also be used as the basis for the forecast in Section 3.4.2.8 of this document. The information provided by ARRC shows that in terms of tonnage and railcar trips the three largest commodities moved by rail are stone, sand and gravel; petroleum products; and coal. Despite these commodities accounting for the largest share of overall tonnage, only stone, sand, and gravel, and intermodal have increased.

[46] It should be noted that intermodal freight, that which moves by more than one mode, is represented in the category "multiple modes and mail" in the FAF data. These shipments can include containerized cargo, movements done by both truck and rail, movements by rail and water, etc.

[47] FAF data for 2013 was not available for all modes, so Sections 3.4.2.3 to 3.4.2.7 are based on 2012 information.

Overall, both tonnage and railcar trips decreased—from 5.6 million to 4.3 million tons and 64,600 to 51,400 trips, respectively. Though overall tonnage moved and railcar trips both decreased from 2012 to 2015, movements of stone, sand, and gravel increased by 284,000 tons during this period. This commodity grouping accounted for roughly 36 percent of tonnage in 2012 and 53 percent of tonnage in 2015.

Table 3-15 Tonnage and Railcar Trips on ARRC, 2012 and 2015

Freight Type	Tonnage (000s)			Total Number of Railcar Trips		
	2012	2015	% Change in Tonnage	2012	2015	% Change in Trips
Stone, sand, gravel	2,004	2,288	14.2%	20,037	22,877	14.2%
Petroleum Product	1,057	381	-64.0%	13,899	5,255	-62.2%
Coal	1,770	900	-50.8%	18,266	9,360	-48.8%
Chemicals	130	105	-19.2%	1,671	1,271	-23.9%
Iron/Steel Products	50	70	40.0%	696	1,132	62.6%
Intermodal	140	123	-12.1%	7,380	8,262	12.1%
Other	410	418	2.0%	2,673	3,251	21.6%
Total	**5,561**	**4,285**	**-22.9%**	**64,622**	**51,408**	**-20.4%**

Source: ARRC

The shipments of gravel are typically traveling from gravel extraction sites in the MSB to processing facilities in Anchorage. Coal accounts for the second largest share of rail freight movements in Alaska, decreasing from 32 percent of rail freight in 2012 to 18 percent in 2015. Coal in Alaska is almost exclusively moved by rail, and the overall tonnage of coal is decreasing due to the changing export market. Petroleum products decreased by 676,000 tons between 2012 and 2015, reflective of the decline and end of shipment of refined product south from North Pole. In 2012 petroleum products constituted the third largest share of rail freight, but in 2015 was fourth behind the "other" category of miscellaneous freight.

3.4.2.3 Rail Freight Commodity Flows by Direction

Moving freight by rail provides a number of potential impacts and benefits. This section assesses the major rail trade flows in Alaska as well as the major trading partners. The commodity flow analysis focuses on the different types of flows, freight trends, opportunities for growth, and an analysis of the various commodities shipped. Trade flows evaluated in this State Rail Plan include three major types of rail commodity movements:

- **Inbound:** Freight originating in a location outside of the state with a destination in Alaska
- **Outbound:** Freight originating in Alaska that has a destination outside of the state
- **Internal:** Freight that has both an origin and a destination in Alaska

The data presented in the previous section provides a picture of the overall rail freight tonnage in Alaska, and the following section highlights overall trends based on the FAF data. The FAF data for 2012 show slightly lower total tonnage of rail movements than the information provided by the ARRC. The FAF indicates a total of 5.06 million tons of freight, and the ARRC data indicate a total of 5.56 million tons. This difference may be due to the classification of modal movements by the differing agencies.

While ARRC provides total tonnage information, it does not include information related to the direction of the freight flow. As a result, the analysis relies on FAF data to determine the directional flow of commodities by rail in the state. Overall, the FAF data show that the majority of freight tonnage moved along Alaskan railroad lines moves within the state, meaning that it both originates and terminates in Alaska. This is unsurprising given the lack of a land rail connection to the Lower 48. In addition, intermodal movements are not counted in this data. The following sections highlight the various directional movements by commodity.

3.4.2.4 Inbound Interstate Rail Traffic

According to the FAF data, inbound rail traffic accounted for the smallest share of rail freight tonnage—0.3 percent of traffic in 2012, or 14,590 tons. The vast majority of all inbound rail freight comes from Canada. Based on the two-digit Standard Classification of Transported Goods (SCTG)[48] coding system, the largest share of inbound rail freight tonnage is attributed to the movement of fertilizers that are imported from Canada. These fertilizers accounted for 71 percent of the inbound rail tonnage, more than 10,000 tons according to the 2012 FAF provisional data. The second largest share of tonnage, 9.8 percent or 1,440 tons, is attributable to wood products. The remaining top commodities for inbound rail freight include plastics and rubber, coal and petroleum products, and paper or paperboard articles. Table 3-16 presents a summary of 2012 inbound rail freight according to the FAF data.

Table 3-16 Inbound Rail Freight in 2012

SCTG Code	Commodity	Rail Tonnage (Thousands of Tons)	Share of Inbound Rail Tonnage
22	Fertilizers	10.38	71.1%
26	Wood Products	1.44	9.8%
24	Plastics & Rubber	0.80	5.5%
19	Coal & Petro Products	0.47	3.2%
28	Paper Articles	0.41	2.8%
All Others		1.11	7.6%
Total		**14.59**	**100.0%**

Source: FHWA 2012

3.4.2.5 Outbound Interstate Rail Traffic

According to the FAF data, outbound rail traffic accounted for 1.5 percent of rail traffic in 2012, or 74,500 tons. Based on the SCTG system, the largest share of this outbound freight, nearly 50,000 tons or 67 percent, is crude petroleum. The second largest tonnage is waste and scrap, accounting for 29 percent of tonnage. Other top commodities moving out of Alaska by rail include base metals, cereal

[48] A listing of the commodity codes and their categories can be found in Appendix B.

grains, and plastics and rubber as shown in Table 3-17. However, there is some uncertainly regarding the results of the FAF query. According to the ARRC, their main export commodity is scrap. It is believed that the FAF query results included a unique shipment of petroleum in rail cars leaving Alaska as the Flint Hills refinery output was being reduced. Shipment of refined petroleum products out of Alaska is rare. The Standard Transportation Commodity Code (STCC) code assigned to these shipments reflects the last placarded commodity which is causing the results to be inconsistent with ARRC information[49].

Table 3-17 Outbound Rail Freight in 2012

SCTG Code	Commodity	Rail Tonnage (Thousands of Tons)	Share of Outbound Rail Tonnage
16	Crude Petroleum	49.76	66.8%
41	Waste & Scrap	21.58	29.0%
32	Base Metals	1.86	2.5%
2	Cereal Grains	0.81	1.1%
24	Plastics & Rubber	0.15	0.2%
	All Others	0.33	0.4%
	Total	**74.50**	**100.0%**

Source: FHWA 2012

3.4.2.6 Intrastate Rail Traffic

Intrastate rail traffic is that which both originates and terminates in Alaska. This accounts for the largest share of all rail freight traffic in the state, 98.2 percent of all tonnage in 2012. The FAF does not allow for a breakdown of location within the state, so an understanding of freight directionality or detailed movements by location within the state is not possible using FAF data. Recently, gravel is transported southward while intermodal, coal, petroleum and chemicals are shipped northward. The FAF data varies slightly from the data provided by ARRC for internal freight movements, with the gas and aviation fuel (classified as petroleum products by ARRC) accounting for more than 56 percent of 2012 tonnage. This was primarily the fuel that moved from the Flint Hills refinery to the Ted Stevens Anchorage International Airport. Table 3-18 presents a summary of 2012 intrastate rail freight according to the FAF data.

Table 3-18 Intrastate Rail Freight in 2012

SCTG Code	Commodity	Rail Tonnage (Thousands of Tons)	Share of Intrastate Rail Tonnage
17	Gas & Aviation Fuel	2,787.38	56.1%
15	Coal	1,140.64	22.9%
12	Gravel & Crushed Stone	521.18	10.5%
18	Fuel Oils	385.00	7.7%
31	Nonmetallic Mineral Products	67.82	1.4%
	All Others	69.54	1.4%
	Total	**4,971.57**	**100.0%**

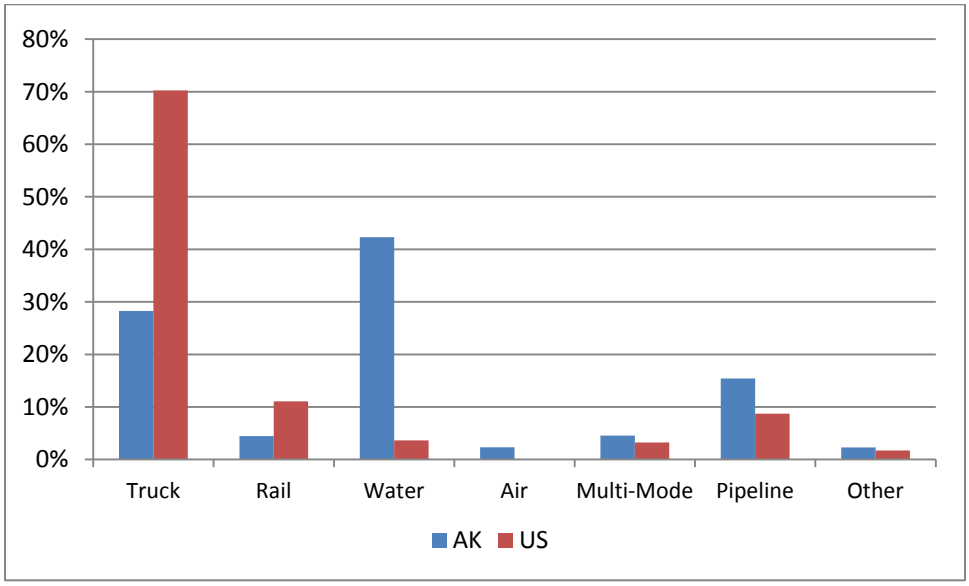
Source: FHWA 2012

[49] It should also be noted that the FAF sample is relatively small, yielding potentially inaccurate results when characterizing traffic moving out of state, itself is a relatively small fraction of ARRC traffic.

3.4.2.7 Freight Transportation by Mode

In 2012, rail freight accounted for 11 percent of total freight movement in the United States—2.2 billion of the 19.7 billion tons moved. According to the FAF data, Alaskan rail freight accounted for the movement of more than 5 million of these tons. This is roughly four percent of the 113.8 million total tons of freight moved into, out of, or within Alaska during 2012. In terms of tonnage, the largest share of modal movements in Alaska is water based, accounting for 42 percent of tonnage. Trucks account for the second largest share of tonnage, 28 percent, followed by pipeline, accounting for 14 percent. Figure 3-22 illustrates the share of freight tonnage carried by mode for Alaska and the United States in 2012. As illustrated in Figure 3-22, Alaska has a significantly higher share of freight moved by water and pipeline than the United States as a whole, and a lower share of rail and truck freight. The high share of water freight movement is largely attributable to the movement of crude oil south from Valdez, and the movement of freight to Southcentral Alaska by ship from Tacoma, WA.

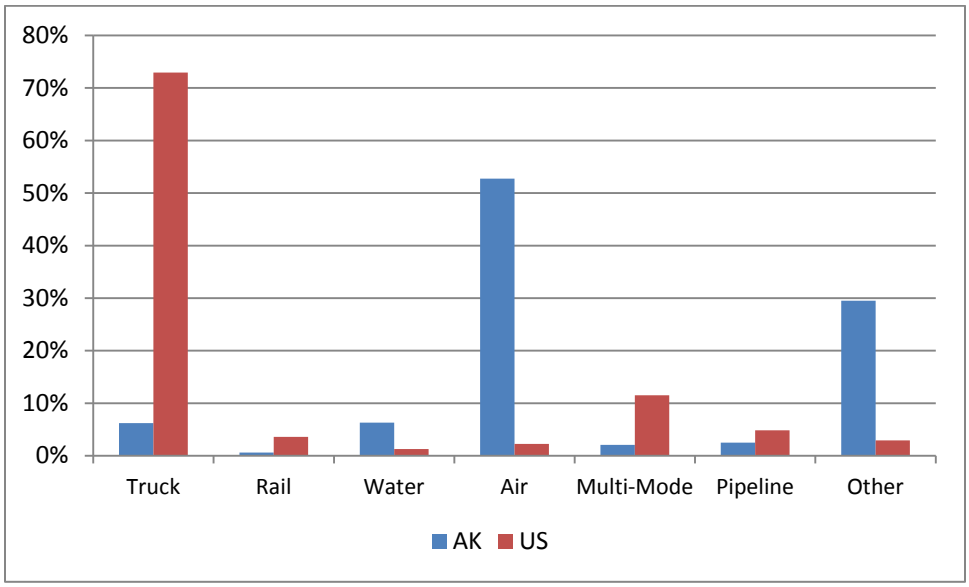
Figure 3-22 Freight Tonnage by Mode for Alaska and the United States in 2012



Source: FHWA 2012

The strong majority of freight value, similar to tonnage, is moved by truck for the United States as a whole (see Figure 3-23). In Alaska, rail accounted for the smallest share of any mode, one percent of all value of Alaskan freight movement in 2012. The largest share of value, nearly 53 percent, was moved by air from various locations around the United States and Canada. This is very different than the remainder of the United States, where air freight only comprises two percent of all freight value and is likely due to Anchorage's role as an air freight hub, and the distance and associated costs required to move goods to Alaska by other modes.

Figure 3-23 Share of Freight Value by Mode for Alaska and the United States in 2012



Source: FHWA 2012

"Other and unknown" makes up the second largest share of value of Alaskan freight. This mode includes freight that is moved by other modes, such as flyaway aircraft, and shipments where the mode cannot be determined. While "other and unknown" accounts for a very small portion of Alaskan freight tonnage, only two percent, this category moves more than 29 percent of value. The largest share of the value of other and unknown modes is domestically moved within Alaska, but is often either imported from or exported to a foreign country. For much of this tonnage, the mode of import or export is known, but the domestic mode, or how it travels through Alaska, is unknown. Since the study is primarily interested in the domestic movements, the freight will remain categorized as "other and unknown," as that is the domestic mode.

3.4.2.8 Rail Traffic Growth

The FAF projection contributes to the future rail freight estimates included in the ASRP. The FAF forecast is based on the 2007 Commodity Flow Survey data and forecast, and uses a reasonable extrapolation of current trends. This forecast does not reflect major changes in the economy, capacity limitations, or changes in transportation costs or technology. Given the changes in the economy since the last FAF projection, as well as the closure of the Flint Hills refinery and the decline in the export coal market, adjustments were made to the FAF projection. Additionally, projected growth rates were applied to the ARRC data to provide a more accurate baseline of existing rail flows. It should be noted that all projections are ***not*** statements of what will happen but of what may happen, given the assumptions and methodologies used in the particular forecasted case. These projections are a function of the estimated relevant growth rates by well-recognized and widely-used sources, but they are incapable of foreseeing unpredictable factors that may have either a positive or negative influence on the projected freight flows. The models used to generate the projections are simplified representations of reality and cannot account for the random and unanticipated events that may happen nor any of the

many uncertainties of the future such as demographics, technology changes, resources, climate change, acts of terrorism, natural disasters, or any other such factors that may alter the estimated projections.

A summary of the projection is provided in Table 3-19. Though coal and petroleum rail tonnage have been declining in the last few years, a modest overall decrease in rail freight movement between 2013 and 2035 is expected based on recent experience, national trends and the expectations from the FAF data.

Table 3-19 Alaskan Rail Freight Forecast, 2013, 2025 and 2035

Freight Type	Tonnage (000s)		
	2013	2025	2035
Stone, Sand, Gravel	2,025	2,124	2,187
Petroleum Product	947	275	199
Coal	1,427	946	946
Chemicals	155	207	264
Iron/Steel Products	70	63	58
Intermodal	104	104	107
Other	382	356	336
Total	**5,110**	**4,075**	**4,097**

Source: FHWA 2012; ARRC; HDR Calculations

According to the FAF data, stone, sand, and gravel products moved by rail have declined slightly from 2007 through 2012, though shipment tonnages are expected to increase at a slow rate from 2015 through 2035. The actual declines as indicated by the FAF provisional and ARRC data are less than the projected declines, but it is reasonable to assume that the slow growth forecast will hold into the future. Thus, the growth rates from the FAF have been applied to the ARRC data.

Petroleum products include aviation fuels as well as other petroleum commodities. The FAF data projected that these commodities will decline in overall freight rail tonnage shipped between 2012 and 2035. This projection did not take into account the closure of the Flint Hills refinery, which led to a further decline in the overall tonnage. The average decrease of 3.2 percent per year in the FAF data is applied to the 2015 tonnage moved after closure of the Flint Hills refinery..

The FAF forecast for coal showed a slight increase in tonnage shipped in the early years, with slowing growth in the later forecast years. The 2013 FAF reported only 2.1 percent annual growth between 2007 and 2015. Given the information in the EIA *2016 Annual Energy Outlook*, and prospects for continued coal use in Alaska, a growth rate of 0.5 percent annually was used and applied to the tons of coal shipped and consumed within Alaska over the next 10 years. This growth rate was applied to the 2015 ARRC non-export coal tonnage to adjust the future projections of coal movement. Both the export and the Alaska markets beyond 2025 are very difficult to forecast; no growth factor was used for these years. This projection does not take into account that it is likely that natural gas will be brought to the Fairbanks area in the next 10-20 years and will replace coal as the fuel for electrical generation in that region.

The same approach of applying the FAF growth rates to the 2013 ARRC tonnage reports was used for all remaining commodities and intermodal tonnage given that the tonnages remained steady through 2015 and these prospects for future growth are reasonable. This provides an updated overall projection of rail freight tonnage based on available information.

3.4.3 Passenger Demand and Growth

Prior to the onset of the recession in 2009, over half a million passengers per year rode ARRC trains. These included passengers riding ARRC equipment as well as tour company customers riding tour company equipment pulled by ARRC locomotives. While ARRC ridership declined during the 2008-2010 period to a low of 405,786 in 2010, it has since partially recovered, reaching 475,034 passengers in 2015 (See Table 3-7).

The WP&YR's ridership is also growing. In 2013, ridership reached 395,000. The 2014 ridership was even higher at 402,141, and 2015 was 401,905 (WP&YR 2016).

Thus, rail ridership in Alaska totaled 870,802 in 2014 and 876,939 in 2015. In Alaska, rail passenger traffic is linked fundamentally to visitors to the state, and is also heavily concentrated during the May to September peak tourism period.

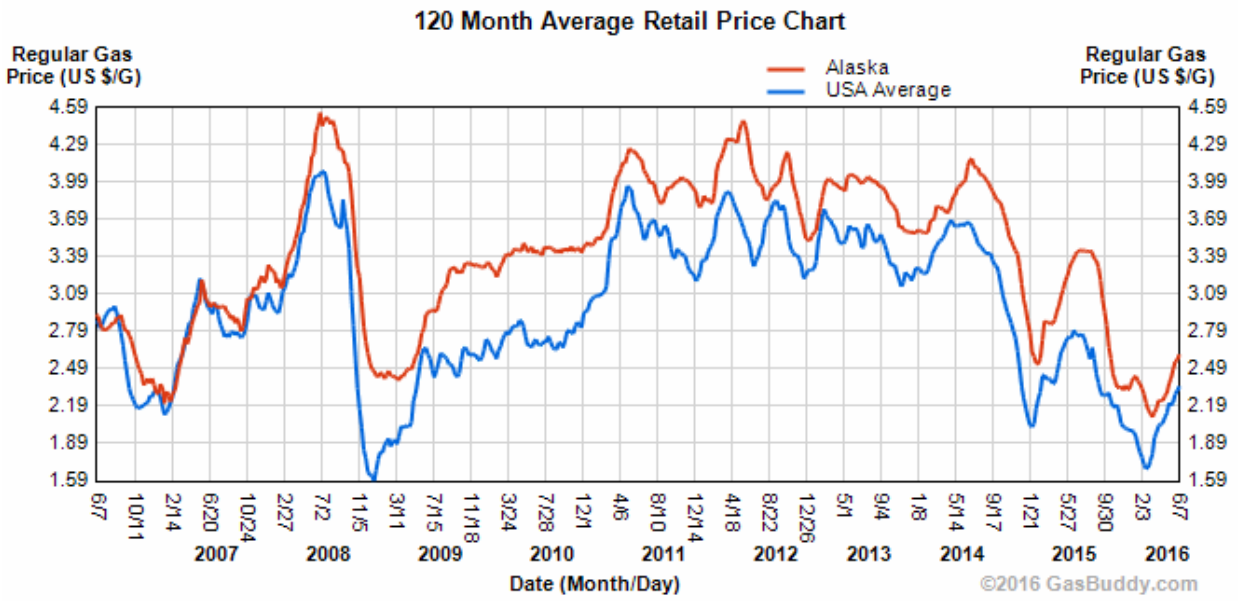
The trend in summer visitor volume across all transportation markets grew 1.6 percent between 2010 and 2011, and another 1.9 percent between 2011 and 2012 (McDowell Group, Inc. 2012). Looking back to 2003, visitor numbers have grown 2.1 percent per year on average, including the downturn during the Great Recession. Thus, a forecast of an average annual growth rate of 2 percent going forward is a reasonable estimate of visitor growth overall and, as a consequence, of rail passenger traffic in particular. Accordingly, by 2035, passenger rail ridership could total almost 1.09 million.

3.4.4 Fuel Cost Trends

Trends in fuel costs (crude oil and regular gasoline) over the last 10 years are shown in Figure 3-24. Costs for fuel rose steadily until mid-2008 before falling precipitously to 2004 levels by the end of that year. Prices rebounded steadily from 2009 until 2011 and remained at roughly $4.00 per gallon in Alaska until the recent price decline to a low of $2.10 per gallon in early 2016. Prices have rebounded somewhat to $2.60 or higher as of the time of this writing.

In Figure 3-24, gas prices are shown for both the Alaska and for the United States averages. Until 2008, the regular gas price in Alaska and the United States average tracked each other closely. Since then, however, the Alaska price has been significantly and consistently higher than the United States average. As a substantial amount of regular gasoline for motor vehicles is refined at facilities in the contiguous United States and then shipped to Alaska, the transportation cost of the fuels is a contributing factor to the difference.

Figure 3-24 Fuel Cost Trends, 2006 to 2016



Source: GasBuddy.com

3.4.5 Rail Congestion Trends

As of April 2016, the ARRC does not have any line sections that would be considered congested. Based on existing and future activity levels, ARRC staff does not anticipate any track being congested by 2035 unless the Southcentral Commuter Rail plan is fully implemented. If commuter rail is operating with frequent (approximately 15 minute) headways, the track between Wasilla and South Anchorage would be considered congested.

The WP&YR can experience congestion on peak days, especially in the depot area when multiple trains try to board/unload passengers and depart in a relatively short time. On peak days, they are operating close to or at their maximum capacity.

3.4.6 Highway and Airport Congestion Trends

Alaska relies on a combination of roads, airports, railroads, and ferries to link the State together as well as to the major population and industrial centers across the United States. In addition to the demographic and economic forecasts and their relationship with future rail freight and passenger levels, other transportation-related trends may have an impact on future reliance for any transportation mode. Factors such as increased vehicle miles of travel (VMT) and congestion negatively impact highway travel and make the rail mode more attractive. The following is a general discussion of these transportation modes.

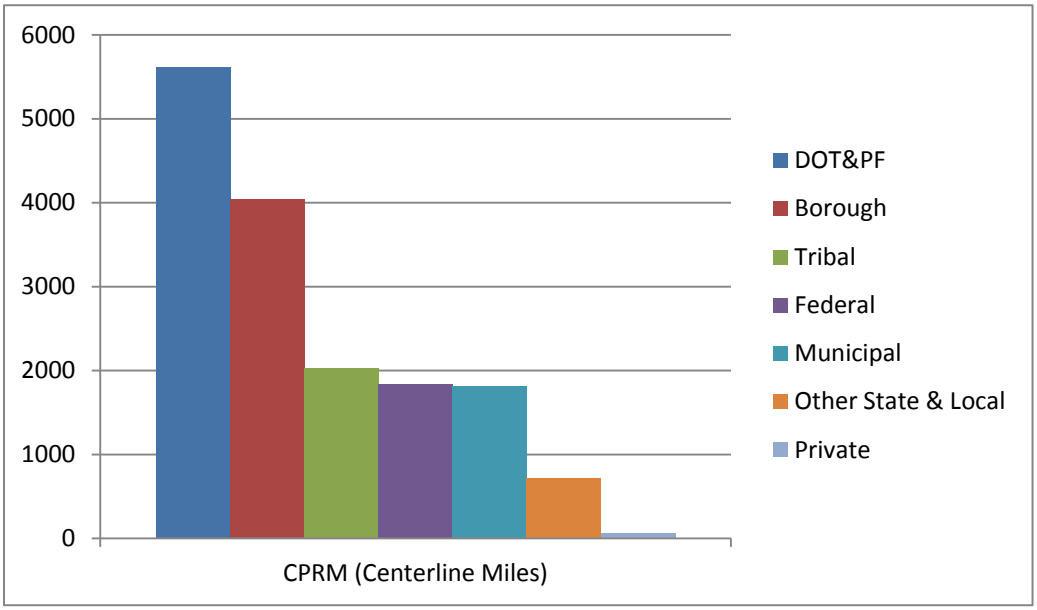
3.4.6.1 Highways

Alaska has 19 boroughs[50] and 355 incorporated cities and CDPs. In Alaska, there are approximately 16,130 miles of roadway (State of Alaska 2015). Of these, 5,612 miles (35%) are owned by DOT&PF,

[50] A borough is an administrative subdivision similar to a county in other states.

4,043 miles (25%) are owned by boroughs, and the remainder are owned by a various municipal, federal, tribal, and other entities (see Figure 3-25).

Figure 3-25 Road Miles by Agency, 2015



Every highway in the state is classified according to its function (i.e., the character of service they are intended to provide; see Figure 3-26). Public roads in Alaska have been organized by DOT&PF[51] into the following classifications:

- Local Road
- Minor Collector
- Major Collector
- Minor Arterial
- Principal Arterial
- Freeway/Interstate

[51] Local communities may classify roads using a different classification system that is not consistent with DOT&PF's system.

Figure 3-26 Functional Classification

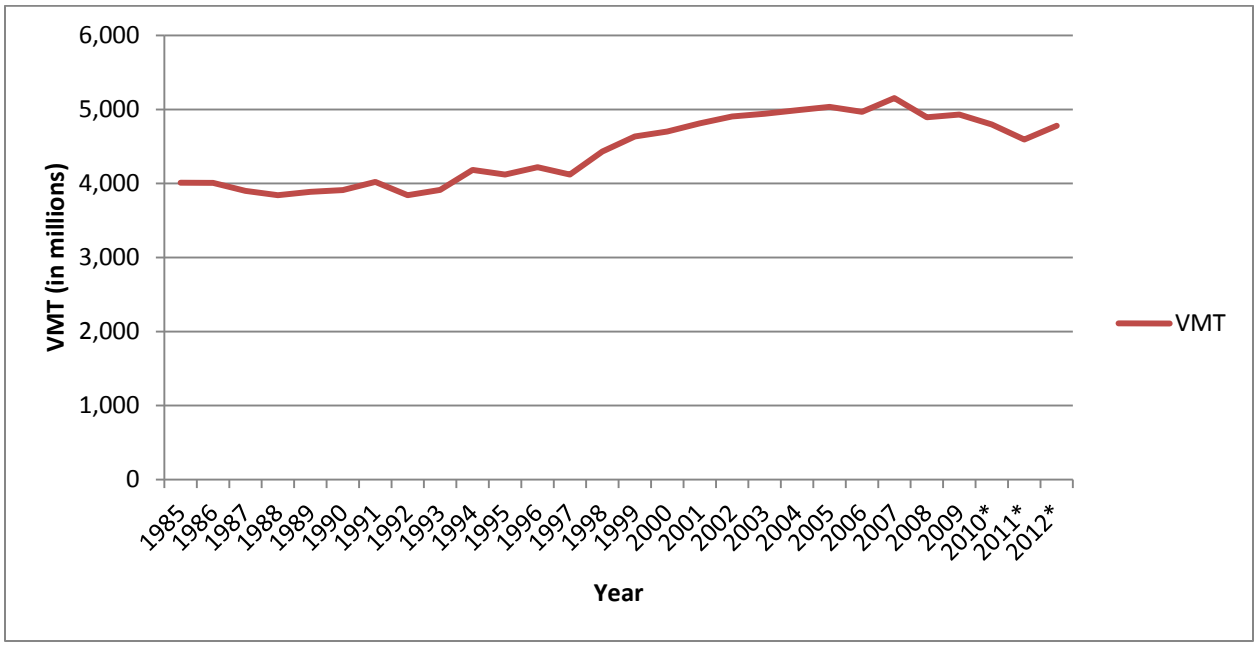
Source: American Association of State Highway and Transportation Officials

Local roads provide access to individual pieces of property. Arterial roads are intended to satisfy the need for mobility by providing high speed roadways over longer distances. The Freeway/Interstate class of roads, which provides the highest level of service, is actually a sub-class of Arterial roadways. Bridging the gap between Local roads and Arterials are the Collector Roads, which possess elements of both.

Most traffic counts are reported in terms of annual average daily traffic (AADT) and represent an estimate of the number of vehicles traveling along a given point on a highway on an average day in the year. VMT estimates, while based on AADT estimates, include the distance traveled element and thus provide a measure of highway vehicle travel usage over a geographic area such as a county, state, or highway system. VMT is routinely used to calculate important statistics including traffic fatality rates, fuel efficiency, and air quality.

Figure 3-27 shows historical VMT in Alaska. Over the past 28 years, VMT has grown and declined from year to year but overall, it is approximately 19.4 percent higher in 2012 than it was in 1985. Nationally, after years of steady growth, VMT has been relatively stable since 2004. Alaska's VMT have behaved similarly, but it remains to be seen whether the improving national economy will result in further growth in VMT or whether the nation and Alaska have entered a new era of stable volumes of auto and truck use.

Figure 3-27 State of Alaska Annual Vehicle Miles of Travel, 1985-2012



Note: Annual Vehicle Miles Traveled (VMT) are from the DOT&PF Highway Performance Monitoring System (HPMS) data for 1985-2012. The 1990-2012 VMT have been adjusted with axle correction factors for all axle counts (*=VMT from HPMS Version 8 Software) Source: State of Alaska 2012

The main highways in Alaska include the Glenn Highway, Seward Highway, Parks Highway, Richardson Highway, Dalton Highway, and Sterling Highway (Figure 3-28). In general, these highways are performing at an acceptable level of service (LOS). However, there are some sections of the Glenn, Seward, and Parks Highways (especially on the urbanized sections near Anchorage, Wasilla, Palmer, and Fairbanks) that have unacceptable LOS during peak periods. By 2035, the level of congestion is likely to increase in areas with growing populations and vehicle travel. The long range transportation plans for Anchorage, Fairbanks, and the MSB describe specific planned improvements to address congestion on these roadways.

Figure 3-28 Highways in Alaska

The rail system's interaction with the highway mode tends to involve intermodal container or trailer transfers where the ARRC generally does the long-haul portion of the trip with trucks being responsible for the movement between the origin/destination and the truck/rail transfer facilities. This type of activity is likely to increase in the future. While trucking has an important role in the movement of freight in Alaska, and the Glenn and Seward Highways parallel the ARRC tracks, trucking is not likely to compete with the ARRC for the movement of bulk commodities.

3.4.6.2 Airports

Alaska has 287 public use land-based airports (Alaska Airports Association 2012). In addition, there are numerous private and military landing areas. There are also thousands of lakes and gravel bars used by float planes and in rural and remote areas. The airports with more than 10,000 enplanements (passenger boardings) are shown in Table 3-20.

Table 3-20 Alaska Airports with more than 10,000 Enplanements in Calendar Year 2013

City	Airport Name	Enplanements
Anchorage	Ted Stevens Anchorage International	2,325,030
Fairbanks	Fairbanks International	457,372
Juneau	Juneau International	321,573
Bethel	Bethel	152,084
Ketchikan	Ketchikan International	109,433
Kenai	Kenai Municipal	99,821
Kodiak	Kodiak	79,930
Sitka	Sitka Rocky Gutierrez	67,989
Kotzebue	Ralph Wien Memorial	61,274
Nome	Nome	58,020
Barrow	Wiley Post-Will Rogers Memorial	51,568
Deadhorse	Deadhorse	48,588
Homer	Homer	37,705
King Salmon	King Salmon	35,450
Unalaska	Unalaska	28,556
Dillingham	Dillingham	26,632
Petersburg	Petersburg James A Johnson	20,046
Cordova	Merle K (Mudhole) Smith	15,772
Aniak	Aniak	14,334
Galena	Edward G. Pitka Sr	14,141
Unalakleet	Unalakleet	14,011
St Mary's	St Mary's	13,949
Valdez	Valdez Pioneer Field	13,318
Wrangell	Wrangell	11,807
Hoonah	Hoonah	10,468
Yakutat	Yakutat	10,135
Haines	Haines	10,106
Gustavus	Gustavus	10,076

Source: Federal Aviation Administration (FAA) 2014

The two largest airports, Ted Stevens Anchorage International (ANC) and Fairbanks International (FAI), are the primary cargo airports. In 2013, Ted Stevens Anchorage International Airport had a landed weight of 16,115,413,052 pounds while Fairbanks International Airport had a landed weight of 125,670,081 pounds (FAA 2014). A significant fraction of the landed weight at the Ted Stevens Anchorage International Airport is attributable to air freight flights between Asia, Europe and North America stopping to refuel in Anchorage. Most of the cargo shipped to or from Alaska by air uses one of these two airports, and is then distributed throughout the rest of the state.

Ted Stevens Anchorage International Airport has recently is completed an update of its Airport Master Plan (AMP) to ensure the airport can maximize its operational efficiency and business effectiveness over the next 20 years. The AMP includes several recommended improvements that will be needed during that time frame.

Fairbanks International Airport completed updating its AMP in December 2014. The airport has done substantial capital expansion and reconstruction over the past 10 years. With these improvements, it is expected that the existing infrastructure will be able to handle the projected level of activity for the foreseeable future. The AMP also includes recommended improvements to guide future airport development.

3.4.7 Land Use Trends

Historically, development in Alaska has occurred along railroad tracks, river systems, the highway system, and the state ferry system. Much of the state is rural with substantial amounts of forest, wetland, and tundra. Large tracts of land are also used for military purposes. In general, all of the cities on the ARRC (the “Railbelt”) have experienced population growth over the past decade with the highest growth in the Wasilla area. Railbelt communities are generally growing faster than rest of the state. The ARRC also serves the three busiest ports in Southcentral Alaska (Seward, Whittier, and Anchorage).

3.5 Rail Service Needs and Opportunities

This section identifies the needs and opportunities for freight and passenger rail service in Alaska. Specific projects relative to these needs and opportunities are summarized in Chapters 4 and 5. A brief discussion of the challenges in funding the improvements is found at the end of this chapter.

3.5.1 Freight Rail Services

As of publication of the ASRP, the ARRC’s freight service relies heavily on the transportation of bulk commodities such as gravel, coal, and petroleum products. It appears that the demand for these services will vary by commodity. Export coal and petroleum volumes have declined but may well rebound in time (see section 3.4.2, above). One potential area of concern is the relatively small number of shippers who provide a significant fraction of the ARRC freight volume. If a shipper closes or switches modes, such as the Flint Hills refinery, the effect on ARRC freight volumes and revenues could be significant. The ARRC has been pursuing other potential clients but the number of prospective shippers is limited. Resource development is very likely the industrial sector with the greatest potential for growth in rail freight.

3.5.1.1 New and Expanded Resource Development

Analysis of past trends and data, while useful for understanding the existing economy, does not adequately tell the story of Alaska's future. There are several new undertakings and development projects to expand existing development underway or with the potential to start soon. The petroleum sector is the broadest (Resource Development Council 2014) and includes:

- Point Thompson – Exxon Mobil has constructed a 22-mile Point Thompson export pipeline, work camps, and other development to bring the natural gas condensate and oil field into production. Point Thompson is considered to be one of the largest undeveloped oil fields in the United States. Condensate production is scheduled to begin in 2016.
- Interior Energy Project – the Interior Energy Project is being developed to bring affordable energy to the Interior of Alaska as quickly as possible. The project involves bringing natural gas from the North Slope or Cook Inlet to Fairbanks, and constructing a distribution network in the Fairbanks/North Pole area. The project is being led by AIDEA with private sector partners. Proposed transportation methods of LNG include trucking or rail freighting natural gas to the Fairbanks region.
- Natural Gas Project from North Slope to Southcentral – This project involves a 737-mile pipeline from the North Slope to the Mat-Su - Anchorage area. The pipeline would also serve the Fairbanks area with a short spur line. This project is also known as the bullet line, the in-state line, and the Alaska Stand Alone Pipeline (ASAP). The project is being sponsored by the Alaska Gasline Development Corporation, a state agency created in 2010. A final decision to proceed with the construction of this pipeline is expected in 2016.
- LNG Plant for export – The Alaska LNG Project is for an approximately 800-mile pipeline between the North Slope and a port in Southcentral Alaska. At the port, the gas would be converted to LNG and shipped to market. Three different groups are considering this type of project.
- North Slope exploration and production of new oil fields for delivery via the TAPS – High oil prices prior to 2014 and other factors led to considerable exploration activity on the North Slope to identify new oil fields. If the exploration results in oil production and market conditions improve, the Trans-Alaska Pipeline has excess capacity that could be used to move this product to market.
- Oil and Gas development on the outer continental shelf – The outer continental shelf is the submerged area between a continent and the deep ocean. The Alaska outer continental shelf is estimated to have as much as 27 million barrels of oil and 132 trillion cubic feet of natural gas.
- Shale oil and gas exploration – Shale oil and gas is a relatively new area of interest in Alaska. A United States Geological Survey study indicated that as much as 80 trillion cubic feet of natural gas and 2 billion barrels of oil could be produced. While this area has strong potential, additional studies are likely to be needed to determine the economic viability of this resource.
- North Slope Foothills oil and gas exploration/production – Past surveys have indicated that there is the potential for oil and gas in the northern foothills of the Brooks Range. Much of the interest has focused on the area between the Dalton Highway and Umiat. To promote more active exploration in this area, DOT&PF studied a proposal to build an all-season gravel road

connecting the Dalton Highway with the Umiat area. As of publication of the ASRP, DOT&PF has suspended work on this proposal pending any expression of interest and involvement from developers and nearby land owners and managers, and direction from State policy makers.

- Development in the National Petroleum Reserve-Alaska – The National Petroleum Reserve-Alaska (NPR-A) is estimated to have approximately 900 million barrels of oil and 53 trillion cubic feet of natural gas. There are numerous leases in the area and exploration is occurring, but production has not begun.

Most of these potential opportunities are located in the northern half of Alaska where there is minimal transportation infrastructure. Any of these developments would require infrastructure to ship pipe and other materials to the site as well as to transport the product from the site to market. Hence most, if not all, of these prospects could require an extension of the ARRC tracks or the development of a new "island" railroad. An interesting prospect that deserves analysis is the construction of a rail extension to the North Slope, which could be used to haul LNG south to Fairbanks and Southcentral Alaska as well as handling crude oil from the North Slope once volumes become too low to be handled in the Trans Alaska Pipeline. The line would also be available to carry freight to the North Slope.

There are also development prospects in the mineral industry that are underway and could result in significant changes in urban and rural Alaska:

- Ambler Mining District - four large copper mine prospects;
- Fairbanks vicinity, Livengood and prospects north and east;
- Mining activity in many locations in the Yukon Territory and British Columbia;
- Mining prospects in Northwest Alaska - the existing Red Dog Mine plus GraphiteOne on the Seward Peninsula;
- Donlin Creek Gold in Western Alaska; and
- Several more sites, including some on the Alaska Peninsula.

In addition to these development prospects, a new deepwater port is being considered in Northwest Alaska to support international ship traffic and resource development. Two potential sites for the port include Nome and Port Clarence. Shipping traffic in the Arctic, through the Bering Straits as well as across the North Slope in the Beaufort and Chukchi seas, is likely to grow in the future. As of publication of the ASRP, the Northern Sea Route is open about 50 days a year; by 2050, this number is expected to increase to 125 (Wynn 2014). Using the northern route would provide shorter trips, thereby reducing the cost of shipping and reducing carbon dioxide emissions, but could have negative impacts on marine mammals and fish.

The existing ARRC system has excess capacity that could be used to accommodate new rail traffic associated with resource development projects. There are no projects currently envisioned where the ARRC would be unable to move the product. However, until one or more projects move forward and demands on the existing rail system are better known, it is not possible to determine how much additional traffic would be generated and what improvements, if any, to Alaska's existing railroads would be needed.

Given the size of these projects, on-going coordination with project sponsors is encouraged as each project could have a substantial impact on Alaska's rail system. Coordination will allow the identification of transportation needs, the appropriate mode to meet those needs, and support the development of a transportation system that meets the needs of future and existing users.

3.5.1.2 Liquefied Natural Gas – Transport by Rail

Summary

Prior to October 2015 federal regulations did not allow rail transport of Liquefied Natural Gas, or LNG. The ARRC successfully applied to the FRA for permission to ship LNG in 2015, and the application was approved in October 2015 for two years. Given that there are economic and safety benefits that could be realized through the shipment of LNG by rail in Alaska, and that LNG is a cryogenic liquid and other cryogenic liquids are currently shipped by rail,[52] Alaska DOT&PF supports rulemaking by the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) to authorize the transportation of LNG via rail for an unlimited period of time.

Background

LNG is growing in popularity as a fuel source because it is inexpensive (about 50% of gasoline or diesel fuel), burns cleaner than other fossil fuels (lower emissions), and is safer (non-toxic, non-corrosive, and less of a fire hazard). Fairbanks and other Alaska communities are seeking less expensive energy alternatives than are currently available. Alaska's extensive North Slope reserves are seen as the ultimate source of LNG, but a gas pipeline to markets in Alaska remains years off. A number of interim solutions are being considered, including shipment of LNG from Cook Inlet sources to Fairbanks and possibly other Alaska destinations.

Under existing federal rail regulations, propane, with similar properties to LNG, can be shipped by rail, either in specially-designed rail cars or in containers which can be moved by trucks, barges, and rail cars. Until recently, LNG could be moved by water and truck, but not by rail. However, in October 2015 the FRA authorized the ARRC to haul LNG for two years. The authorization includes 11 stipulations, including provision of first-responder training, track and equipment inspections, and regular reporting to FRA. The regulation of LNG transportation is shared by four Federal agencies: FRA, the Federal Energy Regulatory Commission (FERC), the U.S. Coast Guard, and the PHMSA.

Over the past four decades, approximately 1,300 shiploads of LNG were exported from Alaska with the majority of them destined for Japan. The Nikiski plant closed in April 2011 due to a fall-off in Cook Inlet gas production and an abundance of gas in the Pacific Rim from other sources. Local electrical generation and heating are considered more important uses than gas exports. It was feared[53] that production would fall off further and that natural gas would have to be imported into the Cook Inlet region. Instead, tax incentives and new exploration have increased gas production in Cook Inlet substantially allowing the LNG plant to re-open in 2014.

[52] For example, ethylene refrigerated liquid (553 shipments in 2013), argon refrigerated liquid (1,643 shipments in 2013) and oxygen refrigerated liquid (45 shipments in 2013).

[53] Alaska Dispatch News Article dated Feb. 10, 2011 http://www.adn.com/article/conocophillips-shuttering-kenai-lng-plant

LNG is being moved by truck within Alaska. Fairbanks Natural Gas operates a 50,000 gallon per day liquefaction plant near Big Lake using Cook Inlet gas that is delivered through the ENSTAR pipeline running to the railbelt from the gas fields in northern Cook Inlet and onshore gas fields near Tyonek and Beluga. The LNG is then trucked to Fairbanks where the company has about 1,000 customers. The trucks are special LNG carriers and about six trips a day are made to deliver the gas.

Shipment of LNG

While there is a history of gas export from Alaska and renewed interest in future gas exports, the more immediate concern is the movement of gas to customers within the State of Alaska and to potential customers in Yukon and British Columbia. The transportation of LNG is little different than the movement of propane, shipped as Liquefied Propane Gas or LPG. A key difference between the two gasses is that when released into atmosphere as gas, natural gas is lighter than air and will eventually dissipate with a small window of danger from ignition. Propane is heavier than air and will gather at low points and remain a danger of fire or explosion for a longer time.

LNG is highly compressed natural gas. The condensing process is a complicated application of pressure and cooling that reduces 600 gallons of gas (at room temperature) to one gallon of liquid that weighs approximately 3.5 pounds at -260 F. The temperature must be maintained to sustain the reduced volume. The light weight means that there are options available for transporting the fuel. One method of transportation is the "isotainer," typically a 40-foot long package that contains a double-walled containment vessel that holds 10,000 gallons of chilled, liquid gas. It is set in a steel shipping frame that protects the containment vessel and provides the means for moving and stacking similar to a 40-foot container. At about 65,000 pounds per isotainer, ARRC advises that two of these isotainers could be placed, end-to-end on a 95 foot flatcar and the combined load would still be safely below the current 263,000 pound limit.

One company[54] proposing to do LNG business in Alaska indicates that once filled, an isotainer can be transported to a customer location and will hold the cargo for up to three months without external energy needed to maintain the refrigeration, provided that the temperature within the tank remains constant.[55] The frame enables the isotainers to be moved and stacked in the same way that ordinary cargo containers are stacked on barges and in staging yards.

Shipment of LNG by Rail in Alaska

The Interior Energy Project, under the management of Alaska Industrial Development and Export Authority (AIDEA), is a state-sponsored proposal to build a 300,000 gallon per day LNG plant at Deadhorse.[56] The LNG would then be trucked 509 miles to Fairbanks where it would be used primarily

[54] WesPac, Midstream, personal communication.
[55] The temperature within the tank will remain constant if the pressure is kept constant by allowing the boil off gas to escape from the tank. This is known as auto-refrigeration. The boil-off gas is collected and used as a fuel source in the facility or on the ship transporting it. When natural gas is needed, the LNG is warmed to a point where it converts back to its gaseous state. This is accomplished using a regasification process involving heat exchangers.
[56] April 23, 2013 AIDEA *Engineering Brief*
http://www.interiorenergyproject.com/Resources%20and%20Documents/Final%20Engineering%20Brief.pdf

for space heat. This will increase truck traffic on the Dalton Highway.[57] While there is no opportunity to move this gas by rail, there are competing ideas for substantially increasing the availability of gas that originates from Cook Inlet and it is this potential that could involve rail transportation.

Elsewhere, this plan describes the difference in the cost of moving freight by truck and rail. Cost is not the only factor that determines how a freight customer decides which mode to use, but it is a key factor. In the case of LNG, a much larger plant than the Fairbanks Natural Gas plant could be built at Port MacKenzie and LNG could be shipped by rail when the Port MacKenzie Rail Extension is completed.[58] The recent approval of ARRC's request to ship LNG by rail in Alaska will make it possible to move LNG to Interior Alaska as economically as possible until a gas pipeline is constructed.

Alaska has an interest in making this resource available for use within as much of the state as possible. The key reason the ARRC sought approval for shipping LNG by rail is economic. Reducing the cost of fuel in the Tanana Valley and many other parts of the state is a widely supported public policy objective. Other benefits to shipping LNG by rail include:

- Limiting the introduction of additional LNG-carrying trucks onto the Alaska Highway system.
- Reducing the growth in the number of trucks on the highways avoids increased congestion (and associated air pollution/emissions), and wear and tear on the highways.
- Transporting LNG by rail will increase the separation of the containers from the general public and other vehicles which will reduce the public safety risk. In general, transporting hazardous materials by rail is safer than by truck. Nationally, in 2014, there were 699 rail hazardous materials incidents compared to 14,735 associated with highways (USDOT, 2015).
- Air quality in the Fairbanks area will improve if natural gas can be used to replace other fuels such as wood burning that cause chronic winter air quality problems.

3.5.1.3 West Susitna Access

DOT&PF published a reconnaissance study in early 2014 that reviewed the need for surface access from the current road and rail system to the lower western Susitna Valley. There is such access (highway only, not rail) over 70 miles up-river from Cook Inlet, but the study shows that it would be easier to create a new access link lower on the river, most likely just below the confluence of the Susitna with the Yentna River, about 25 miles north of Cook Inlet. The countryside is relatively flat on

Figure 3-29 West Susitna Access

[57] From the AIDEA Engineering Brief: To deliver LNG during the peak demand period in the winter of 2015-16, approximately seven 10,500-gallon trailers will be on the road at any one time, which will necessitate a minimum of 10 units in the fleet. By 2025, the maximum (January) number of trailers on the road will increase to an estimated fleet size of approximately 90 10,500-gallon trailers.

[58] Shipping by rail in this scenario would be possible even before the Port MacKenzie Rail Extension is available. The new LNG plant would be 30 miles from the existing ARRC siding at Houston and LNG in isotainers could easily be trucked to Houston and then delivered anywhere on the ARRC.

both sides of the Susitna, and it is reasonable to envision a rail extension across the river to service the many mineral and energy prospects that abound on the west side. Just one of these, Canyon Coal, could produce 5 million tons of coal per year and one way to export coal in that quantity could be with a rail extension that delivers coal to Port MacKenzie (see discussion under *Coal* in Section 3.4.1.4).

3.5.1.4 Knik Arm Crossing

The idea of building a crossing over Knik Arm that would connect Anchorage to the MSB has been a concept under consideration for many years. The highway crossing would come ashore northeast of the newly established Port MacKenzie staging area and dock. The prospect of including a rail link as part of the crossing was discussed in the run-up to applying for state and federal permits. Throughout, the development of the crossing was limited by funding and permitting complications from including a rail component. The development and design process has evolved nearly to completion, although in 2016 state decided to suspend further project development.

The prospect of a rail crossing of Knik Arm should not be discarded entirely. There are several benefits to such an idea. Most obvious benefit, assuming the PMRE is completed, is a 35 mile reduction in the main line distance between Anchorage and Fairbanks. The new route would include much faster and straighter track. Train running time from Anchorage to Fairbanks could be reduced by as much as an hour. Trains would be rerouted away from two military bases and the busy Wasilla town center, and access would be broadened to include a rail connection between the Port of Anchorage and Port MacKenzie.

A rail crossing of the Inlet would also create an opportunity to relocate the ARRC main rail yard out of very valuable downtown land along Ship Creek in Anchorage to the central MSB area soon to be served by the PMRE. This would give ARRC growing room and a more efficient central rail yard designed from the ground up, and will allow conversion of the Ship Creek rail yard to other uses.

3.5.2 Passenger Rail Services

Passenger transportation in Alaska is primarily by private automobile and air. Alaska's low population densities, long distances and rugged environment have impeded development of a road system comparable to other states. Travel to communities not on the road system is primarily by air while other parts of the state use a combination of roads, air, and ferries. There is passenger rail service between Seward and Fairbanks (see 3.2.1.4), but the frequency of the service and length of the trip in comparison to air and road travel results in a rail passenger market consisting primarily of visitors and other vacationers. There is, however, considerable interest in using rail for urban commuter trips, especially in Southcentral Alaska and Fairbanks. Of the prospects, Southcentral Alaska commuter service has been studied the most and may have the most potential to be implemented in the near future.

Commuter rail offers many benefits compared to commuting by automobile including being an energy-efficient way to travel, less air and noise pollution, and increased safety. Commuter rail can also decrease congestion, and have a positive impact on property taxes and development. Commuters also save on vehicle operating costs and are able to spend their commuting time engaging in reading or work. Developing commuter rail also offers increased mobility in the area because it provides another

transportation alternative to the automobile. In addition to providing drivers with a choice, it also provides more transportation options to people who are unable or chose not to drive. The ARRC, the MOA, the MSB, and DOT&PF are all supportive of commuter rail service in Southcentral Alaska.

The track to support this type of passenger service is largely in place; however, improvements are needed to meet the needs of commuters, including faster travel times. There are several challenges to providing these services. Most riders will have to drive or take a local bus to and from the rail stations, so commuter rail needs to be appealing enough overall to entice commuters to use the system. Developing a viable regional funding strategy is another challenge as revenues from commuter rail will not cover the cost of operating the service. An additional need is for new shuttle service in Anchorage to connect commuters between the rail station and their final destination. For more information about commuter rail, please see Section 4.2.1 and Appendix C.

3.5.3 Tourist Rail Services

WP&YR is Alaska's only purely tourist railroad, highlighting the history of the Klondike Gold Rush. Most of WP&YR's passengers are from one of the many cruise ships that dock in Skagway each summer. WP&YR competes with other shore excursions for business. The WP&YR success largely depends on the number of cruise ship passengers arriving in Skagway. WP&YR's major concerns are keeping their track and equipment in a state of good repair and retaining their trained, reliable workforce. The WP&YR operates seasonally, so their employees are a combination of year-round and seasonal positions. The biggest challenge to filling their seasonal positions is not the lack of qualified workers, as many people from across the country want to work for the railroad, but the lack of affordable housing in Skagway to accommodate the influx of summer workers.

3.5.4 High Speed Rail

According to the US Code, high speed rail is rail service that is reasonably expected to reach sustained speeds of at least 125 miles per hour. However, the term high speed rail is defined differently by different rail authorities. As of October 2016, there were no plans for the development of high speed rail in Alaska.

3.5.5 Rail Financial Needs

Developing a funding strategy to support rail transportation is essential to maintaining and expanding existing service as well as undertaking new services. Freight rates are expected to cover the cost of carrying new freight commodities and contribute to the railroad's overhead and profit. A funding strategy can take many forms as demonstrated by experience in other states. The most consistent is a flow of funds for capital support provided by a reliable source. In Alaska, the railroads use their own funds in combination with federal funds to pay for rail improvements. State funds have primarily been used to support planning projects and road-rail crossings, but have also been used on some construction projects such as the Tanana Bridge. In general, Alaska's rail infrastructure shows no major deficiencies that prevents the railroads from operating. However, there are several issues that limit their ability to operate at its full potential. These issues include:

- PTC requirement
- Deferred maintenance
- Numerous bridges need to be upgraded to meet the 286,000 pound railcar weight limit, the AAR standard
- Tunnel height restricts double-stack service south of Anchorage
- Numerous at-grade crossings
- Speed restrictions due to track curvature near Wasilla and Nenana

To implement the state's vision, public investment in rail should be directed toward rail-related economic development opportunities (e.g., access to new customers or markets), improving the level of service, and—as opportunities arise—the expansion and reach of its rail network. A designated funding source, with the flexibility to direct grants or loans to strategic rail projects on a statewide basis, would provide the state the means and opportunity to address many of the issues noted above over a reasonable period of time.

4 Passenger Rail Improvements and Investments

4.1 Introduction

The purpose of this chapter is to describe the improvements and investments that could address passenger rail needs in Alaska. Funding is a critical issue for the State of Alaska to maintain and expand its passenger service. Since continued operation of passenger service will be dependent on successful completion of a PTC system for the ARRC, and the cost of PTC system development is well beyond ARRC's ability to fund internally, additional financial investment needed for the PTC program is the most critical near-term issue. The initiation of commuter rail service between the MSB and Anchorage and within the Fairbanks/North Pole/Eielson Air Force Base area is also of great interest.

Proposed improvements to Alaska's rail passenger network are discussed below. This section is split into three sections: new, short-term, and long-term initiatives.

4.2 New Passenger Rail Initiatives

4.2.1 Commuter Rail in Southcentral Alaska

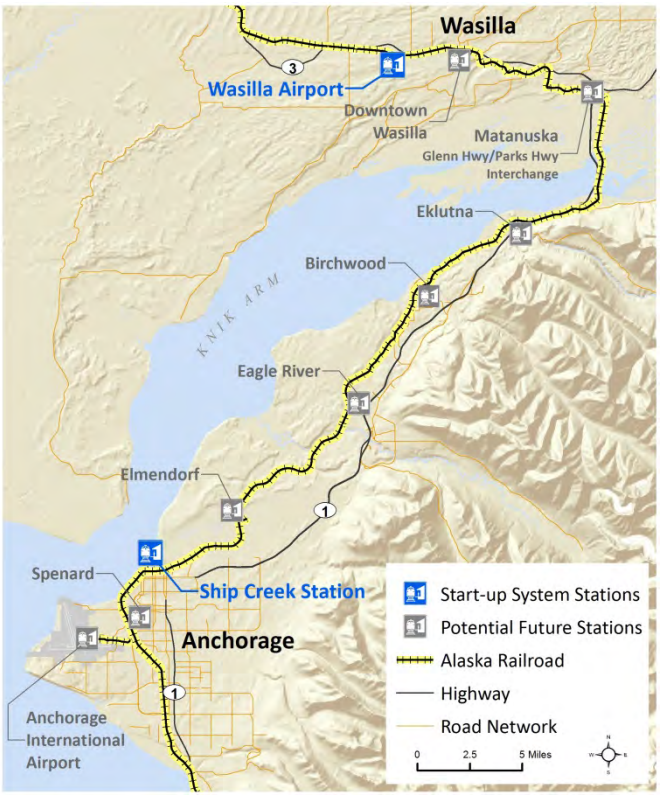
The concept of commuter rail service between Anchorage and the MSB has been studied by the MOA, the MSB and the ARRC (1979, 1988). Service between Girdwood and Anchorage was studied by the MOA in 1994 as part of development of the *Turnagain Arm Comprehensive Plan*. In 2002, the ARRC sponsored the *South Central Rail Network Commuter Study and Operation Plan*, which, in addition to service between the Matanuska-Susitna Valley and Anchorage, explored service between Girdwood and Anchorage (Wilbur Smith Associates, Harding ESE, Debbie Bloom Consulting, Nancy Whelan Consulting, and Craciun Research Group 2002). The ridership element of that study was updated in 2009 with the *Wasilla-Anchorage Commuter Rail Concept of Operations*, a technical memorandum prepared for ARRC. The early studies concluded that three requirements would need to be met before commuter service could be initiated—there would need to be 10,000 or more commuters per day between the Matanuska-Susitna Valley and Anchorage, the track between Wasilla and Anchorage would need to be realigned to achieve competitive train speeds, and a commuter service-specific labor agreement would be needed to achieve labor costs appropriate for short-run train service. The key remaining requirement to be met is the straightening of track between Matanuska and Wasilla (see Figure 4-1), which would support competitive running times from Wasilla to Anchorage.

During the first round of public meetings for the ASRP, it was clear that commuter rail was of interest to many meeting participants. In addition, members of the ASRP's Steering Committee and TAG expressed interest in the possibility of commuter rail in Southcentral Alaska. In response to that interest, an update of the 2009 conceptual operating plan was developed as part of the ASRP (see Appendix C). The conceptual plan was based on two stations (Wasilla[59], and Ship Creek; see Figure 4-1), with three southbound peak period trips in the morning, the reverse during the evening peak period, and one mid-day round trip. The trip from a new Wasilla station near the Wasilla Airport to Ship Creek would have a

[59] As of May 2014, this station is under development.

run time of approximately 49 minutes.[60] In the 2009 conceptual plan and the update in appendix C, the rolling stock for this service is assumed to be self-propelled rail cars, however some other equipment may be used. The cars would have level boarding to speed up the boarding/unloading process. With this scenario, it is estimated that total weekday ridership could reach 1,650 by 2020.

Figure 4-1 Potential Commuter Rail System



To handle this projected ridership, the commuter rail service would require a three-car trainset that costs approximately $9.5 million in 2014. Three trainsets plus one spare would be needed, bringing the cost for rolling stock to approximately $37 million. While using ARRC equipment would be possible, it would limit commuter rail service as the ARRC is already at capacity with its existing passenger fleet. Using ARRC equipment for a demonstration project during the winter months when there is less demand for ARRC equipment may be possible.

The stations are assumed to accommodate approximately 100-500 vehicles as well as accommodate transit and a passenger drop-off/pick-up area. Stations would have an enclosed waiting room and electronic ticket vending machines. Stations may also include other amenities such as bike racks. Each station is anticipated to cost between $1 and $5 million.

[60] This run time assumes an average speed of 58 miles per hour. This speed is comparable to other commuter rail services, and it assumes that the track straightening between Matanuska and Downtown Wasilla has been completed.

It is estimated that the service could cost approximately $6.3 million per year to operate. Annual fare box revenue is estimated at $2.7 million, producing an operating subsidy of approximately $3.6 million per year. Given the projected revenue and operating costs, the fare box recovery for the commuter rail service in 2020 would be 43 percent. This is similar to the fare box recovery ratio achieved by other commuter rail systems. The capital cost to implement the "start-up" phase of commuter rail is estimated at $45.7 million ($5.3 million in station improvements, $38 million for equipment, $2 million for a layover facility, and $0.4 million for testing.

The operating plan for the commuter rail services assumes a Regional Transportation Authority (RTA) will be created to sponsor the service. For additional information about the RTA, please see Section 4.2.2. It is assumed that the ARRC would operate the commuter rail service on behalf of the RTA, but a third party could be hired to operate commuter rail on the ARRC tracks.

While not required to operate commuter rail, the South Wasilla Rail Line Realignment would benefit the service as it will reduce the run trip by up to six minutes and eliminate multiple at-grade crossings. For additional information regarding this project, please see Section 5.2.4. The Ship Creek Intermodal Transportation Center (see Section 4.5.1) would also benefit commuter rail in the long term.

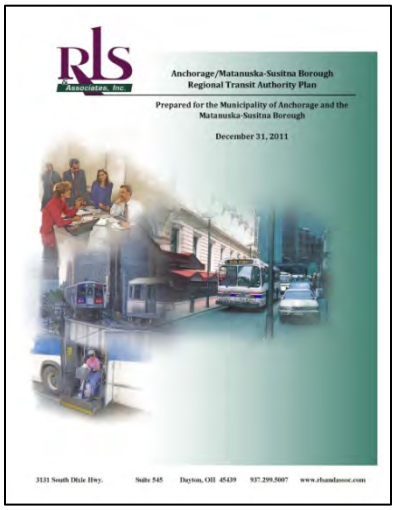
The next steps to implement commuter rail include:

- Coordination with the MOA and MSB
- Formation and funding of the operating authority
- Consultation with ARRC to verify run time and needed improvements
- Demonstration of service
- Construction of facilities and equipment purchase

Prior to or coincident with consideration of the establishment of an regional transit authority for the purposes of commuter rail, a multi-modal corridor planning study should be conducted for the Glenn Highway between Anchorage and the Mat-Su, detailing the costs of commuter rail alongside the costs of adding more lanes and other improvements to the Glenn Highway. The study should also outline the possible funding scenarios with the cooperation of the DOT&PF, Mat-Su Borough, Anchorage, AMATS and the ARRC. For additional information about the creation and operation of rail commuter service between Wasilla and Anchorage, see Appendix C.

4.2.2 Establishment of Regional Transit Authority (RTA)

ARRC's 2002 *South Central Commuter Rail Network Commuter Study and Operation Plan* recommended forming a RTA as a critical first step to establishing commuter rail. In order for regional commuter systems to be effective, links between communities must be planned and implemented with coordination between local governments and their transit systems, such as the Anchorage People Mover and Mat-Su Community Transit (MASCOT) systems. An RTA makes such coordination possible, along with coordinated support from state, federal, and private sector partners.



Both the MOA and MSB acknowledge RTA's crucial role in developing a regional commuter strategy to better serve thousands who regularly commute between the two communities. Both entities participated in the *Anchorage/Matanuska-Susitna Borough Regional Transit Authority Plan,* which studied the creation of a RTA (RLS & Associates 2011).

The plan identified the preferred RTA for the region as one in which the RTA would operate new transit service while existing transit services would be operated as they are today. The RTA would have the option to contract with People Mover, MASCOT, or others to operate the new transit service. New funding would be needed to operate the RTA as well as for the operation and maintenance of the new services.

An alternative RTA structure would be one organization that manages multiple transportation modes. An example is Sound Transit, which provides ST Express Bus, Link light rail, and Sounder commuter rail services in the Seattle area. Such a model applied to Anchorage would have People Mover, MASCOT and the South Central Alaska commuter rail operated, coordinated, and funded by one organization.

As of October 2016, Alaska does not have legislation enabling the creation of RTAs. RTA legislation was introduced in the 2009 and 2015 sessions of the Alaska Legislature but not passed.

4.3 Regular Maintenance and Improvements

The railroads routinely conduct maintenance activities, as well as some capital improvements to keep their infrastructure and equipment in good condition. These projects are typically considered part of their annual operations program and are within the railroad's ability to fund. Examples of this type of project are described below.

4.3.1 ARRC - Passenger Rolling Stock Rehab

The ARRC is actively upgrading older rolling stock to maintain passenger operations in Alaska. Typical projects include repainting and interior restoration of coaches, rehabilitation of railcar trucks, and rebuilding of passenger locomotives. This project is expected to cost approximately $2.6 million over the next five years and is partially funded by the FTA.

4.3.2 ARRC - Bank Stabilization Program

Bank stabilization involves the placement of approved materials (e.g., rip rap) to protect shorelines, bridge abutments, and similar structures from scour, water, or ice erosion (see Figure 4-2). As there are numerous spots where the ARRC has track near a stream or other water body, there is a need to continually fortify areas to protect their infrastructure. Bank stabilization work locations vary from year to year and depend on the effect of water on track and structures. Between 2014 and 2019, the ARRC is anticipated to spend approximately $3.1 million on bank stabilization.

Figure 4-2 Bank Stabilization along the Susitna River

4.3.3 WP&YR - Continue the Remanufacturing of Passenger Locomotive Fleet

The WP&YR is rebuilding and upgrading existing equipment, specifically locomotives. The remanufactured locomotives will have more powerful engines and will reduce exhaust and visual emissions. Additionally, there is renewed interest from WP&YR in procuring new locomotives for increased operational efficiency.

4.3.4 WP&YR - Continue the Installation of Heavy Rail within Heavy Grade Territory

This project continues the WP&YR practice of installing heavier-gauge rail on the steepest sections of the railroad. Original rail laid was less than 100 pounds per yard, typical for narrow gauge railroad construction at the turn of the 20th century. The heavier rail is better able to withstand the forces exerted on the rails, especially in areas with steep grades and sharp curves.

4.3.5 WP&YR - Continue Tie Renewal Program

Railroad ties are the rectangular supports for the rails, which along with spikes and tieplates constitute railroad track. The ties used on the WP&YR are made of pressure-treated wood. Railroad ties can last between 40 to 70 years but do need to be replaced periodically. The WP&YR intends to continue their tie renewal program to keep their track in a state of good repair.

4.3.6 WP&YR - Continue Bridge Rehabilitation Program

In Alaska, the WP&YR has 14 bridges along its length, including several wooden trestle bridges. The WP&YR intends to continue their bridge rehabilitation program to ensure the bridges remain in a state of good repair.

4.3.7 WP&YR - Enhance Right-of-Way Vegetation Control Program

Vegetation control is an important aspect of railroad operations. Vegetation within the railroad's right-of-way can make it difficult to inspect tracks; interfere with equipment; hide walking hazards leading to slip, trip, and fall injuries; accelerate rail and tie deterioration; and impair track bed integrity. Vegetation may also increase the potential for derailments and reduce visibility for train crews, making it harder for them to see potential problems. The WP&YR intends to enhance their vegetation control program to maintain their track and increase operational efficiency.

4.3.8 WP&YR - Computer Aided Rail Traffic Control System

Traffic on the WP&YR is controlled by Track Warrant Control (TWC), which is a verbal authorization system. WP&YR intends to switch to a computer aided rail traffic control system to increase operating efficiency.

4.3.9 WP&YR - Curvature Reduction Program

The program will realign some of the curves along the track to reduce the degree of curvature, reduce the possibility of derailments, reduce wear and tear on the rails and car wheels, and improve operating efficiency.

4.3.10 ARRC - Track Rehabilitation Program

The ARRC track rehabilitation program is part of an ongoing effort to upgrade the main line, sidings, and yards from Seward to Fairbanks. The program calls for replacement of rail, ties, and ballast in areas of critical need system-wide. This program includes: replacing rail and eliminating joints with continuously welded rail (CWR), replacing wood ties (see Figure 4-3), surfacing track bed (ballast), improving yards, improving drainage, and fortifying embankments. Between 2014 and 2019, the ARRC will spend approximately $68.6 million on track rehabilitation.

Figure 4-3 An ARRC Tie Inserter Extracts Old, and Installs New, Ties

4.3.11 ARRC - Bridge Program

The ARRC's 500-plus miles of mainline and branch track includes about 160 bridges that cross barriers ranging from streams to gulches. Nearly 70 are constructed entirely of steel, about 60 are constructed entirely from timber, about 24 are constructed entirely of concrete, and the remainder are of mixed construction (e.g., the Matanuska River Bridge and the Hurricane Gulch Bridge [see Figure 4-4] include steel, concrete, and timber elements). The ARRC Bridge Program includes maintenance, overhaul, and replacement needed to maintain corridor integrity, safety, and efficiency. The long-term plan includes replacement of most, if not all, timber bridges. Between 2014 and 2019, the ARRC is expecting to spend approximately $16.9 million on bridge maintenance and replacement.

Figure 4-4 Hurricane Gulch Bridge

4.3.12 ARRC - Capital Locomotive Overhaul Program

The ARRC locomotive overhaul program would install emission control measures that bring older locomotives into compliance with EPA tiered standards. Specific improvements include the installation of after-cooler equipment, new fuel injection systems, new power assembly designs, and Automatic Engine Start-Stop. The overhauls will extend the useful life of the locomotives; result in fewer complaints from neighbors; and reduce emissions of carbon monoxide, hydrocarbons, nitrogen oxides, and particulate matter. Between 2014 and 2019, the ARRC will spend approximately $8.9 million on this program.

4.4 Short-term Passenger Rail Improvements

This section describes passenger rail projects that are planned to be substantially complete within the next five years.

4.4.1 ARRC - Positive Train Control[61]

The Rail Safety Improvement Act of 2008 (RSIA) mandates passenger railroads and Class I freight railroads to install PTC by the end of 2015 on main lines used to transport passengers or toxic-by-inhalation materials. PTC is an enhanced safety system designed to reduce human factor errors for train and roadway worker operations on all railroads carrying passengers. Since 1996, the ARRC has been developing a PTC program that uses data radio communications between train dispatchers and train crews, or dispatchers and roadway workers. The PTC system is being developed to reliably prevent:

- Train to train collisions
- Overspeed derailments and incidents
- Work zone incursions
- Improper movements over switches and control points

The PTC project will replace an outdated Computer Aided Dispatch (CAD) system, and includes an on-board computer system, 220 megahertz (MHz) Very High Frequency (VHF) packet data radio technology, Global Positioning System (GPS) locator technology, and upgrades to the back-haul fiber and microwave

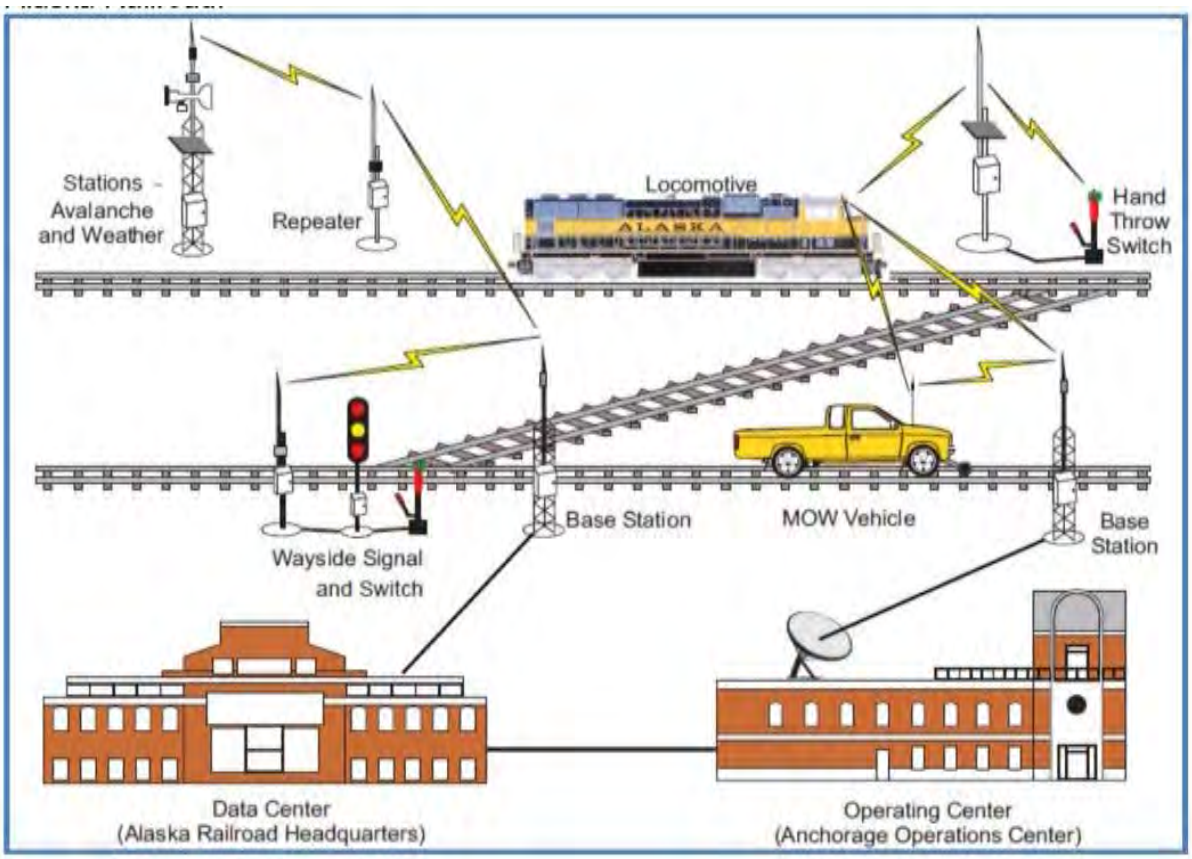
[61] The WP&YR is not subject to RSIA.

communications. Approaching locomotives interrogate wayside devices (including signals, switches, and track integrity) for status. If needed, PTC will stop a train before moving over specific devices. Figure 4-5 provides an overview of the PTC system.

ARRC is implementing PTC in several phases. Initially, the full PTC build-out was legally required to be completed by December 31, 2015. While substantial progress was been made towards implementing PTC nationally and locally, it was unlikely that most, if any railroads will be able to meet that deadline. PTC systems are a new technology and railroads have encountered technical and programming challenges that have resulted in the 2015 date being unrealistic. In October 2015, Congress based the Surface Transportation Extension Act of 2015 which extended the deadline to implement PTC to December 31, 2018. Rail operators can also request an alternative schedule that will give then an additional two years to implement PTC with the approval of the US Secretary of Transportation.

Through June 20, 2014, the ARRC has spent approximately $82.9 million on PTC. This funding has come from a variety of sources including FRA, FTA, ARRA Stimulus funds, ARRC funds, and an appropriation by the Alaska Legislature. It is estimated that the ARRC will need approximately $69.7 million in additional funding to implement the PTC program by the end of 2018.

Figure 4-5 PTC Communications Overview



Source: ARRC

4.4.2 US Forest Service – Complete Chugach National Forest Whistle Stop Development

The ARRC and the U.S. Forest Service (USFS) are partners in developing a whistle stop service in Chugach National Forest. The project will develop up to five sites between Portage and Moose Pass that will be accessible only by rail and connected by trail. The trail system would consist of approximately 35 miles of new trail connecting proposed whistle stop locations. Each whistle stop location would have different amenities such as passenger shelters, picnic areas, camping sites, etc. depending on the terrain and potential recreational opportunities. Two sites, Spencer and Grandview, have already been developed, along with a key 280 foot long pedestrian bridge across the upper Placer River (Figure 4-6). The remaining three sites are Luebner Lake, Bartlett Glacier, and Trail Creek. Initial planning estimates indicate that construction of the remaining infrastructure and recreational facilities would exceed $7 million.

Figure 4-6 Placer River Trail Bridge Under Construction

Source: USFS

4.4.3 WP&YR - Passenger Depot Expansion

The WP&YR plans to add a second story onto the Skagway Depot and renovate the interior. The improvements will allow them to better meet their back office needs and expand passenger waiting space. This project will be funded by the WP&YR.

4.4.4 WP&YR – Acquire New Passenger Equipment

This project will expand the WP&YR's fleet of passenger equipment to accommodate anticipated steadily growing demand.

4.4.5 WP&YR - Skagway Depot Passenger Handling Capabilities Expansion

The WY&PR is one of the most popular tourist railroads in the United States. Expansion of the passenger depot will allow WP&YR to improve passenger comfort and convenience, as well as the railroad's operational efficiency. The passenger depot also contains many of WP&YR's administrative offices. Expansion of the depot would provide additional capacity for those functions.

4.5 Long-Term Passenger Rail Improvements

This section describes projects that are long-term in nature and are planned for 2020 or beyond. The appearance of a project in this section does not guarantee the project will be implemented. This section represents the long-term project being considered as of May 2014 but the needs of the state and the railroads change; projects may be revised or not pursued.

4.5.1 ARRC - Ship Creek Intermodal Transportation Center

The ARRC is pursuing an Intermodal Transportation Center (ITC) and associated improvements (pedestrian amenities, transit infrastructure, parking, track modifications, etc.) in the Ship Creek area (see Figure 4-7). The Ship Creek ITC has been part of the vision and plans for the Ship Creek basin and Anchorage downtown area for several years. The purpose of the Ship Creek ITC is to facilitate connections between transportation modes (rail, air, marine, public transit, taxi, private vehicle, bicycle, and pedestrian) to meet passenger transit needs over the next 30 years. A secondary goal is to provide an efficient and safe connection between downtown Anchorage and the Ship Creek area, creating better access for residents and visitors. The Ship Creek ITC project is designed to complement existing and projected developments in the Ship Creek area. The Ship Creek ITC is estimated to cost approximately $50 million.

Figure 4-7 ECI/Hyer Architectural Design Model of the Ship Creek ITC

4.5.2 WP&YR - New Intermodal, International Passenger Depot

The project will construct a new intermodal, international passenger depot to better accommodate passengers transferring between the railroad and cruise ships or tour buses. WP&YR's most significant capacity issue at present is the ability of the Skagway station and its platforms to handle the volume of passenger boardings and alightings on peak days. It will also increase the efficiency of processing international passengers.

4.5.3 WP&YR - Continued Upgrades to the Avalanche Control Program

As the WP&YR track quickly climbs in elevation, there are sections of track that face avalanche threats early in the operating season. As part of this project, the WP&YR will explore different technologies and potential new equipment as well as consider additional infrastructure to enhance their avalanche control program.

4.5.4 WP&YR - Expansion of the Railroad Dock

The existing railroad dock can accommodate two large cruise vessels and does so multiple times a week during the cruise ship season. Total berthing length of the railroad dock is just less than 2,000 feet. The railroad dock has on-dock rail service, which greatly enhances the ease and efficiency for rail-shore excursions. The WP&YR is considering adding a floating dock to the end of the existing railroad dock in order to accommodate new larger cruise ships with capacities in excess of 4,000 passengers.

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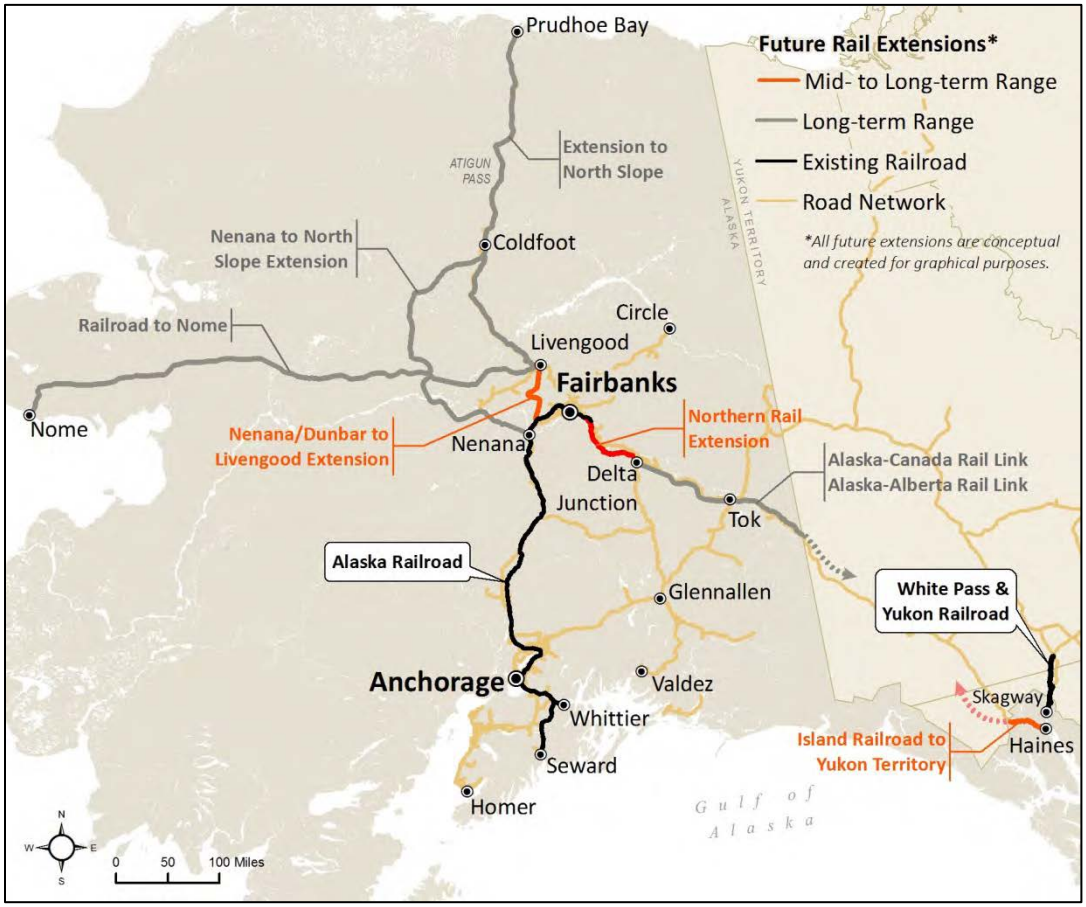
5 Freight Rail Improvements and Investments

The purpose of this chapter is to describe the improvements and investments that could address freight rail needs in Alaska. The determination of future freight needs in Alaska is based on an analysis of existing and projected freight rail traffic movement as well as rail operational and project needs identified during public outreach sessions, railroad interviews, shipper interviews, and steering committee and TAG input.

5.1 New Freight Rail Initiatives

Alaska has many areas that are rich in mineral resources. However, there is often no transportation infrastructure to get these minerals to market. In addition, it would not be cost effective to move many of these resources by road. As a result, there is interest in developing new rail lines (either stand-alone or connecting to an existing railway) to access these mineral resources. Specific connections are discussed below and are shown on Figure 5-1. The inclusion of these projects does not assure the construction of the rail links. Additional research, including economic feasibility studies, is needed to determine which, if any, of these lines should be built and who should be responsible for their construction and maintenance.

Figure 5-1 Potential Rail Extensions and New Lines



5.1.1 Nenana/Dunbar to Livengood Railroad Extension

There has been interest in extending the ARRC from Nenana/Dunbar to Livengood to support potential limestone mining activity in the area. This route is approximately 45 miles long. One potential route for the extension would follow the Dunbar-Brooks Terminal Trail (DBTT), an established Revised Statute (RS)-2477[62] right-of-way. This area also has the potential to be used as a strategic staging location for pipeline construction materials and would eliminate the need to bring pipeline-related rail traffic into Fairbanks. Challenges to constructing a railroad in this area include frozen ground (discontinuous permafrost, thaw settlement, load creep settlement, icing), earthquakes/seismicity, slope stability, and flooding. The proposed route is near the Minto Flats Wildlife Refuge, and there is a possibility that the rail link could support tourism in the form of wildlife viewing (Bohart 2011). The cost capital cost of this extension is estimated at approximately $300 million (Bohart 2011).

5.1.2 Rail Extension to North Slope

Northern Alaska has petroleum, natural gas, and mineral resources that could be developed. However, compared to other areas with these resources, this area has limited access and high operating costs. The North Slope has higher transportation costs and longer supply links than other regions of Alaska and the contiguous United States. A railroad to the North Slope has been considered, as it has the potential to transport large volumes of bulk freight at a competitive cost. It may also lead to new oil drilling and mining opportunities. The rail link could facilitate the movement of bulk freight required for large scale horizontal drilling as well as hydro-fracturing of shale oil and shale gas bearing formations. One route for this extension would be approximately 450 miles long and would likely connect to the ARRC mainline at the Dunbar siding near Nenana. There are also other potential routes. The cost of this project is estimated at nearly $7 billion. Please see Appendix D for further detail regarding the economic impact of a North Slope rail extension.

There is another aspect of a North Slope rail extension to consider. Recent analysis on the subject has been tied to the prospect of hydraulic fracturing to extract oil and gas and the huge volumes of sand and other materials needed for the practice. If rail is extended north to the North Slope, new service opportunities to the east and west might emerge. Other oil and gas activity—Point Thomson—is located east of Prudhoe Bay. Rail service to the west could access other oil and gas prospects and a the sizeable coal fields located there.

[62] RS-2477 is found in Section 8 of the Mining Law of 1866. It grants states and counties a right-of-way across Federal land when a highway was built. The law did not define what it meant by highway and, at that time, the term highway often referred to foot trails, wagon roads, sled dog trails, and similar transportation corridors. The rights-of-way associated with these historic "highways" must be honored even if the land is no longer owned by the Federal government. As Alaska was once largely federally owned, there are hundreds of historic routes that qualify as RS-2477 right-of-way.

[63] University of Calgary, *UToday*, March 14, 2016

5.1.3 Alaska-Canada Rail Link

In recent years, there has been interest in a rail connection through Alaska, Yukon, and northern British Columbia linking north Pacific Rim markets. Demand for minerals by the Asian market has raised the value of mineral resources in northwestern Canada and Alaska. A railroad connecting these resources to a tidewater port could efficiently move those resources to market. In July 2005, the governments of Alaska and Yukon studied the feasibility of connecting Alaska and Yukon with the North American railroad system. The Phase 1 Feasibility Study found:

- Mutually dependent economics of large-scale northern resource and railway development are compelling.
- Drastic changes in global demand—driven by Asian markets—sharply raised the value of mineral resources in northwestern Canada and Alaska, and rail infrastructure investment would dramatically increase economic productivity, development, and sustainability in this region.
- A new North Pacific Rim Trade Corridor may be well positioned to complement bulk mineral resource traffic for export to Asia with container import traffic from Asia.
- A rail connection through Canada would improve the economic security of Alaska and the Lower 48 by providing essential supply route redundancy, as well as West Coast container congestion relief with a new Alaska sea/rail port gateway.

The construction of this connection was estimated to cost approximately $11 billion. Over the anticipated 50-year life of the project, proponents estimated that it has the potential to increase the Gross Domestic Product (GDP) of Alaska and Canada by approximately $170 billion and create more than 25,000 new jobs.

5.1.4 Alaska-Alberta Rail Link

There has been interest in having a rail connection between Alaska and Alberta, Canada to transport oil products. One proposal would create a rail connection between Fort McMurray, Alberta and Delta Junction, Alaska. At Delta Junction, oil products from Canada would be added to the Alyeska Pipeline. This connection would transport Alberta oil to TAPS, where it could be exported from Valdez. This is a proposal advanced by a group from Vancouver, B.C., called G7G, and is significantly different from the Alaska-Canada Rail Link (ACRL) discussed above. It would connect through Fort Nelson in northeastern British Columbia rather than the more westerly location favored in the ACRL. The rail line would tie into the planned Northern Extension from Eielson Branch line to Delta Junction (see 5.3.4). It is hard to estimate how realistic the G7G proposal is. The proponents were able to persuade the Alberta, Canada government to fund a $1.8 million (Canadian dollars) pre-feasibility study. The outcome of that work, the *Alberta to Alaska Railway Pre-Feasibility Study*, was released by the Van Horne Institute in March, 2016. The study estimates the cost of the rail connection to be $28 to $34 billion (Canadian), and indicates that the project would involve “substantial risk,” but that the risk could be mitigated through the development of up to $659 billion worth of minerals along the route that could be mined and transported over a 30-year period.[63]

[63] University of Calgary, *UToday*, March 14, 2016

5.1.5 Island Railroad to Yukon Territory

While Skagway has historically been used as the export site for Yukon mining resources, the WP&YR has not carried freight since 1982. Despite interest by some in the mining industry to revive the freight service, the WP&YR operates as a tourist railroad. As of publication of the ASRP, WP&YR management has decided to not haul ore concentrate or other freight. There is interest in determining if shipping ore concentrate from Yukon mines to Haines, Alaska by rail is a viable alternative. In September 2013, DOT&PF provided a grant to the Haines Borough to do a feasibility study on this rail connection.

According to the April 2014 *Haines Rail Access Report*[64], this rail connection is not economically feasible without financial assistance from a government or major commercial customer (ALCAN RailWay Inc. 2014). However, the reduced highway maintenance resulting from taking mining traffic off the road could make it attractive for the public sector to provide some investment in the project. A rail connection between Haines and Carmacks, Yukon would cost approximately $3.5 billion. The *Haines Rail Access Report* recommends a scenario that relies on public sector value to supplement private sector funding. The public/private partnership for this scenario would include an investment of $3.48 billion, which would include a private railway partner financing $2.76 billion (79 percent share) and a public sector partner financing $720 million (21 percent share). This connection is being pursued by the Haines & Yukon Railway, LLC. Their long-term goal is to build a railway from Haines to Carmacks. According to the Haines & Yukon Railway, there are two ways this new rail link could be profitable. The first is to wait until the price of minerals increases sufficiently to reasonably ensure a profitable development. The second would be to wait until after the Alaska Canada rail link (described in 5.1.3) is operational and then transport minerals from the Yukon to Haines for export.

5.1.6 Rail Extension to Nome

Surface access to Nome from interior Alaska—by road or rail—has been a subject of interest for many years. A surface transportation link would improve access among remote villages and the communities of Fairbanks and Nome as well as reduce the cost of living in connected villages. It would also provide access to mineral resources along the corridor. In 2010, DOT&PF completed the *Western Alaska Access Planning Study,* which looked at alternative corridors to connect the existing transportation system in the Fairbanks area to Nome (DOWL HKM 2010).

The railroads that operated in the Nome area are noted in Chapter 2 of this plan. However, as with many parts of Alaska, the railroads actually constructed pale in comparison to those planned and proposed. A railway to Nome from Fairbanks was the subject of a 1906 study as well as another conducted by the U.S. Army in the summer of 1942. In the latter case, the U.S. Army was directed to undertake a field survey for a military railroad from Prince George, British Columbia to Fairbanks, and then to Nome and west to Port Clarence, near Teller (U.S. Army 1942).

Much more recently, there has been new emphasis on Nome in the first phase of the Arctic port development investigation undertaken jointly by the State of Alaska and the U.S. Army Corps of Engineers. That study began as an effort to establish port facilities for larger vessels serving national

[64] The study analyzed four different scenarios: Haines-Carmacks stand-alone railway, Haines-Delta Junction Rail Connection, Haines/Alberta Oil Sands Railway, and Haines-Crest Iron Ore Railway.

and off-shore activity in the Arctic as well as the increase in maritime traffic due to the opening of Arctic waters to seasonal travel. This was a maritime-focused endeavor that has resulted in a proposal to expand Nome's port capabilities and to eventually do the same at Port Clarence, located nearby. The study did not include the expectation of land access from the east by road or rail. Even so, the expansion of port capability, might combine with other factors to encourage surface access from, or to, the east. There are other resource development opportunities in the region served by Nome and Kotzebue, including large coal reserves on the western end of the North Slope.

5.1.7 Resumption of WP&YR Freight Service

WP&YR ceased both passenger and freight service in 1982 when Yukon's mining industry collapsed due to low mineral prices. The Klondike Highway had already been extended to Skagway by then and so a second, and more flexible, method of hauling freight overland was available. Passenger service has since resumed, and interest in restarting freight service at WP&YR has emerged occasionally in the years since, the most recent being a proposal by Eagle Minerals. The company is planning to re-refine tailings at Whitehorse Copper to extract and export magnetite. WP&YR was approached in 2013 to see if the line would be interested in providing freight service for the Eagle Minerals project. The company declined because of the relative short duration (4-5 years) of the project and the relatively light loads expected. There are two scenarios that can be imagined for this resumption of service:

- Use of the railroad in operation at publication of the ASRP. In 2016, WP&YR was supplying passenger and excursion service to four destinations from Skagway: White Pass Summit, Fraser, Lake Bennett, and Carcross. If the WP&YR acquires appropriate freight cars and established loading facilities at Carcross and Skagway, freight service could resume with the existing engines. The freight service would be expected to operate at night during the summer to minimize conflicts with WP&YR's passenger excursions. The primary benefit of this is to avoid heavy truck operations on the most challenging part of the Klondike Highway (the section between Skagway and Carcross).
- A more extensive freight service could be provided by restoring the line from Carcross to Whitehorse. This section is approximately 40 miles long and it still owned by the WP&YR. The right-of-way and most of the embankment and track is intact. This section would have to be substantially improved to be used for regular freight service so it is likely that either government support or a very strong industry commitment would be needed to justify the expense. The benefits include cheaper shipping of ore from local mines, less wear and tear on the Klondike Highway and expanded economic activity in Whitehorse and surrounding areas.

5.2 Short-Term Freight Rail Improvements

This section describes projects that are anticipated to be completed within four years of this plan's adoption.[65]

[65] Some projects are being developed in phases. If the phase that is under development as of December 2014 is anticipated to be complete within the four-year time horizon, the project was listed as a short-term project.

5.2.1 ARRC – Seward Marine Terminal Improvements

The ARRC owns a land reserve in Seward that encompasses approximately 328 acres. Much of this land is used for train operations, including the rail yard where train maintenance and maneuvering occurs as well as the passenger depot and terminal facilities. Operating lands also include the docks and adjacent uplands, which support intermodal operations. ARRC land not used to support railroad operations, or not set aside for future capital and expansion opportunities, is made available for lease or permitted use.

At its Seward dock facilities (approximately 75 acres) ARRC has made a number of improvements over the years. However, the demand for freight and passenger service continues to grow and evolve, and significant additional improvements in the dock area are required to support customers' needs.

The 2014 Seward Master Plan (see Figure 5-2) calls for four phases of improvements costing a total of $140 million. Phase 1 is estimated at $ 60 million and consists of:

- Widening existing freight dock to 320 feet, from the shore to the end of the existing dock
- Constructing/relocating jetty and removing existing sediment groin
- Dredging east side of the freight dock basin
- Grading uplands areas to accommodate freight customer upland operations/support needs

Phase 2 will remove the existing passenger dock and construct a new multiuse dock. This phase is estimated at $65 million. Phase 3 will cost approximately $15 million and would include:

- Extending Port Avenue to connect with Airport Avenue (including utilities, security measures, etc.)
- Leasing and developing upland parcels to accommodate customer operation and support needs
- Improving intermodal operating areas
- Rehabilitating support tracks, and extending tracks and utility service to the expanded dock

Phase 4 would extend the existing freight dock by approximately 400 feet and is expected to cost approximately $43 million.

ARRC is currently updating the Seward Master Plan using a $2.5 million TIGER grant matched with $500,000 of ARRC funds. The updated plan is expected to be completed in 2017.

Figure 5-2 ARRC 2014 Seward Master Plan - Fully Developed

- Waterfront Development: Wider/Longer Freight Dock, Dredged Basin, Relocated Jetty, New Uplands
- Leaseable Real Estate Development for Commercial and Light Industrial Uses and extended Port Avenue
- Intermodal Development: Expanded Intermodal Operating Areas, and Additional Track
- Increase rail operating area by about 30 acres and increase dock/lease area also by about 30 acres

Alaska Railroad Seward Reserve Master Plan - DRAFT

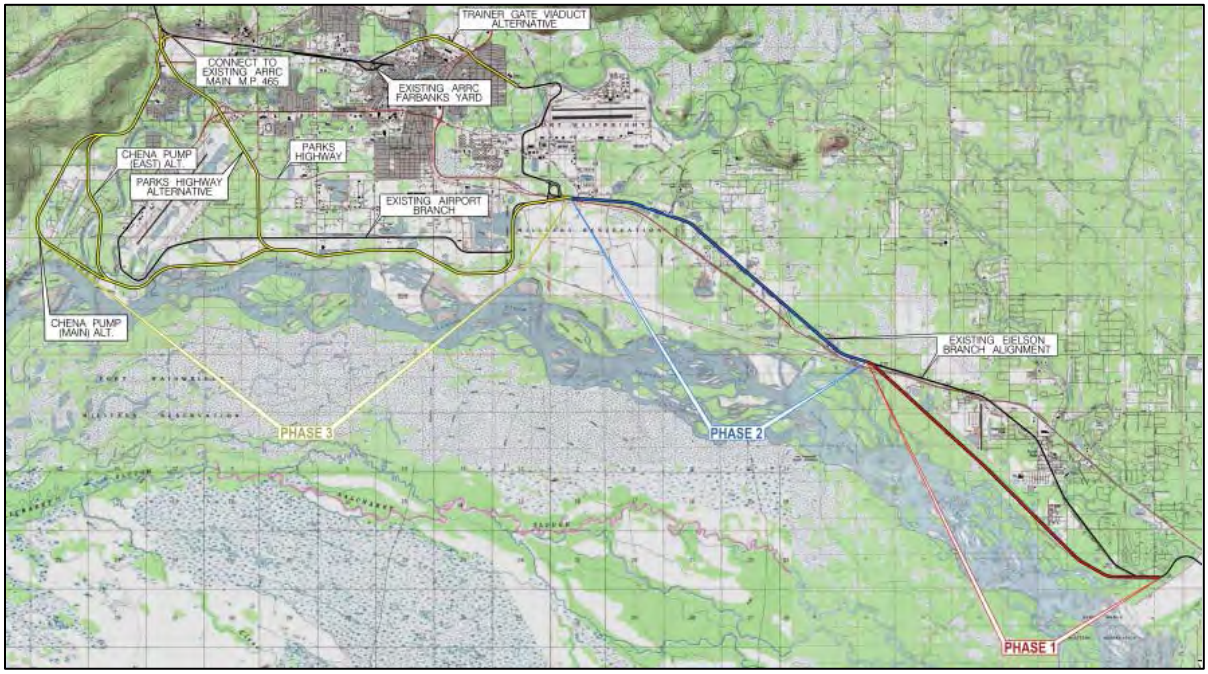
5.2.2 ARRC - Fairbanks Area Rail line Relocation

The Fairbanks North Star Borough (FNSB) has been working with ARRC to optimize the alignment of mainline and branch track within the Fairbanks area. The purpose of the Fairbanks Area Rail Line Relocation Project is to: 1) enhance the safety of road/rail crossings, railroad operations, and pedestrian activities within urban/suburban Fairbanks and along the Eielson Branch; 2) reduce travel times and improve operational efficiency; and 3) accommodate mass transit/passenger service. Objectives are to construct a straighter railroad track alignment, reduce the number of at-grade (same elevation) roadway crossings, and establish a rail-based passenger system within the FNSB.

The Fairbanks Area Rail Line Relocation Project (see Figure 5-3) consists of three phases:

- Phase 1 - From near 9-Mile on the Richardson Highway (MP 353) to Southeast North Pole, near Moose Creek; this phase is also known as the North Pole Road/Rail Crossing Reduction Project
- Phase 2 - From Richardson Highway MP 9 to 3-Mile Gate on Fort Wainwright's western border
- Phase 3 - Area west of the 3-Mile Gate, past the Chena River

Figure 5-3 Fairbanks Area Rail Line Relocation



In Phase 1, the ARRC proposes to reduce the number of at-grade crossings on a portion of its Eielson Branch track (from Richardson Highway MP 9 to the Chena River Floodway) that runs through North Pole, Alaska as of publication of the ASRP. The proposed alternative would realign the track on the landward side of the Tanana River Flood Control Levee. It would close nine at-grade crossings within the City of North Pole, and relocate the existing crossing of the Richardson Highway, replacing it with a separated grade crossing. This phase has independent utility and would provide immediate safety benefits. Phase 1 has a signed Finding of No Significant Impact (FONSI), but funding for final design and construction has not been identified. The cost estimate for Phase 1 is $65 million which includes a grade separation at Richardson Highway (ARRC MP G9) and Rental Street. Phase 2 is estimated at $10-20 million, and there is not a current estimate available for Phase 3.

5.2.3 Cantwell Intermodal Facility

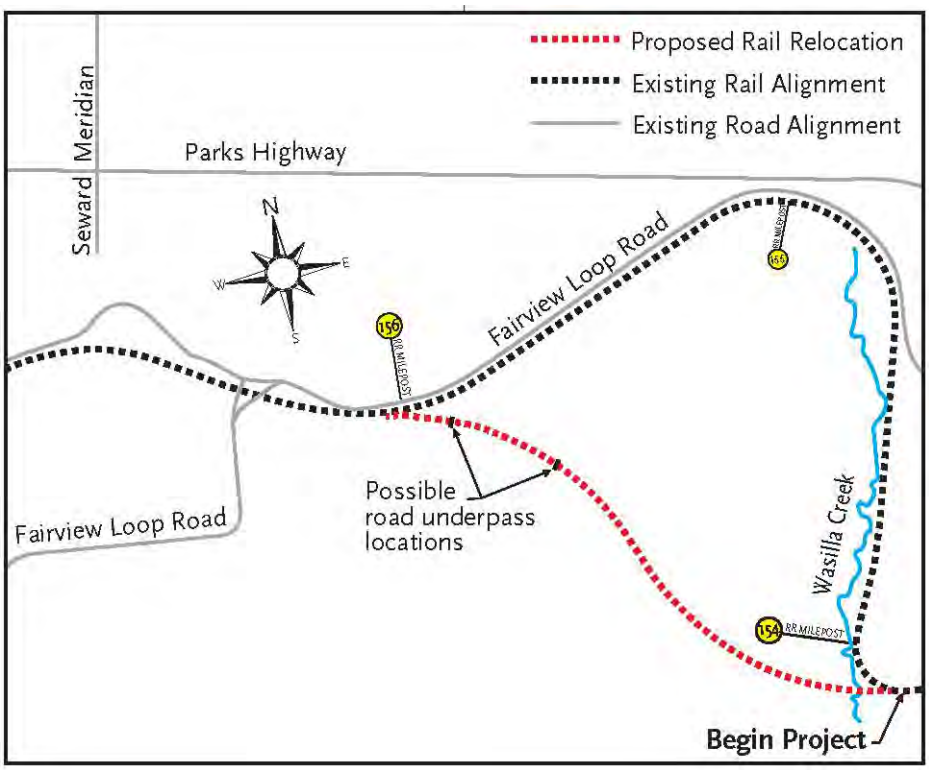
Several entities including DOT&PF, the Alaska Gasline Development Corporation, and the Alaska Energy Authority have expressed interest in a potential intermodal facility near Cantwell to transfer material from rail to truck. For example, DOT&PF is interested in the facility because of the potential to develop a hard aggregate facility in the area. The cost of this facility would be approximately $4.1 million.

5.2.4 ARRC - South Wasilla Rail Line Relocation

The ARRC, in cooperation with the FTA, plans to straighten curves along the mainline track in South Wasilla, between ARRC MP 154 and 158 (see Figure 5-4). This is part of a larger ARRC effort to reduce track curvature and improve safety along the main line track between Girdwood and Wasilla. This project has both freight and passenger applications, as it will reduce travel times on this section of track as well as improve freight train efficiency and safety. Reducing travel time on this segment would

support commuter rail. The ARRC has the right-of-way it needs for this relocation effort. This project is estimated at $40 million.

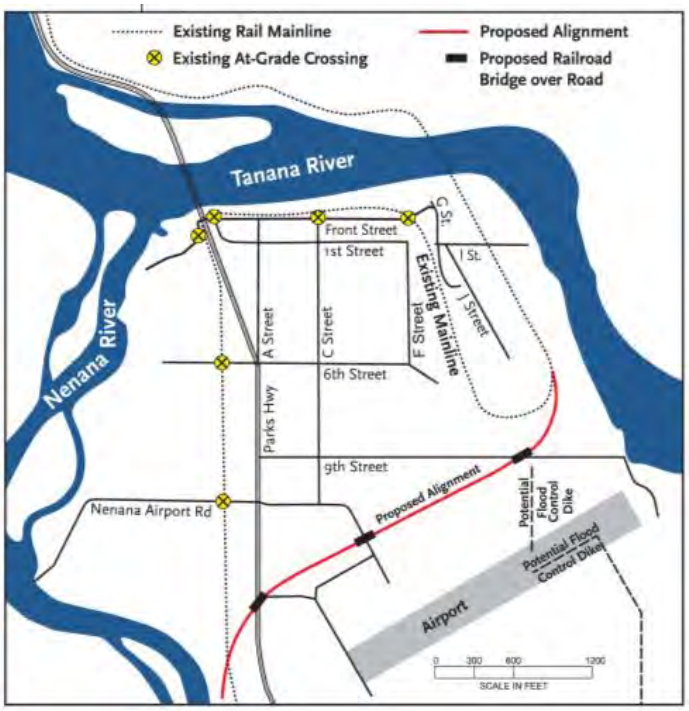
Figure 5-4 South Wasilla Rail Line Relocation



5.2.5 ARRC - Nenana Rail Line Relocation

The ARRC proposes to relocate the railroad main line around the downtown area of Nenana, Alaska (Figure 5-5). Built around 1920, the existing alignment parallels the Tanana River along the city's waterfront. This alignment has not changed since its original construction, and the issues of community growth, public safety, and railroad operational efficiency need to be addressed. The ARRC would like to relocate the track outside of the existing right-of-way north of the airport and southeast of town, over the Parks Highway. This relocation would improve operations, improve safety, and reduce maintenance. The existing track structure through Nenana would be maintained to support port and potential passenger activities. This project would enhance both freight and passenger service. The ARRC has already acquired the right-of-way needed for this project. This relocation was estimated at approximately $30 million.

Figure 5-5 Nenana Rail Line Relocation



5.2.6 ARRC - Portage and Divide Tunnels

Most of the ARRC system has the ability to accommodate double-stack trains. The Portage tunnel on the Whittier Branch and the Divide tunnel on the line to Seward are the only two ARRC facilities that do not have adequate clearance for double-stack container railcars. Increasing the clearance in these two tunnels would allow the ARRC to operate double-stack trains between Anchorage, Whittier, and Seward, which could increase the operational efficiency of the railroad. The cost to improve the Portage tunnel is estimated at $5.0 million and the Divide tunnel is estimated at $0.8 million.

5.2.7 Fairbanks Area Rail Plan

The greater Fairbanks area, working in partnership with the Alaska Railroad and the DOT&PF should develop a rail plan to establish a long-term goals, objectives, and priorities for the region. There is interest in relocating the Fairbanks rail yard as its proximity to downtown Fairbanks has created a number of land-use and functional issues. Other potential improvements such as grade separations and line relocations have been considered but the potential solutions have the potential to create new concerns. A comprehensive, long-term study to identify the rail-related issues in the Fairbanks area and solutions is needed.

5.3 Long-Term Freight Rail Improvements

This section describes projects that are anticipated to be completed after 2019.

5.3.1 ARRC - Anchorage to Seward Track Rehabilitation

The ARRC plans to rehabilitate their track between Anchorage and Seward. The rehabilitation effort includes replacement of rail, ties, and ballast. The cost to rehabilitate this section of track is estimated at $100 million.

5.3.2 ARRC - Whittier Wharf Replacement

The ARRC plans to construct a replacement of the Whittier Marginal Wharf to serve freight ships and other larger ships. Whittier also offers another potential deep draft port for the movement of freight. Medium and long term needs of the cruise ship industry.

This project is estimated to cost $60 million.

5.3.3 ARRC - Whittier Yard Improvements

Whittier is a traditional manifest railroad yard but most rail traffic is now intermodal in nature. The configuration of the Whittier railyard is inefficient for movement of intermodal traffic. Improvements could be made to increase the efficiency of the Whittier yard including the construction of an additional outbound/inbound track from Whittier to Door One of the joint use road/rail tunnel. It is assumed that improvements to the rail yard would cost several million dollars.

5.3.4 ARRC - Northern Rail Extension

The ARRC proposes to construct and operate a new rail line in the area between North Pole and Delta Junction (see Figure 5-6). The project would involve approximately 80 miles of new line connecting the existing Eielson Branch rail line at the Chena River Overflow Structure to a point near Delta Junction. Operated as part of the ARRC system, the proposed rail line would provide freight and potentially passenger rail services serving commercial interests and communities in or near the project corridor. This project would serve freight and passenger needs as well as provide military support. With a top design speed of 79 miles per hour for passenger trains, the line could support public transit operations between Fairbanks, North Pole, Salcha, and Delta Junction. The project would provide year-round access to the Joint Pacific Area Range Complex (JPARC). Existing access is limited to ice roads in the winter. JPARC provides unique opportunities for large scale, combined training of military units. The cost of the Northern Rail Extension project is estimated at approximately $1.1 to $1.5 billion, of which $188.4 million has already been expended to complete Phase 1. The estimates do not include the cost of passing sidings, significant terminal development in Delta Junction, or further environmental review of the impacts on military lands.

The project consists of four phases:

- Phase 1– Tanana River crossing (3,300-foot long bimodal rail-vehicle bridge) at Salcha (completed in August 2014) (see Figure 5-7) at a cost of $188.4 million
- Phase 2 – Rail construction (13 miles) from Moose Creek near North Pole to the Salcha crossing
- Phase 3 – Rail construction (30 miles) from the Salcha crossing to the Donnelly Military Training Area
- Phase 4 – Rail construction (38 miles) from Donnelly Training Area to Delta Junction

Figure 5-6 Northern Rail Extension Overview

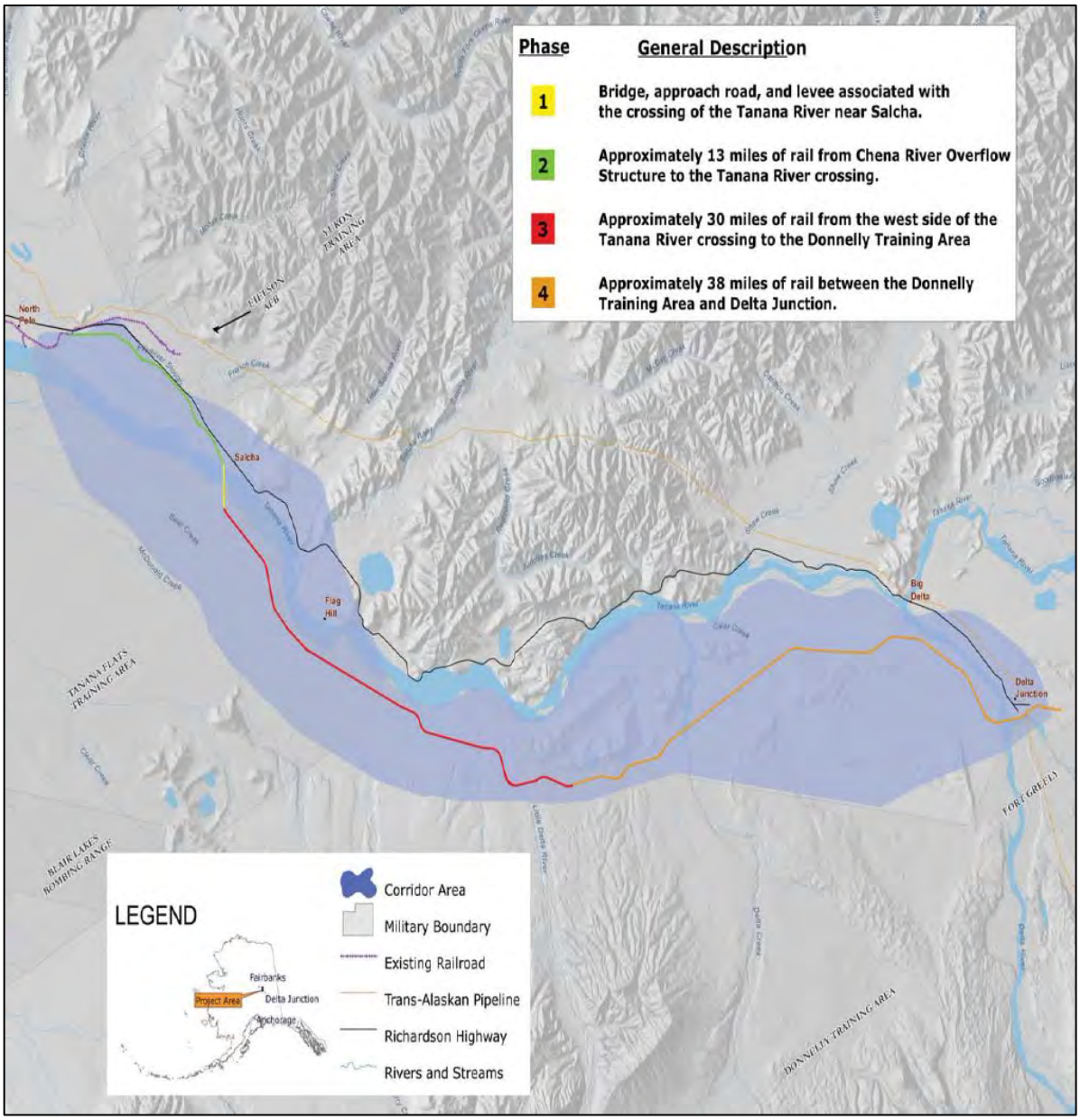


Figure 5-7 Phase 1 - Bridge over the Tanana River

5.3.5 ARRC - Healy Canyon Stabilization

Healy Canyon lies between Denali Park Station (MP 348) and Healy (MP 358). In this area, the ARRC tracks follow the Nenana River gorge on a narrow bench above the river. This project includes: stabilizing the track bed (ongoing), controlling the rock fall problems, removing the top ("daylight") of Moody Tunnel at MP 353.6 (complete), realigning tracks around Garner Tunnel (complete), and realigning the tracks to enhance safety at MP 353.6 (Moody Tunnel) and MP 357 (complete; see Figure 5-8). This project will enhance safety (address rock slide problems and straighten track), enhance reliability, and reduce operational costs. Several elements of this project have already been completed. Annual maintenance expenditures are expected to approximate $3.0 million per annum. An engineering solution to the problem is likely to significantly exceed a $100 million.

Figure 5-8 Track Realignment near Healy

5.3.6 Port of Anchorage Track Improvements

This project would extend two tracks to the Port of Anchorage's new north end barge facility in anticipation of extensive port use for unloading break bulk freight and other pipeline support material best moved on barges. This project includes the construction of a new 6,000-foot receiving/departing track within the Anchorage yard. This project was estimated at $8 million, although the ARRC and Port are developing an alternative track improvement plan.

5.3.7 ARRC - Fairbanks Airport Branch and Eielson Branch Staging Areas

The branch track to the Fairbanks Airport and Eielson Branch is near large, undeveloped areas that could be used as major staging areas for pipe and gas pipeline construction materials. Undeveloped land near Eielson Air Force Base is comprised of old gravel pits easily developed into a gas pipeline and construction material staging area. This project is estimated to cost approximately $12 million.

5.3.8 ARRC - Fairbanks Freight Intermodal Terminal Rail/Truck Staging Area

The Fairbanks Terminal does not have adequate space for handling containers and TOFC traffic, and creates a bottleneck for this service in the system. Containers and trailers from Anchorage, Whittier, and Seward can move by rail to this facility and then onto the Johansen Expressway, or go to a new terminal outside of Fairbanks. This terminal is expected to have traffic headed to the North Slope for a proposed gas pipeline. This facility is estimated to cost approximately $18 million.

5.3.9 Grade-separation of all Remaining At-grade Rail Crossings on Rural NHS Major Highways.

Grade-separations of all at-grade rail crossings of rural NHS major highways are being pursued by DOT&PF and the ARRC. The high speeds associated with these rural crossings (up to 65 mph posted speed limits for highway traffic, up to 79 mph for rail traffic) makes it more difficult for drivers to see and respond to potential conflicts. Replacing at-grade crossings with grade-separated crossings improves safety for highway travelers and the railroad, reduces travel time, and improves operating efficiency of both the railroad and highway. DOT&PF has pursued a policy over the past 20 years to

grade-separate as many of the NHS at-grade rail crossings as funding would permit. A grade-separated crossing typically can cost between $15 and $25 million.

One recently built project is the Parks Highway MP 194 Overcrossing. This crossing eliminated traffic conflicts and addressed snow drift and overall safety. The cost for this project, which includes reconstruction of about a mile of the Parks Highway, a new highway bridge over the Middle Fork of the Chulitna River and the new grade-separated rail crossing, was approximately $20 million.

Grade separation of the Montana Creek and Sunshine rail crossings on the Parks Highway were identified as eligible for Highway Safety Improvement Program (HSIP) funds. Construction of these projects was underway in 2016, with completion expected by the end of the year. The combined cost of the two crossings is estimated to total about $26 million.

5.3.10 Grade-separation of Significant At-grade Crossings

DOT&PF and the railroads have worked together for years to identify and correct problem crossings, whether on rural highways or in urban locations. This has resulted in improved safety for both roadway and railroad users. FRA data show that the number of motor vehicle/train crashes at rail crossings in Alaska has decreased significantly since the 1970's. DOT&PF and the railroads are interested in grade-separating other crossings as funding is available, especially higher volume routes or locations with frequent or significant delays. Traffic volumes and delays are not the only factors considered, however. Factors that are considered to determine if a crossing should be grade-separated include:

- Higher roadway speed
- High crash rate history
- High crash risk
- Freight movement is significantly hindered
- Significant roadway congestion
- Feasibility
- Consistency

DOT&PF does not maintain a list of crossings to be grade-separated, but instead works with the railroads to identify candidate locations for grade-separation. Crossings that may be separated in the future, as funding permits, include C Street and Arctic Boulevard[66] in Anchorage, Whittier Street in Whittier, Knik Goose Bay Road in Wasilla, and University Avenue in Fairbanks.

5.3.11 Susitna Watana Support Spur

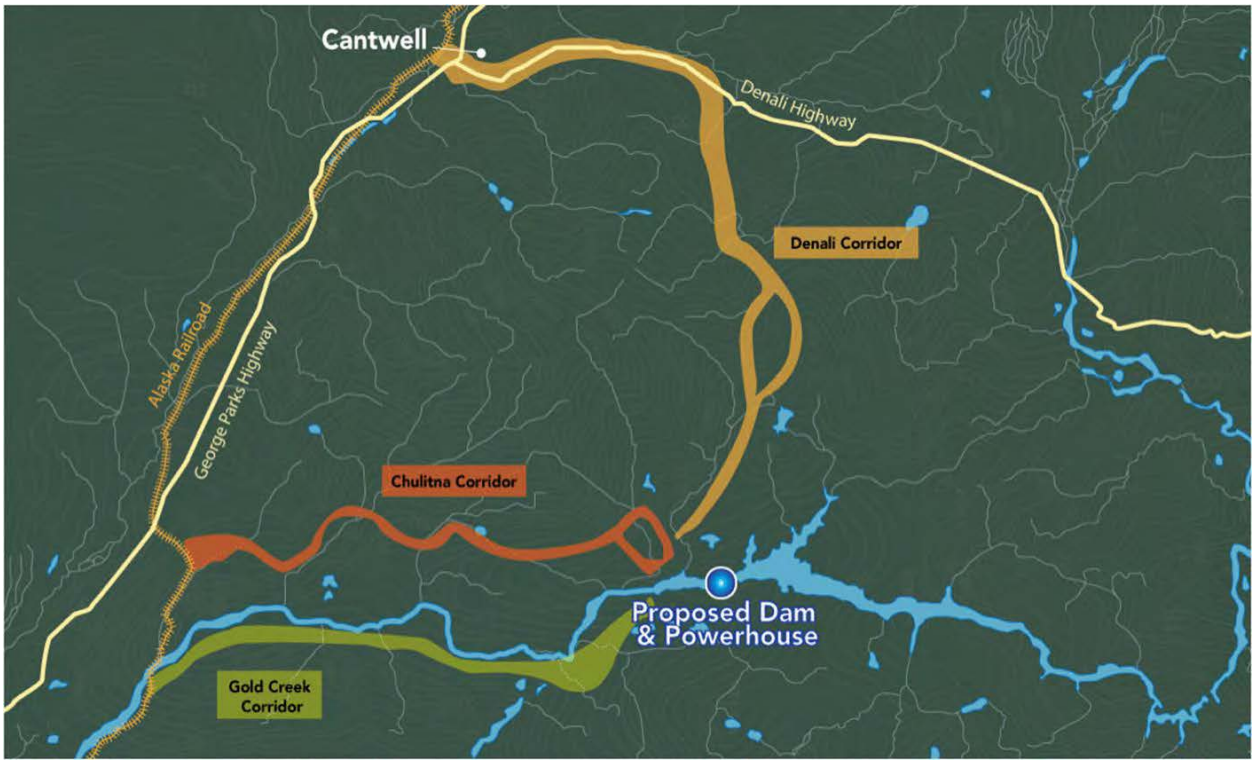
Three potential alternatives for road access and transmission lines have been identified for the Susitna-Watana Hydroelectric project should the state decide to move ahead with the project. The environmental study plan area includes all three potential routes. A high-level feasibility study was conducted by the DOT&PF, and public comments were solicited to aid in the decision making process. A

[66] As part of the West Dowling Road Connection Project, a new bridge crosses over Arctic Boulevard and the railroad tracks. Arctic Boulevard still crosses the railroad tracks at-grade, although plans include a possible future grade-separation.

favored route decision is not anticipated until the license application is filed with the Federal Energy Regulatory Commission (FERC).

When possible, the transmission lines will be co-located with the road access. A second transmission line is likely to provide protective redundancy and security for the Railbelt's Intertie. The two east-west road access corridor options are planned to terminate at the Alaska Railroad; the north-south route connects with the Denali Highway. Rail service improvements to support the project could include a siding in one of the locations shown in Figure 5-9 or an actual extension of rail along one of the three corridors.

Figure 5-9 Potential Extensions to Support the Susitna-Watana Hydroelectric Project



Source: susitna-watanahydro.org

5.3.12 Extending Transportation Facilities to Provide Surface Access to Resource Development Opportunities

The State of Alaska has a constitutional imperative to "encourage the settlement of its land and the development of its resources…." A significant hurdle to fully implementing that policy has been the lack of economical transportation access to the lands where the resources are found. Early settlement and resource development in Alaska came along its vast seacoasts and river ways. Later development was facilitated by the construction of overland railroads and highways.

While it may be less expensive initially to construct a road than a railroad, the cost of transporting bulk freight and resources by rail typically is lower on a per-ton mile basis than by road. Hence, for resource movement that is anticipated to involve of large quantities of resources over a lengthy time period, rail should be thoroughly considered. The relative advantages and disadvantages of each transportation

mode must be considered to ensure the best transportation access is provided to each resource area. Over time, the relative advantages may change as each area and its resources develop and mature. In long-term strategic planning for surface transportation, it would benefit the state to think in terms of transportation corridors as opposed to one specific mode. These corridors could then accommodate a single or multiple modes: roads, railroads, pipelines, and electrical and communication lines.

5.3.13 Standardize Alaska's Track to 286,000 Pound Capacity

Most modern railcars can weigh up to 286,000 pounds (loaded weight), and this is considered the North American industry standard. This higher standard can decrease the railroad's cost per ton-mile. However, many of the ARRC's bridges cannot currently support the heavier railcars in normal operations. Accommodating 286,000 pound rail cars should be considered as the standard for future rail extensions, new island railroads or upgrades to ARRC infrastructure.

5.3.14 WP&YR - Construction and Expansion of Skagway Docking and Port Facilities (West Basin)

These improvements are being made to accommodate a multi-use business model that addresses future growth for the region. The existing Skagway cruise ship docks are located on the east side of the harbor. Expansion of docking facilities to accommodate simultaneous mooring of additional cruise ships, without the need to lighter passengers to the docks, will necessarily occur on the west side of Skagway's narrow harbor.

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6 Rail Service and Investment Program

This chapter provides a constrained list of those investments described in the preceding Chapters 4 and 5. The improvements and potential investments have been evaluated using an evaluation methodology described in Section 6.7.1.

6.1 Vision

A portion of each public, TAG, and Steering Committee meeting was dedicated to the creation of a state rail vision. As the ASRP is a long-range planning document, meeting participants were asked to describe the future role of rail in Alaska, identify what the rail system should look like in the future, and identify challenges and opportunities. Based on input collected during the public outreach efforts, and the Steering Committee and TAG's review and comments on draft vision statements, DOT&PF has developed the following preamble and vision statement for rail transportation in Alaska.

Preamble:

> *The pioneering ambition that built Alaska was both practical and visionary; using roads, waterways, air, and rail to haul resources to market and connect communities to each other and the world.*

Vision:

> *The State of Alaska will use rail to foster growth and trade, build prosperity, connect and support communities, and provide safe and efficient freight and passenger services coordinated with other transportation modes, regionally and internationally.*

6.1.1 Alaska Rail Planning Goals and Objectives

With a rail vision articulated, the ASRP needs to define specific service goals and objectives to guide state action in the development of its rail system. Listed in Section 1.8, above, are the goals and objectives for passenger and freight rail operations and investments in Alaska. These goals and objectives were obtained from:

1. ASRP planning team (consisting of DOT&PF staff and the consultants retained for this project) interaction with the Steering Committee and the TAG;
2. The analysis and experience of the team members working as individuals and in groups;
3. The stakeholder outreach process described in Chapter 7, Coordination and Review; and,
4. The public outreach program that elicited interest, ideas, and contributions from Alaskans throughout the state.

6.2 Program Coordination - Integration of the Rail Vision with Other Transportation Plans

This ASRP is intended to become an element of the multi-modal Alaska SWLRTP. As stated in Chapter 1, The Role of Rail in Statewide Transportation, the goal of the SWLRTP is to create a Comprehensive Vision to provide all parties—the public, legislators, and DOT&PF executives and managers—with a clear understanding of the direction of DOT&PF and the condition and performance of the transportation

systems in the state to allow these decision-makers to make more effective and informed decisions regarding the transportation system.

The current SWLRTP is called *Let's Get Moving* 2030 and was approved in February 2008.[67] DOT&PF will complete an update of the SWLRTP in 2016. The ASRP will become part of the updated SWLRTP. The following are goals of the SWLRTP:

- Complete the modernization of the NHS to current standards to address safety and connectivity
- Address demand-driven urban capacity on the most congested highways in Alaska
- Add strategic new system links to improve connectivity and efficiency
- Replace ferries and transit vehicles that are old and no longer cost-effective
- Improve selected Alaska Highway System links to enable economic development
- Other strategic capital needs and committed projects: Alaska Gasline Inducement Act project improvement, removal of spring weight restrictions, and NHS rehabilitation

The SWLRTP estimated the cost required to meet these goals would be at least $5.5 billion.

The ASRP serves to address the goals of DOT&PF through the following objectives:

- Providing an overview of railroad assets and all related issues to address any issues with the physical aspects of the system
- Focusing on safety, including highway-rail safety such as grade-crossings, to address any issues
- Linking the economic view and needs of passenger and freight rail with economic vitality in Alaska to best serve the residents and users of the system as well as to develop and care for the residents of the state

FRA was directed by PRIIA legislation to develop a Preliminary National Rail Plan to address the rail needs of the United States. The Preliminary National Rail Plan, published in October 2009, provided objectives for rail as a means of improving the performance of the national transportation system. These objectives are:

- Increased passenger- and freight-rail performance
- Integration of all transportation modes to form a more complementary transportation system
- Identification of projects of national significance
- Providing for increased public awareness

A final National Rail Plan will account for state rail planning practices and will reflect the issues and priorities addressed in various State Rail Plans. The National Rail Plan is intended to be developed through the integration of individual State Rail Plans. The final National Rail Plan remains under development as of publication of this ASRP. DOT&PF will work with FRA and other states in the region to ensure that the regions' rail perspectives and issues are adequately addressed in the final National Rail Plan when it is published.

[67] The SWLRTP's recommended strategies and actions were based on data tabulated through 2006. The SWLTRP was updated in 2010 to include 2007 and 2008 data. A new SWLRTP is expected to be completed in 2016.

In addition to the need to coordinate the ASRP with the National Rail Plan and the national freight network, DOT&PF will also coordinate as necessary with the U.S. Military Surface Deployment and Distribution Command's Transportation Engineering Agency, which oversees the STRACNET. STRACNET and rail transportation's role in defining a national defense network are discussed in Chapter 2, The Rich History of Railroads in Alaska.

6.3 Rail Agencies

DOT&PF conducts rail planning along with other road, airport, and marine planning. In the future, the State of Alaska and DOT&PF may choose to make organizational changes to policy or legislative changes that could impact investment in rail infrastructure within either a 4- or 20-year planning horizon. These proposed organizational and policy changes are described below.

6.3.1 Proposed Organizational or Policy Changes

Participants in the planning process for the ASRP were questioned regarding the potential need for organizational or policy changes. The proposed changes that enjoyed general agreement are discussed below.

6.3.1.1 State Capital Program for Rail

The ASRP demonstrates a need for many rail-related capital improvements. Not listed are projects that the railroads expect to pay for themselves from ongoing revenue. These are frequently smaller projects needed to maintain and improve the railroads and are of sole or primary benefit to the rail companies. There are two tiers of projects for which the needs and benefits are broad enough to justify external funding. The upper tier consists of truly large projects that will require cooperation from all levels of government and industry. Each is expected to have costs exceeding a billion dollars.

There is, however, an intermediate tier of medium-sized projects that can be funded from routine sources. These are in the $30-60 million range and are appropriate for state support. The federal government has a history of routine and special grants to ARRC, which as an instrumentality of the state is specifically eligible for such grants. In recent years, substantial capital investments have been made by the State of Alaska as well. These include funds for three huge endeavors: Phase 1 of the Northern Rail Extension project, the Point Mackenzie Rail Extension project, and PTC for the ARRC. As of this ASRP, the state contribution to the Salcha Bridge is $84 million, Department of Defense provided $104 million ($189 million cost to date, with the total cost of Northern Rail estimated at $800 million or more), to the PTC project, about $82.9 million (with $69.7 million in additional funds needed to complete by 2018), and to Point MacKenzie Rail Extension $171 million (with a total cost estimated at $300 million). Each of the three has been the subject of separate development and legislative effort, and each has a discrete and different set of supporters, contributors, and enthusiasts. Until this ASRP, there has been no master program for which these appropriations were made and no overarching vision to unite, evaluate or prioritize them.

A state capital program for rail-related projects is recommended. Nearly any project will require two or more years to implement. Each will start out with planning and design. Most will require National Environmental Policy Act documents, from simple environmental assessments to full environmental impact statements. A given project might become stalled from a right-of-way acquisition dispute, a

court challenge, or unexpected field discoveries that require re-design. The state capital rail program would enable money to move from one project to another so that progress is made where it is possible, and there is a relatively even strain on ARRC and state staff, resources, consultants, and contractors over time.

No legislature can bind the hands of a subsequent legislature. This applies to state support of the rail capital program. The program, once established, can be amended on a regular basis to add projects, drop completed projects, and to abandon project ideas. Establishing a program can have the effect of creating a tradition if the program is supported over time. There are four intermediate projects that are beyond the financial reach of ARRC but seen as necessary to the well-being of the ARRC and the communities it serves. These are all described in detail elsewhere in this plan but are listed by title here with some summary comments:

1. Completion of PTC (Section 4.4.1) - There has already been a large investment by ARRC itself and more recently by the state. Finishing the job will require approximately $70 million.
2. Complete the South Wasilla Rail Line Relocation (Section 5.2.4) - The ARRC has designed this project and acquired the right-of-way needed to build it using federal and company funds. Another $40 million is needed to complete the project. This will eliminate a key impediment to providing commuter service between the MSB and Anchorage.
3. Complete the Nenana Rail Line Relocation (see Section 5.2.5) - Similar to the project above, the ARRC has advanced this effort to the point where it is ready to build. The approximate cost is $35 million.
4. Begin the first of a series of projects collectively called the Fairbanks-to-North Pole Realignment (see Section 5.2.2) - Aspects of the plan are still under study but one portion, the North Pole bypass, would cost approximately $60 million.

All four of these have benefits to the communities traversed by ARRC and to the general public as well as to the rail company itself. The ARRC is not seen as the sole beneficiary of this funding program over the long-term. There could be entirely new railroad companies formed in the future for which state capital support might be appropriate where there are public needs and benefits.

6.3.2 Office of Intermodal Planning

Working towards fulfilling the requirements of the MAP-21 and FAST Act, freight planning and mobility of freight movements will be a strong focus for the department throughout the foreseeable future. Playing an important role in meeting these requirements will be close coordination with the ARRC.

The purpose of Intermodal Planning office is to provide for the optimum use of all of the State's transportation modes for both passengers and freight. Intermodal refers to the shipping and/or receiving of freight by two or more different modes of transportation (e.g., rail and truck) or, a system of passenger movements such as a system link (e.g., ground transportation at airports). Current planning activities focus on providing improved intermodal connections, enhancing shipping choices, and conducting intermodal studies to aid local and regional economic development efforts.

Below are a few of the responsibilities that the Intermodal Office will be responsible for assisting the AARC in the future.

6.3.3 State Policy on Support, Maintenance, and Expansion of Rail

Based on the ASRP project findings, the following state railroad policy is proposed:

> *In order to support a strong and growing state economy, it is the policy of the State of Alaska that railroads in Alaska shall be supported from a policy, and as appropriate, a financial perspective by the state. Furthermore, the state shall consistently support the expansion of rail lines and service in Alaska as these initiatives have a long-term positive effect on transportation costs and the state economy, and are otherwise cost-effective.*

6.3.4 Legal Structure Review

There have been a number of incidents over the years that collectively have been leading up to the need for a statutory and regulatory review and overhaul of rules that apply to the ARRC and various state agencies that do business with the railroad. Chief among the issues is the need to clarify when and by what means the railroad will be granted right-of-way over state-owned lands. There are conflicting interpretations of the statutes governing DNR's land management duties and statutes directing DNR to identify and reserve railroad corridors for an Alaska-Canada link (and possibly others).

A state-owned entity like the ARRC should be granted right-of-way over state-owned land without cost. For example, a state park can be designated without the DNR Parks division having to pay the DNR Division of Mining Land and Water for the property. The same situation should apply to obtaining railroad right-of-way. Related issues that deserve legal attention include:

- Identifying and protecting corridors that might eventually host a rail line as well as a clear path to right-of-way acquisition at the appropriate time in the decision-making process. Proposed legislative changes to remove barriers to identify and preserve corridors for rail purposes must be clarified. The issue is between ARCA requirements to identify/acquire right-of-way for current and future development of rail and DNR's perception that their regulations are additive to the process. This has caused lengthy delays to both the NRE and PMRE projects. As the state moves forward in its vision for rail, issues related to extensions to the North Slope, Livengood, Delta Junction, and Canada right-of-way will loom large. A harmonization of state departmental policy and regulations will be critical to moving forward.
- Clarifying how and whether the ARRC should charge for giving permits to other governmental entities and whether the ARRC should have to pay for authorizations *from* other state or local governmental entities.
- Legislation that will enable creation of regional transportation entities, typically by joint action of cooperating municipalities. There is discussion elsewhere in this ASRP (see Section 4.2.1) of the potential for providing rail commuter service between the MSB and MOA. A significant barrier is the lack of a management entity to design, deliver and manage the commuter service. The ARRC has studied commuter service ideas and gone some distance to producing a plan, but stops short of sponsoring the commuter service in its own right because the service will not work without some form of governmental subsidy (like every other bus or rail commuter service in the United States) and the railroad has no means to produce or sustain such a subsidy. The most typical regional entity would be formed under a cooperative agreement between the MSB

and MOA, and could include the State of Alaska as well, depending on how the authorizing legislation is designed.

6.4 Program Effects

This section identifies the short- and long-term passenger and freight rail projects for this 20-year ASRP, along with the expected effects of these projects (project details are provided in Chapters 4 and 5). The projects identified have been separated into short-term (including those projects that are underway as of publication of the ASRP, or have secured partial funding in years 1-4) and long-term (5-20 years). Please note that some of the projects are applicable to both passenger and freight rail but they have only been listed once.

6.4.1 Passenger Element

Table 6-1 provides a list of the identified short-term passenger railroad projects requiring capital investment.

Table 6-1 Short-Term Passenger Rail Investments

Alternative Name	Total Cost of Investment ($M unless otherwise stated)
ARRC Positive Train Control	$69.70
USFS Complete Chugach National Forest Whistle Stop Development	$7
WP&YR Passenger Depot Expansion	Less than $25
WP&YR Acquire New Passenger Equipment	Between $25-$100
WP&YR Skagway Depot Passenger Handling Capability Expansion	Between $25-$100

Table 6-2 provides a listing of the identified long-term passenger railroad projects requiring capital investment.

Table 6-2 Long-Term Passenger Rail Investments

Alternative Name	Total Cost of Investment ($M unless otherwise stated)
Commuter Rail in Southcentral Alaska	$45.7
ARRC Ship Creek Intermodal Transportation Center	$50.0
WP&YR New Intermodal, International Passenger Depot	Greater than $100
WP&YR Continued Upgrades to Avalanche Control System	Less than $25
WP&YR Expansion of the Railroad Dock	Between $25- $100

6.4.2 Freight Element

Table 6-3 provides a listing of the identified short-term freight railroad projects requiring capital investment. The PMRE project is not included in this list because construction has begun and much of the funding is in place.

Table 6-3 Short-Term Freight Rail Investments

Alternative Name	Total Cost of Investment ($M unless otherwise stated)
ARRC Seward Marine Terminal	$180.0
Cantwell Intermodal Facility	$4.1
ARRC Fairbanks Area Line Relocation - Phase 1	$65.0
ARRC South Wasilla Rail Line Relocation	$40.0
ARRC Nenana Rail Line Relocation	$30.0
ARRC Portage and Divide Tunnels	$5.8
Fairbanks Area Rail Plan	$2

Table 6-4 provides a listing of the identified long-term freight railroad projects requiring capital investment.

Table 6-4 Long-Term Freight Rail Investments

Alternative Name	Total Cost of Investment ($M unless otherwise stated)
ARRC Anchorage to Seward Track Rehabilitation	$100
ARRC Whittier Wharf Replacement and Staging Areas	$60.0
ARRC Whittier Yard Improvements	Between $25-$100
ARRC Healy Canyon Stabilization	$3.0
ARRC - Northern Rail Extension	$862.0
Port of Anchorage Track Improvements	$8.0
Grade-Separation of All NHS At-Grade Rail Crossings	$122.5
Grade-Separation of Significant Non-NHS At-Grade Crossings	Greater than $100
Susitna-Watana Support Spur	Between $25-$100
WP&YR Construction and Expansion of Docking and Port Facilities (West Basin)	Between $25-$100
ARRC Fairbanks Airport Branch and Eielson Branch Staging Areas	$12.0
ARRC Fairbanks Freight Intermodal Terminal Rail/Truck Staging Area	$18.0

The appearance of projects in the tables above does not guarantee that each project will be implemented. These tables represent freight projects being considered as of December 2014. As the needs of the state and the railroads change, projects may be revised or not pursued.

The effects of these projects will be a positive impact on rail capacity, congestion relief, safety, and resiliency, which provide a range of public benefits. The public benefit categories for each project are shown in Section 6.7.1 below.

6.5 Project Impact and Financing Analysis

State rail plan guidelines require states to describe how capital projects were analyzed, specifically with regard to their impacts on passenger rail ridership, potential diversion from highway and air to rail, passenger rail revenues and costs, freight rail project benefits, etc. States are also required to describe their 4- and 20-year financing plans for passenger rail capital and operating costs. Discussion of these analytical areas for both passenger and freight rail projects is presented below.

Alaska's proposed short- and long-range rail investment plans are intended to have a high correlation between the public funding provided and their intended benefits. Because the proposed short-range program is primarily directed at needs identified by the two railroads operating in the state, the public benefits include not only the transportation-related economic and socio-environmental benefits involved in providing competitive rail service itself, but also the preservation and protection of state-owned assets. These rail lines have also steadily produced increased traffic levels, which have resulted in former and new shippers receiving cost efficient service.

Through this ASRP process, DOT&PF has also developed a better understanding of the rail industry's plans for growth within the state and the projects deemed necessary to facilitate this growth. These rail projects, if deemed to provide sufficient public benefits in the future, may receive public financial assistance should future funding become available. As most proposed long-range projects have yet to be analyzed with regard to their economic feasibility, it is premature to identify any correlation between the level of public investment and benefits.

As part of the project development process, all project sponsors are encouraged to coordinate with state agencies and other stakeholders as appropriate. For example, permitting, title work, and site research should be coordinated and planned with DNR to the extent possible.

6.5.1 Passenger Rail

Most significant rail intercity or commuter rail projects will have some level of impact, usually positive, on overall rail passenger ridership, rail passenger miles travelled, modal diversion from highway, and increased rail passenger revenues and/or reduced costs. As of publication of the ASRP, both the ARRC and the WP&YR generate and maintain annual capital and operating financing plans and budgets.

The State of Alaska has a limited amount of control over the rail passenger operations within the state. ARRC and WP&YR operate intercity rail operations, and those operations represent only a portion of the total service area of the operations. These limitations also reduce the state's ability to significantly affect positive impacts on other modes or influence major modal diversion. DOT&PF is limited in the means available to increase the frequency and level of service of the passenger rail operations within the state, and any capital investments related to the overall operations must be made at the regional level with concurrence by ARRC and WP&YR. The state, however, does plan to contribute to the preservation, and possibly the eventual expansion, of these passenger operations, by taking advantage

of and leveraging all available opportunities to increase ridership. The following sections describe the operating costs and budgets for ARRC and WP&YR.

6.5.1.1 ARRC

The ARRC's fiscal year 2014 capital budget approved spending another $26.0 million for capital projects, principally for continued track and bridge rehabilitation, planned replacement of vehicles and equipment, other infrastructure improvements, and continued development of federally mandated PTC. The ARRC intends to use federal grant funding to provide $7.4 million for capital additions. The remaining capital projects will be funded out of current year earnings and cash flow and approximately $3.5 million in State of Alaska funding. Table 6-5 provides a summary of the ARRC's operating expenses for 2011 though 2013.

Table 6-5 ARRC Operating Revenues and Expenses, 2011-2013

	($ in thousands)		
	2013	2012	2011
Operating Revenue:			
Freight	96,575	100,022	98,045
Passenger	25,650	24,027	22,382
Other	3,242	4,059	4,965
Total transportation revenue	125,467	128,108	125,392
Grant revenue	40,111	40,341	40,873
Total	165,578	168,449	166,265
Operating expense: Transportation			
Passenger	9,311	9,755	8,796
Marketing and customer service	21,165	20,735	18,472
Mechanical	25,110	26,276	25,484
Engineering	40,394	40,348	38,494
Facilities	15,327	15,953	16,023
General and administrative	10,840	7,701	9,484
Total	160,725	164,651	161,185
Operating income	4,853	3,798	5,080
Non-operating revenues (expenses):			
Corporate planning and real estate, net of expenses	10,929	10,104	8,292
Gain on sale of capital assets	6	—	1,391
Investment income	31	87	110
Interest expense, net of grant	(1,502)	(1,474)	(1,562)
Net income	14,317	12,515	13,311
Other changes in net position	8,372	(2,108)	(805)
Change in net position	22,689	10,407	12,506

6.5.1.2 WP&YR

The WP&YR's $22.1 million investment in United States infrastructure during the four years 2011-2014 has allowed business growth by ensuring that their port operations can accommodate larger cruise ships, such as the Solstice Class Cruise ship that made 17 dockings during its inaugural season in Skagway. Their vintage GE locomotives have been repowered, allowing WP&YR to realize operational and fuel efficiencies, while providing a cleaner, quieter experience for rail passengers. The eleventh and last GE locomotive to be repowered was back in the fleet with the commencement of the 2014 season.

Net operating income from WP&YR rail, tourism and port operations increased to $20.0 million (United States dollars) in 2013 compared to $19.3 million in 2012, resulting from 10,000 additional rail passengers and 65,000 additional port passengers (ClubLink 2014).

The number of rail passengers has further increased 1.8 percent to 402,141 in 2014 as compared to 395,000 in 2013. Railroad revenue increased 3.2 percent to $27.9 million (United States dollars) in 2013 from $27.1 million (United States dollars) in 2012. The number of port passengers has increased 8.6 percent to 822,000 in 2013 as compared to 757,000 in 2012 resulting in a 9.3 percent increase in port revenue. Cruise ship dockings increased 9.3 percent to 388 in 2013 compared to 355 in 2012. The capture rate of port passengers declined in 2013 compared to 2012 due to deep discounting by the cruise ship lines resulting in less-affluent cruise passengers. A summary of operating costs for the WP&YR are provided in Table 6-6.

Table 6-6 WP&YR Rail, Tourism and Port Operating Costs, 2012-2013

($ in thousands)			
	2013	2012	%
Cost of sales	726	694	4.6
Labor and employee benefits	9,639	8,948	7.7%
Utilities	400	417	(4.1%)
Property taxes	557	560	(0.5%)
Insurance	1,635	1,640	(0.3%)
Repairs and maintenance	380	391	(2.8%)
Fuel and oil	1,166	1,260	(7.5%)
Other operating expenses	3,679	3,366	9.3
Subtotal (U.S. dollars)	18,182	17,276	5.2
Exchange	573	48	N/A
Total (Canadian dollars)	18,755	17,324	8.3

Note: Fuel and oil has decreased 7.5% in 2013 due to the increased efficiencies realized by the locomotive repower program.

6.5.2 Freight-Rail

The state's proposed short- and long-range freight projects are oriented toward preserving and increasing the efficiency of rail operations. Operating efficiency will continue to benefit from

investments in bridge rehabilitation, new track alignments, and other projects described in Section 5. As noted previously, most proposed long-range projects have yet to be analyzed with regard to their economic feasibility, and it is premature to identify any specific economic benefits.

6.6 Rail Studies and Reports

There are several studies of possible future rail infrastructure investments in the State of Alaska that can be recommended. They include:

- Nenana/Dunbar to Livengood Railroad Extension
- Extension to North Slope
- Alaska Canada Rail Link (ACRL)
- Island Railroad to Yukon Territory

Each of these ideas has been studied to some extent and more elaborate possible work is described in Section 5.1. Other potential rail opportunities are described in Section 3.5.1.1. While these projects are in various stages of development, as of November 2016 none of them has moved to actual construction of rail improvements or projects that would occur in the next 20 years. As a result, these projects were not included as part of the state's proposed freight projects list and were not ranked with the project prioritization methodology. Future updates to the plan should incorporate rail improvements that are identified from those projects as well as other needs.

6.7 Passenger and Freight Rail Capital Program

Using the projects identified and described in Chapters 4 and 5 of this ASRP, DOT&PF developed a prioritization methodology to rank highly feasible projects that offer significant benefits to the State of Alaska. The following section describes the methodology used.

6.7.1 Project Prioritization Methodology

A methodology of project prioritization has to be consistent with the overall vision embedded in the rail plan and fit within its goals. As discussed in the earlier sections of this document, the vision and goals of the ASRP focus around promoting economic development, promoting rail system efficiency, and improving connectivity of the transportation system as well as improving environmental sustainability, safety, and overall quality of life in the State.

Projects considered for funding should generate benefits to the State of Alaska that align with the above and are generally feasible in terms of preparedness, acceptable costs, and reasonable complexity.

The methodology entails two scoring components: 1) Benefits Score, and 2) Project Feasibility Score. Total project score is the sum of the two:

Total Project Score = Benefits Score + Feasibility Score

The two components are discussed in some detail below. This is followed by final ranking of capital expenditure-based projects. Projects that implement mandatory requirements are given top ranking regardless of their total project score. The Project Team scored each project based on the methodology described below.

6.7.1.1 Benefits Score

It was determined that each project can potentially provide three types (categories) of benefits to the State of Alaska that can be classified into one or more of the following categories:

- **Economic Benefits** – improve the economy by supporting development in key industries/business sectors or stimulating trade. They are broken down into seven subcategories:
    - Benefits Oil and Gas Sector;
    - Benefits Mining and Minerals Sector;
    - Benefits Travel and Tourism Sector;
    - Benefits Military Sector;
    - Benefits Local Businesses in the Project Area;
    - Potential to Stimulate Economic Development; and
    - Potential to Stimulate International Trade.
- **Social Benefits** – provide key social and environmental benefits shared by all members of the population. They are broken down into five subcategories:
    - Enhances Area Livability;
    - Improves Access to Remote Areas;
    - Significantly Improves Public Infrastructure;
    - Reduces Transportation Congestion; and
    - Reduces Emissions (Greenhouse Gases and Criteria Air Contaminants).
- **Operational Benefits** – benefit the transportation system in Alaska by improving operational efficiencies or reducing transportation costs. They are broken down into four subcategories:
    - Improves Operational Safety/Security;
    - Enhances Operational Efficiency;
    - Increases Transportation Capacity; and
    - Reduces Future Operations and Maintenance (O&M) Costs.

Economic Benefits capture the key economic considerations behind a project and benefits to specific user groups, businesses within certain industries, or individuals. These benefits improve or facilitate their operations, save time and money (and thus can be relatively easily expressed in monetary terms). Social Benefits capture the observation that a project may benefit a broader society, including project non-users, in many other ways that go beyond project financial metrics (e.g., reduction in environmental emissions in the project area). These benefits contribute to environmental and socio-economic sustainability and are also considered within the prioritization approach. Finally, Operational Benefits capture improvements in the efficiency of the transportation system.

The various categories of benefits may be assigned various weights in the scoring system. The scoring adopted here considers **Economic Benefits** as the most important category in the analysis (50/100 benefit points), followed by **Social Benefits** and **Operational Benefits** (25/100 benefit points each). If an alternative offers all benefits in a given category (e.g., 7/7 total for **Economic Benefits**), it would receive 100 percent of the total category weight (50/50 points). If an alternative offers no benefits in a given

category (e.g., 0/7 for **Economic Benefits**), it would receive 0 percent of the total category weight (0/50 points).

It should be noted that an additional factor will play a role in determining a project's Operational Benefits. This factor is related to the quantity of transportation models affected and can be characterized as follows.

- **Quantity of Transportation Modes Affected:** A given project can be passenger-rail based, freight-rail based, port/marina based, or a combination of multiple transportation modes. In the ranking system, if a project potentially improves the operations of multiple transportation modes, operational benefits are positively impacted (revised upward). See the chart below for details.

Transportation Modes Benefited (Operational Multiplier)		
Value	**Details**	**Description**
1.00	= 1	1 Mode Benefited (Example: Passenger Rail) = 1.00 x Operation Benefit Points
1.25	= 2	2 Modes Benefited (Example: Passenger Rail and Ports) = 1.25 x Operation Benefit Points
1.50	= 3	3 Modes Benefited (Example: Passenger Rail, Freight Rail and Ports) = 1.50 x Operation Benefit Points

6.7.1.2 Feasibility Score

The following factors contribute, or play a role, in assessing project feasibility at any point in time.

- **Project Readiness**: Project feasibility is considered a function of two important variables: project timeline and cost. The first portion of feasibility is related to how prepared an entity is to make an investment, or the project timeline. From a ranking perspective, projects that are to be completed in the short-term (within the next four years) should be inherently more important than projects being considered for the distant future. Similarly, projects that are already underway (either financially or from an operational perspective) are considered more important than those not yet underway. Accordingly, projects are assigned a range of 0-10 points based on each project's estimated "**Project Readiness;**" projects with "High Readiness" **benefit** as a result. See the chart below for details.

Project Readiness		
Value	**Details**	**Description**
0	qualitative	Alternative is a Long-Term Option
5	qualitative	Alternative is a Short-Term Option
10	qualitative	Alternative is Currently Underway or Has Secured Partial Funding (i.e. Continue Project)

- **Cost/Complexity:** The second portion of project feasibility is related to cost. There is limited state/federal funding available to support the development of freight rail, passenger rail, and port-based projects. As such, projects that are comparatively **more expensive** than their peers **were penalized** in the ranking system. A "**Cost/Complexity**" level was assigned to each project by outlining parameters for low, medium, and high investment costs. A range of 0-10 points was assigned based on each project's estimated "**Cost/Complexity**" level; projects with "Low Cost/Complexity" **benefit** as a result. See the chart below for details.

Cost/Complexity of Investment - Capital Expenditure			
Value	**Parameter**	**Details**	**Description**
0	High	> $100M	High Cost/Complexity
5	Medium	$25M <, ≤$100M	Medium Cost/Complexity
10	Low	≤ $25M	Low Cost/Complexity

Total project feasibility score will be equal to the sum of score on the two above factors:

Project Feasibility Score = Project Readiness Score + Cost/Complexity Score

6.7.1.3 Rankings of Capital Expenditure Projects

Table 6-7 includes final ranking of capital expenditure-based projects. Projects that implement mandatory requirements are given top ranking in this table regardless of their total project score.

Table 6-8 includes benefits provided by capital expenditure-based projects. Projects are listed in order of their benefits score.

Table 6-7 Final Ranking of Capital Expenditure-Based Projects

ID #	Alternative Name	Total Benefits Score	Mandatory	Project Feasibility Score: Cost/ Complexity	Project Feasibility Score: Project Readiness	Total Score
4.4.1	ARRC - Positive Train Control	37.05	✓	5.0	10.0	52.05
5.2.7	Fairbanks Area Rail Plan	101.25	×	10.0	0.0	111.25
5.2.1	ARRC - Seward Marine Terminal Improvements	80.98	×	0.0	5.0	85.98
5.3.3	ARRC - Whittier Yard Improvements	57.01	×	10.0	5.0	72.01
5.2.2	ARRC - Fairbanks Area Line Relocation - Phase 1	58.39	×	5.0	5.0	68.39
4.2.1	Commuter Rail – Initial Phase	65.18	×	0.0	0.0	65.18
4.4.2	USFS - Complete Chugach National Forest Whistle Stop Development	42.68	×	10.0	10.0	62.68
5.3.6	Port of Anchorage Track Improvements	52.01	×	10.0	0.0	62.01
5.3.4	ARRC - Northern Rail Extension – Phase 2	59.20	×	0.0	0.0	59.20
3.2.1.6	MSB/ARRC Port MacKenzie Rail Extension (PMRE)	48.53	×	0.0	10.0	58.53
5.2.4	ARRC - South Wasilla Rail Line Relocation	43.44	×	5.0	10.0	58.44
5.2.5	ARRC - Nenana Rail Line Relocation	43.44	×	5.0	10.0	58.44
4.5.4	WP&YR - Expansion of the Railroad Dock	49.87	×	5.0	0.0	54.87
4.4.5	WP&YR - Expand Skagway Depot Passenger Handling Capabilities	36.79	×	5.0	10.0	51.79
5.3.7	ARRC - Fairbanks Airport Branch and Eielson Branch Staging Areas	27.68	×	10.0	0.0	37.68
5.3.14	WP&YR - Construction and Expansion of Docking and Port Facilities (West Basin)	42.05	×	5.0	0.0	47.05
5.2.3	Cantwell Intermodal Facility	28.75	×	10.0	5.0	43.75
5.3.5	ARRC - Healy Canyon Stabilization	23.44	×	10.0	10.0	43.44
5.3.2	ARRC - Whittier Wharf Replacement and Staging Areas	37.05	×	5.0	0.0	42.05
4.5.1	ARRC - Ship Creek Intermodal Transportation Center	36.79	×	5.0	0.0	41.79
5.3.9	Grade-Separation of All NHS At-Grade Rail Crossings	38.44	×	0.0	0.0	38.44
5.3.10	Grade-Separation of Significant At-Grade Crossings	38.44	×	0.0	0.0	38.44

ID #	Alternative Name	Total Benefits Score	Mandatory	Project Feasibility Score: Cost/ Complexity	Project Feasibility Score: Project Readiness	Total Score
4.4.3	WP&YR - Passenger Depot Expansion	18.39	×	10.0	10.0	38.39
5.2.6	ARRC - Portage and Divide Tunnels	19.96	×	10.0	5.0	34.96
4.5.2	WP&YR - Construct a New Intermodal, International Passenger Depot	34.91	×	0.0	0.0	34.91
5.3.1	ARRC - Anchorage to Seward Track Rehabilitation	23.44	×	5.0	0.0	28.44
4.4.4	WP&R - Acquire New Passenger Equipment	13.39	×	5.0	5.0	23.39
5.3.4	ARRC - Fairbanks Freight Intermodal Terminal Rail/Truck Staging Area	13.39	×	10.0	0.0	23.39
4.5.3	WP&YR - Continued Upgrades to Avalanche Control System	6.25	×	10.0	0.0	16.25
5.3.10	Susitna-Watana Dam Support Spur	12.14	×	0.0	0.0	12.14

Table 6-8 Benefits Provided by Capital Expenditure-Based Projects

		Sector Multiplier Value	Economic Benefits (50.00)	Social Benefit (25.00)	Operational Benefits (25.00)	
	Alternative Name	**Operational Multiplier**	**Economic Benefits**	**Social Benefits**	**Operational Benefits**	**Total Benefits Score**
5.2.7	Fairbanks Area Rail Plan	1.25	100%	80%	125%	101.25
5.2.1	ARRC - Seward Marine Terminal Improvements	1.5	86%	40%	113%	80.98
4.2.1	Commuter Rail – Initial Phase	1	43%	100%	75%	65.18
5.3.4	ARRC - Northern Rail Extension – Phase 2	1.25	57%	60%	63%	59.20
5.2.2	ARRC - Fairbanks Area Line Relocation - Phase 1	1.25	14%	80%	125%	58.39
5.3.3	ARRC - Whittier Yard Improvements	1.25	57%	20%	94%	57.01
5.3.6	Port of Anchorage Track Improvements	1.25	57%	0%	94%	52.01
4.5.4	WP&YR - Expansion of the Railroad Dock	1.25	43%	20%	94%	49.87
3.2.1.6	MSB/ARRC - Port MacKenzie Rail Extension (PMRE)	1.25	71%	20%	31%	48.53
5.2.5	ARRC - Nenana Rail Line Relocation	1.25	0%	80%	94%	43.44
5.2.4	ARRC - South Wasilla Rail Line Relocation	1.25	0%	80%	94%	43.44
4.4.2	USFS - Complete Chugach National Forest Whistle Stop Development	1	43%	60%	25%	42.68
5.3.14	WP&YR - Construction & Expansion of Docking and Port Facilities (West Basin)	1.25	43%	20%	63%	42.05
5.3.10	Grade-Separation of Significant At-Grade Crossings	1.25	0%	60%	94%	38.44
5.3.9	Grade-Separation of All NHS At-Grade Rail Crossings	1.25	0%	60%	94%	38.44
5.3.2	ARRC - Whittier Wharf Replacement and Staging Areas	1.25	43%	0%	63%	37.05
4.4.1	ARRC - Positive Train Control	1.25	43%	0%	63%	37.05
4.5.1	ARRC - Ship Creek Intermodal Transportation Center	1	29%	40%	50%	36.79
4.4.5	WP&YR - Expand Skagway Depot Passenger Handling Capabilities	1	29%	40%	50%	36.79
4.5.2	WP&YR - Construct a New Intermodal, International Passenger Depot	1.25	29%	20%	63%	34.91
5.2.3	Cantwell Intermodal Facility	1	0%	40%	75%	28.75
5.3.7	ARRC - Fairbanks Airport Branch and Eielson Branch Staging Areas	1	43%	0%	25%	27.68

		Sector Multiplier Value	Economic Benefits (50.00)	Social Benefit (25.00)	Operational Benefits (25.00)	
	Alternative Name	**Operational Multiplier**	**Economic Benefits**	**Social Benefits**	**Operational Benefits**	**Total Benefits Score**
5.3.5	ARRC - Healy Canyon Stabilization	1.25	0%	0%	94%	23.44
5.3.1	ARRC - Anchorage to Seward Track Rehabilitation	1.25	0%	0%	94%	23.44
5.2.6	ARRC - Portage and Divide Tunnels	1.25	14%	20%	31%	19.96
4.4.3	WP&R - Passenger Depot Expansion	1	14%	20%	25%	18.39
5.3.4	ARRC - Fairbanks Freight Intermodal Terminal Rail/Truck Staging Area	1	14%	0%	25%	13.39
4.4.4	WP&R - Acquire New Passenger Equipment	1	14%	0%	25%	13.39
5.3.10	Susitna-Watana Dam Support Spur	1	14%	20%	0%	12.14
4.5.3	WP&YR - Continued Upgrades to Avalanche Control System	1	0%	0%	25%	6.25

7 Coordination and Review

DOT&PF began the development of the ASRP, as it does with all projects within its transportation program, with a commitment to the process of stakeholder outreach and public involvement. This particular project sought the insight and feedback of both rail stakeholders and the public for planning activities, policy development, and program decision-making efforts.

7.1 Approach to Public and Agency Participation

The ASRP planning team developed an in-depth and structured approach to ensure that stakeholders were provided with an opportunity to not only provide comment, but also to guide the development of the plan. This approach involved the implementation of a comprehensive Stakeholder Engagement Plan (SEP) that laid out various meetings, activities, and deliverables designed to engage rail stakeholders and the public in the design of the ASRP. The SEP summarizes specific public involvement objectives and strategies with target stakeholder groups at each planning stage.

7.2 Coordination with Neighboring States

DOT&PF interacts with neighboring states though involvement in national transportation organizations and to address specific transportation issues as necessary. The rail coordinator in Washington State will be contacted to inform them about the availability of the Alaska State Rail Plan and to solicit their comments. Neighboring Canadian provinces will also be notified.

7.3 Stakeholder Participation

The ASRP's SEP was developed to outline how the project team would identify and work with stakeholders during the progression and development of the ASRP. Stakeholders were invited to participate at various levels and phases of the project including inventory, needs assessment, and final plan review. DOT&PF sought to include all interested and affected individuals and organizations, including rail users, community and economic development organizations, unions, governmental entities, and the general public in the development of the ASRP.

The goals of the SEP were to:

- Involve stakeholders in identifying priorities for rail in Alaska;
- Involve stakeholders in developing a vision for the role of freight and passenger rail service in the economic development of Alaska; and
- Obtain input from people and organizations that have an interest in the ASRP and give them a meaningful and authentic opportunity to participate by:
    - Communicating the need, purpose, and decision-making structure of the ASRP;
    - Informing, consulting, and collaborating with stakeholders; and
    - Responding to issues and ideas.

The SEP used a three-tier engagement strategy to target stakeholders meaningfully and at appropriate points in the ASRP's development in order to bring transparency and trust to the planning process. The three tiers included:

- Tier 1: Steering Committee;
- Tier 2: TAG; and
- Tier 3: General Public.

7.4 State Rail Plan Steering Committee

The Steering Committee was comprised of:

- DOT&PF Commissioner, Pat Kemp (through December 2014)
- DOT&PF Commissioner, Marc Luiken (beginning January 2015)
- DNR Commissioner, Dan Sullivan (through July 2013)
- DNR Commissioner, Joe Balash (August 2013 through December 2014)
- DNR Commissioner, Mark Meyers (beginning January 2015)
- DCCED Commissioner, Susan Bell (through December 2014)
- DCCED Commissioner, Chris Hladick (beginning January 2015)
- ARRC President and Chief Executive Officer, Chris Aadnesen (through October 2013)
- ARRC President and Chief Executive Officer, William O'Leary (beginning November 2013)
- WP&YR President, Eugene Hretzay (through July 2013)
- WP&YR President, John Finlayson (beginning August 2013)

The role of the Steering Committee was to provide senior-level guidance on the ASRP, policies, and long-range vision for the future of rail in Alaska. Over the course of the project, the Steering Committee met three times: in Anchorage on November 28, 2012 during project initiation to provide input into the ASRP's vision statement; in Fairbanks on October 17, 2013 at mid-plan to review ASRP direction; and on July 23, 2015 by teleconference to review and provide guidance on the draft ASRP's recommendations.

7.5 State Rail Plan Technical Advisory Group (TAG)

The TAG was a collaborative, interdisciplinary sounding board for the planning team. The purpose of the ASRP TAG was to provide feedback and recommendations on the ASRP's vision, the needs assessment, and the draft rail policy. While recommendations from the TAG were considered by the project team for possible adoption, DOT&PF remains the ultimate decision-making body responsible for the ASRP.

TAG meetings were scheduled to coincide with key phases of the ASRP's development: needs identification, opportunities identification, and draft review. TAG membership was comprised of industry and rail professionals. Members included representatives from the MPOs; freight shippers; the military; and local, state, and federal agency representatives. A complete listing of TAG members is available in Appendix E.

TAG members participated in two meetings in Anchorage (February 26, 2013; October 1, 2013). Topics included PRIIA and planning background, goals, and objectives; facility requirements and alternatives evaluation criteria; alternative concepts and screening; and final recommendations review. In addition, each TAG member was provided a pre-public release copy of the draft plan and asked for comments.

7.6 Public Meetings

At the initiation of the ASRP, DOT&PF hosted a series of seven public open houses in the following locations:

- Skagway – May 21, 2013
- Haines – May 22, 2013
- Wasilla – May 29, 2013
- Seward – May 30, 2013
- Anchorage – June 4, 2013
- Fairbanks – June 5, 2013
- Nome – June 6, 2013

The purpose of these events was to inform the public about the ASRP's development and to seek input on the ASRP's vision statement and goals as well as potential system-wide needs. Comments regarding the vision statement and overall statewide rail needs were collected at the open houses and online, and were used to assist the project team in updating the ASRP.

Each meeting was held in the evening (between 5PM-8PM) and featured posters with ASRP information including rail plan elements, a map of Alaska's current rail system, and a map of Alaska's resource locations. Project team members were available to answer any questions that arose and actively engaged the public on their thoughts and ideas regarding rail for Alaska's future. A PowerPoint slideshow, followed by questions, was presented at each open house.

The open houses were advertised in local print media, via post card and e-mail announcements to individuals on the project mailing list; fliers were posted by ASRP TAG members; and information was posted on the project website.

The draft ASRP will be presented to the public at an *on-line open house* following independent review by the TAG and the Steering Committee and inclusion of any subsequent plan revisions.

Additional information about the public meetings can be found in Appendix E.

7.6.1 Rail Shipper Interviews

Private sector freight rail shippers, defined as a business or company that uses rail for shipping and/or receiving all or part of their products or materials, were contacted regarding their use of freight service. Interviewed shippers contacted included:

- Eklutna, Inc.
- Usibelli Coal Mine
- Holland America Princess Tours
- QAP
- Alaska West
- Flint Hills

Shippers were asked for input on their use of freight rail service, changes in their use of freight rail service, their opinion on the value of intermodal opportunities and what those opportunities might look

like, potential infrastructure or operational improvements that could increase their rail use, regulatory restrictions that impact rail service, the value of public rail retention and infrastructure programs, ways in which the public sector could assist or enhance rail service to local industries, and their opinion on the future of local rail freight service.

Shippers who were interviewed were using rail freight service with regularity, although recent cutbacks in the freight schedule have been difficult for some. Other modes of transport, such as trucks, have been used by some shippers to make up for this less frequent schedule as well as account for scheduling conflicts and hauling materials in areas where no rail lines or stops are located. Shippers generally stated that decisions on mode of transport are based on economics. They use the mode that is economically beneficial to their business, and rail is generally less expensive than other modes. Shippers noted improvements that could benefit freight service include straightening rail lines as well as constructing longer sidings, double track, rail spurs and depots in key areas. Other improvements identified include adding more and additional types of cars to trains, such as double-stack or fuel transport cars. Shippers were generally unaware of regulatory restrictions impacting their rail service. While shippers were generally unaware of ways in which the public sector could assist them in increasing use of freight rail service, some believe the state should have a rail retention and infrastructure improvement program whereby the state would make improvements to rail lines. Shippers believe that ARRC offers a vital service, one that should be supported by the state. Opinions on the future of freight service were mixed, but most shippers indicated they were neutral to optimistic about future rail freight volume and use.

7.7 Issues Raised during Plan Development

ASRP public meeting participants were asked to provide feedback regarding the ASRP's draft vision statement as well as any specific rail issues that the project team should consider. Comments on 23 different topic areas were received from the public via written comment forms, project website submissions, and emails. Each of these comments was shared with the project team for consideration in the ASRP. Some of the comment topics include:

- Economic Development
  - Maintain existing services first, expand later
  - Bush hubs (e.g., Nome) would benefit from vehicles transported on railcars
- Finance
  - Generating for Seven Generations (G7G) is alleged to have funders ready to finance the $12 billion for construction and rolling stock for a new rail connection from Alberta to Delta Junction
  - Make sure that there is a financing plan in place to operate any new line before building any new trade
- Freight Rail
  - Extend rail from Fairbanks to resources further north
  - Transition freight from truck to rail
- Goals and Objectives

    - Instead of "Roads to Resources" or "Rails to Resources," we would like to see "Corridors to Resources"
    - "Intermodal transport" is the most important concept of the ASRP and should be a focus
    - The first priority should be the continued investment in existing freight and passenger service before laying track into new regions of the state
- Infrastructure
    - The Fairbanks rail yard should be relocated
    - The number of at-grade railroad crossings should be reduced
- Intermodal Connectivity
    - Ports and intermodal connectivity are important for freight transportation
    - Develop a policy that establishes guidelines to ensure a seamless integration of all rail with other forms of transport, including marine highway and other public transport
- Operations
    - Ensure PTC is enforced
    - Rail connections should be made through Canada to the Lower 48
    - Rail corridors used for the transport of hazardous materials should be rerouted away from residential and densely populated areas
    - Railroad safety and reliability should be improved
- Passenger Rail
    - Commuter service between Anchorage and the MSB/Girdwood should be developed
    - Rail service to Ted Stevens Anchorage International Airport should be improved
    - Anchorage to Fairbanks commuter service (late night/early morning) should be developed
    - Commuter costs for Alaskans should be considered

7.8 Incorporation of Stakeholder Comments

Both public and private sector stakeholders played a major role in providing input to the ASRP. The comments and recommendations received through all aspects of the stakeholder outreach process were presented to DOT&PF. These comments and recommendations were used in the development of the state rail vision, passenger and freight improvements, as well as many details of the elements of the plan.

Based on stakeholder input, DOT&PF will emphasize work towards:

- Identifying an Office of Intermodal Planning, with a key mission of helping the state's railroads secure federal funding for improvements
- Continuing to promote and enhance rail safety at crossings

7.9 Coordination with Other Transportation Planning Programs and Activities

An update of SWLRTP is under development in 2016. The ASRP will be incorporated as an element of the SWLRTP. See Section 1.5 for further information.

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Appendix A: Summary of Recent Plans and Projects

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Appendix A – Summary of Recent Plans and Projects

1 Relevant Rail-related Plans and Projects Managed by Other Agencies/Entities

While the Alaska Department of Transportation and Public Facilities (DOT&PF) and the Alaska Railroad Corporation (ARRC) have the primary responsibility for rail planning, policy, and project development, a number of other state and local agencies have an interest in the state rail system. This appendix summarizes recent plans and projects managed by other agencies or entities in Alaska that have applicability to rail.

Rail operations are of increasing interest at the local level of government. At the local level, the agencies most involved in rail planning are Metropolitan Planning Organizations (MPOs). MPOs are federally mandated and funded policy-making organizations consisting of local government and transportation officials. The formation of an MPO is required for an urbanized area with sufficiently dense development and a population over 50,000. A MPO is required to maintain a Long-Range Transportation Plan (LRTP) and Transportation Improvement Program (TIP). A TIP is a multi-year program of transportation projects to be funded with federal and other transportation funding sources. Federally funded projects within each MPO's geographic area, such as a grade crossing improvement project, must be included in the agency's TIP.

There are two MPOs in Alaska: the Anchorage Metropolitan Area Transportation Solutions (AMATS) and the Fairbanks Metropolitan Area Transportation System (FMATS). The Matanuska Susitna Borough (MSB) as well as the Anchorage and Fairbanks MPOs are the agencies engaged with the ARRC in planning, partnering, and funding. Other agencies include: the City of Skagway, which is engaged in port development planning that will affect the WP&YR; and the University of Alaska Fairbanks, which is working on the Alaska-Canada rail link and in-state rail extensions to Livengood, the Yukon River, and Delta/Greely.

1.1 Anchorage Metropolitan Area Transportation Solutions (AMATS)

AMATS is a multiagency, federally recognized MPO tasked with planning and funding the transportation system within the Anchorage Bowl and Chugiak-Eagle River areas. AMATS is funded by U.S. Department of Transportation (USDOT) programs, State of Alaska appropriations and general obligation bonds, and local municipal bonds. These funds are expended on items in the AMATS TIP, which implements elements of the *2035 Metropolitan Transportation Plan* (MTP). In addition, AMATS released the Community Discussion Draft of the *Anchorage Bowl Land Use Plan Map*, designed to guide future use and development through 2040. AMATS does not operate rail service but ARRC is represented on the AMATS Technical Committee, and it coordinates with the ARRC on railroad activities within the AMATS area.

The AMATS Policy Committee approved the 2035 MTP on May 3, 2012. The MTP guides nearly $4 billion in transportation network improvements between 2012 and 2035. The MTP cites the rail system as an

important component of the regional transportation system, particularly in connection with freight movement to and within the region. The MTP cites a number of ARRC infrastructure development plans, including collaboration with the Dimond Center in Anchorage to develop an intermodal center, and upgrading its Ship Creek rail facilities and headquarters complex. The MTP also suggests safety reinforcements at of the following at-grade crossings in Anchorage, at a minimum: C Street, Arctic Boulevard/Dowling Road, and International Airport Road/Jewel Lake Road. These identified crossings are of particular concern because of relatively high vehicle traffic (AMATS 2012).

The MTP recommends the implementation of electronic motorist-warning systems at rail crossings to provide greater safety assurance until planned roadway-rail grade separations can be completed. The MTP also recommends that the currently planned ARRC improvements be continued, including:

- Construction of additional track to expand capacity
- Continued development of passenger facilities
- Continued realignment of tracks within the existing rail corridor
- Design and development of an intermodal transportation facility at Ship Creek
- Pedestrian improvements and enhancements
- Rolling stock rehabilitation
- Improved rail crossing – intersection signalization
- The Port Mackenzie Rail Extension Project

In addition, the MTP also discusses the possibility of using the ARRC for rail commuter service between Palmer, Wasilla, and Anchorage, a scenario that has been studied and discussed for 35 years.

1.2 Fairbanks Metropolitan Area Transportation System (FMATS)

The Fairbanks Metropolitan Area Transportation System (FMATS) is the official MPO for the Fairbanks area. Like AMATS, FMATS is also funded by USDOT programs, State of Alaska appropriations and general obligation bonds, and local municipal bonds. These funds are used through the TIP to implement the FMATS MTP.

The FMATS Policy Committee approved the 2040 MTP on January 21, 2015. The MTP cites the history of railroads serving Fairbanks. Fairbanks is the northern hub of the ARRC, serving as a critical intermodal freight transfer center for Interior Alaska. Rail freight operations in Fairbanks also serve oilfield service companies, the two military bases (Eielson Air Force Base and Fort Wainwright Army Base), and coal deliveries for four coal-fired power/heating plants.

Like the AMATS MTP, the FMATS MTP also calls for safety improvements at a number of at-grade crossings in Fairbanks. There are approximately 50 at-grade crossings of public roadways within the FMATS area (FMATS 2012). The most significant at-grade arterial roadway crossings are:

- University Avenue
- Richardson Highway at three locations: 3-Mile Crossing, Peridot Crossing and Moose Creek Crossing
- College Road

- Old Steese
- Steese Expressway

Future grade separations have been proposed and studied for several crossings, including the University Avenue Crossing (Main Line), the Richardson Highway/3-Mile Crossing (Airport Spur Line) and the Richardson Highway/Peridot and Richardson Highway/Moose Creek Crossings (Eielson Branch Line).

The MTP includes a number of major projects that the ARRC has proposed. These projects are described in Sections 1.2.1, 1.2.2, and 1.2.3.

1.2.1 VLR-25 North Pole, Alaska, Road/Rail Crossing Reduction Project

According to the FMATS MTP (FMATS 2015), this project will realign the railroad track along a portion of the ARRC Eielson Branch to enhance safety by reducing the number of at-grade road/rail crossings in the City of North Pole. It includes elimination of a major at-grade road/rail crossing of the Richardson Highway, a National Highway System (NHS) roadway. The project will relocate the railroad away from North Pole's population center to a rural area along or near the Tanana River Levee structure. The project will extend from Richardson Highway Mileposts (MP) 355 to 347, popularly known as Mile 9, to the eastern portion of the City of North Pole.

The FMATS 2015 MTP includes this project in the Very Long Range group of projects, with implementation anticipated beyond 2040. The ARRC has estimated the total project cost to be approximately $69million. The FMATS MTP (2015: Table 8-4) shows this project as unfunded.

1.2.2 VLR-28 Fairbanks Rail Realignment

According to the FMATS MTP (FMATS 2015), the ARRC proposes to optimize the alignment of its mainline and branch track within the Fairbanks area to improve safety and customer response as well as minimize transportation conflicts with the adjacent communities. A Memorandum of Understanding between the Fairbanks North Star Borough and ARRC is the guiding policy for implementing this project (PL108-199, Div. F, Title I, Sec. 115). The FMATS MTP (2015: Table 8-4) reports that this projected is estimated at $400 million and is unfunded.

1.2.3 Other ARRC Projects in the Fairbanks Area

The ARRC also has a number of other projects planned that will impact the Fairbanks area. These projects may or may not occur within the planning horizon. They are listed here and described below:

- Fairbanks Freight Intermodal Improvements
- Fairbanks Area Rail Line Relocation
- Northern Rail Extension

As discussed in the FMATS MTP, while the cumulative effects of these projects on rail volumes are currently unknown, they will result in improved operating speeds, reduced safety concerns, and a slightly expanded service area. This could support, or even encourage, an increase in rail volumes that are higher than the current "Expected Growth" scenario.

1.2.3.1 Fairbanks Freight Intermodal Improvements

The Fairbanks Freight Intermodal Improvements project entails various improvements to the existing freight intermodal area of ARRC's Fairbanks Rail Yard. The existing rail yard does not have adequate space for handling containers and Trailer on Flatcar (TOFC) traffic, creating a bottleneck in the system. Primary improvements include grading and placing E-1 compacting material, along with drainage, in the intermodal unloading area; moving and improving existing at-grade crossings to allow longer trains to be spotted (parked) without blocking truck departures; and constructing a centralized trailer parking area with space for up to 80 units. This facility is estimated to cost approximately $18 million.

1.2.3.2 Fairbanks Area Rail Line Relocation

The Fairbanks Area Rail Line Relocation has been a project that has been under consideration for more than a decade (ARRC 2011). The primary purpose of the Fairbanks Area Rail Line Relocation project is to resolve safety concerns created by development that has occurred around the railroad tracks over the last 80 years. Additionally, the project would reduce travel times, improve operational efficiency, and accommodate mass transit/passenger service. The realignment is not expected to result in additional rail traffic.

The project would optimize the main line and branch line track within the Fairbanks area to improve safety and minimize transportation conflicts with the adjacent communities. A number of the at-grade crossings in Fairbanks and Fort Wainwright would be eliminated. A number of studies have been prepared and funded by a variety of agencies, including ARRC, Department of Defense via FRA, Federal Transit Administration (FTA), and Federal Highway Administration (FHWA).

The Fairbanks Area Rail Line Relocation project consists of three phases:

- Phase 1 - From near 9-mile on the Richardson Highway (MP 353) to Southeast North Pole, near Moose Creek. This phase is also known as the North Pole Road/Rail Crossing Reduction Project.
- Phase 2 - From MP 353 on the Richardson Highway to 3-Mile Gate on Fort Wainwright's western border.
- Phase 3 - Area west of the 3-Mile Gate, past Chena River.

Phase 1, which has its own utility and can be constructed independently of the other 2 phases, would provide immediate safety benefits. Under this phase, the ARRC proposes to reduce the number of at-grade crossings on a portion of its Eielson Branch track (from Richardson Highway MP 9 to the Chena River Floodway) that runs through North Pole, Alaska. The proposed alternative would realign the track on the landward side of the Tanana River Flood Control Levee. It would close nine at-grade crossings within the City of North Pole, and relocate the existing crossing of the Richardson Highway, replacing it with a separated grade crossing. A finding of no significant impact (FONSI) was finalized for Phase 1 by the FRA on December 7, 2012. FHWA issued a FONSI for the project on January 18, 2013.

Funding for final design and construction has not been identified. The cost estimate for Phase 1 is $65 million which includes a grade separation at Richardson Highway (ARRC MP G9) and Rental Street. Phase 2 is estimated at $10-20 million.

FMATS MTP Projects VLR-25 (North Pole, Alaska, Road/Rail Crossing Reduction Project), described in Section 1.2.1, SR-42 (Richardson Highway: MP 359 Railroad Crossing Overpass), and VLR-28 (Fairbanks Rail Realignment), described in Section 1.2.2, are all components of this effort.

1.2.3.3 Northern Rail Extension

In 2010, the Surface Transportation Board (STB) granted ARRC authority to construct and operate the Northern Rail Extension. If fully implemented, the Northern Rail Extension project would extend the existing Alaska Railroad track 80 miles. The extension would connect the existing Eielson Branch rail line at its terminus near the Chena River overflow structure near North Pole, crossing the Tanana River and traveling through the military training grounds at the Joint Pacific Area Range Complex (JPARC), to a location slightly southeast of Delta Junction (ARRC 2011).

The proposed rail line would provide freight and potentially passenger rail services serving commercial interests and communities in or near the project corridor as well as provide military support. The extension would be available to military, general public, and commercial shippers, including agricultural and resource development businesses. The extension could support transit operations between Fairbanks, North Pole, Salcha, and Delta Junction. This extension is not expected to amount to a net increase in train traffic entering and exiting Fairbanks to and from Anchorage.

In 2011, ARRC began construction of Phase 1 of the project, which includes the construction of a bridge, approach road, and levee associated with the crossing of the Tanana River near Salcha. Construction began in 2012 and was completed in August 2014. Phase 2 includes rail construction from Moose Creek to the Salcha crossing; Phase 3 includes rail construction from the Salcha crossing to the Donnelly Military Training Area; and Phase 4 includes construction of the rail from Donnelly to Delta Junction.

The Northern Rail Extension project is estimated at over $1 billion, of which $189.0 million has already been expended to complete Phase 1. Phases 2, 3, and 4 are currently unfunded.

1.2.3.4 Other FMATS Plans

Other FMATS plans that are associated with rail include:

- 2005 - FMATS Long Range Transportation Plan
- 2006 – FNSB/City of Fairbanks – The Historic Preservation Plan
- 2007 - Airport Way Improvements Reconnaissance Study
- 2008 - Vision Fairbanks Downtown Plan
- 2010 - North Pole Land Use Plan 2010 – Governor's Coordinated Transportation Task Force Recommendations Report
- 2010 – Seasonal Mobility Task Force Recommendations Report
- 2010 – Updated FMATS Metropolitan Transportation Plan including a Freight Element
- 2010 – Updated Public Participation Plan
- 2010 - Update of the BIKEWAYS Map
- 2010 – Steese Highway/Johansen Expressway Area Traffic Improvements
- 2012 – Planning documents for the FMATS Safe Routes to School Program

- 2012 - FMATS Non-Motorized Transportation Plan
- 2012 – FMATS Art Selection Advisory Committee formed
- 2012 - Richardson Highway/Steese Expressway Corridor Study Initiated (DOT&PF)
- 2014 – College Road Corridor Study Completed
- 2013 – Conducted a Household Travel Survey and update of the TransCad Travel Model (DOT&PF)
- 2014 – Update of the FMATS Bikeways Map
- 2015 – Updated FMATS Metropolitan Transportation Plan
- 2015 – Updated Bikeways Map

1.3 Matanuska-Susitna Borough Planning

While not an MPO, the MSB has become involved in discussions and planning for rail transportation. The MSB is the owner of the PMRE project (see Section 1.1.1) and is supportive of commuter rail service between the MSB and Anchorage (Hollander 214; Wellner, 2014).

In its most recent LRTP (2007) and in the update of the LRTP underway in November 2016, the MSB recognizes the fundamental role the ARRC has had in the development and economy of region. The MSB LRTP aspires to better utilize the rail system in order to prompt economic growth (MSB 2007). The LRTP cites the PMRE project as a key element in the long-term growth of Port MacKenzie and development of industry in the Mat-Su Valley. As of 2016, the project is under construction but currently on hold, with a completion date dependent on funding.

The MSB also aims to continue its work with the ARRC, the Municipality of Anchorage, and the State of Alaska to develop commuter rail service between the Mat-Su Valley and Anchorage.

1.4 Planning in Other Parts of the State

1.4.1 Port MacKenzie Rail Extension Project

The Port MacKenzie Rail Extension (PMRE) project is an MSB project being constructed in cooperation with the ARRC. The project is building a new 35-mile track connecting Port MacKenzie, a deep-draft dock on the Knik Arm of Cook Inlet, to the ARRC mainline track near Houston. When complete, the new rail line would operate as part of the ARRC system. The port has adequate acreage to accommodate bulk resource storage, transport, and processing facilities, as well as rail and terminal facilities for efficient train loading and unloading.

As of 2016, the project is under construction but currently on hold awaiting further funding. A September 2014 estimate indicated that the project will exceed $300 million[1]. All of the project funding has thus far come from state grants.

[1] As reported by PMRE Executive Director, Joe Perkins, at an August 5, 2014 meeting of the MSB Assembly and reported by KSKA on August 6, 2014.

1.4.2 Skagway Port Development Plan

Increased mining activity within the Yukon Territory prompted the Skagway Port Development Steering Committee (PSC) to create the 2008 Skagway Port Development Plan (PSC 2008). The purpose of the plan was to assess the current condition of the port, suggest improvements, and provide the framework to be the primary port of the Yukon Territory, both for the export of raw materials and import of project and re-supply traffic. While the plan is not contingent on any changes to the WP&YR, it is suggested that the route, which is currently utilized for passenger rail, could be extended by re-opening the track between Carcross and Whitehorse. Operation of the entire historical extent of the WP&YR and reinstatement of freight service would make it possible to once again haul freight on the line. However, in 2013, the WP&YR considered and rejected the option of providing freight service.

1.4.3 University of Alaska Fairbanks, Institute of Northern Engineering

The University of Alaska Fairbanks has completed several projects that have analyzed the economic feasibility of both extending the Alaska Railroad in-state as well as connecting the Alaska Railroad to the North American Railroad grid. Funding for the work conducted by the university has come from a variety of sources, including the U.S. Department of Defense (DOD), the U.S. Department of State, and the USDOT, and passed through the DOT&PF. Most recently, the 2012 State Legislature approved $1.1 million for an Alaska Canada Rail Link Phase II Feasibility Study (see Section 1.4.3).

1.4.4 Alaska-Canada Rail Link

A railway linking Alaska to the Lower 48 States through Canada has been under consideration for nearly a century. This project was previously included in the 1985 *Alaska State Rail Plan*. In recent years, the effort to establish the Alaska-Canada Rail link has seen renewed interest, with proposals to develop natural resources and mineral deposits along the path of a connecting line in both Alaska and Canada. In July 2005, the governments of Alaska and the Yukon Territory started an initiative to determine the feasibility of connecting Alaska and Yukon with the North American railroad system.

Recent efforts include the 2007 *Alaska-Canada Rail Link Phase 1 Feasibility Study*. This study analyzed the identified ideal rail corridors for any potential long-term benefits to the public, and to determine the technical and economic feasibility of the corridors. The study determined the project was not economically feasible and would not create enough revenue to support the project's cost.

1.4.5 Alaska-Alberta Rail Link

As of early 2013 another separate proposal, the Alaska-Alberta Railway, was made to construct a railroad that would link Alaska, the Yukon Territory, northern British Columbia, and northern Alberta to transport oil products. One proposal would create a rail connection between Fort McMurray, Alberta and Delta Junction, Alaska. At Delta Junction, oil products from Canada would be added to the Alyeska Pipeline. This connection would transport Alberta oil to the Trans Alaska Pipeline System (TAPS), where it could be exported from Valdez. Project proponents, a group from Vancouver, B.C., called G7G, persuaded the Alberta government to provide $1.8 million (Canadian dollars) to conduct a pre-feasibility study. The outcome of that work, the *Alberta to Alaska Railway Pre-Feasibility Study*, was released by the Van Horne Institute in March, 2016. The study estimates the cost of the rail connection to be $28 to $34 billion, and indicates that the project would involve "substantial risk," but that the risk could be

mitigated through the development of up to $659 billion worth of minerals along the route that could be mined and transported over a 30-year period.

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Appendix B: Standard Classification of Transported Goods (SCTG) Commodity Categories and Definitions

SCTG Code	Brief Description	Commodity Details
1	Live Animals/Fish	Bovine animals; swine; poultry; fish; other live animals
2	Cereal Grains	Wheat; corn; rye; barley; oats; grain sorghum; other cereal grains; includes seed
3	Other Ag. Products	Vegetables (fresh, chilled, or dried); fruits and nuts (edible, fresh, chilled or dried); oil seeds; bulbs; soy beans; live plants; cut flowers; cotton; mustard; fresh-cut flowers; plants and parts of plants; tobacco
4	Animal Feed	Eggs; cereal straw; forage products; food waste used in animal feeding; misc. other products of animal origin
5	Meat/Seafood	Meat (fresh, chilled, or frozen, salted or brined, smoked); poultry (fresh, chilled, or frozen); fish (except live)
6	Milled Grain Products	Flours; malt; milled rice; starches; inulin; bakery products and food preparations of cereals flour; starch or milk; baked products (including frozen)
7	Other Foodstuffs	Dairy products (excludes beverages and preparations of milk), processed or prepared vegetables, fruit, or nuts (excludes dried or milled and juices); coffee, tea, and spices (excluding unprocessed coffee and unfermented tea); animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes; flours and meals of oil seeds; sugars; confectionary, cocoa, and cocoa preparations; vinegar; non-alcoholic beverages
8	Alcoholic Beverages	Beer, wine and other fermented beverages; spirituous beverages and ethyl alcohol; denatured ethyl alcohol (not for human consumption)
9	Tobacco Products	Cigarettes & tobacco products
10	Building Stone	Calcareous monumental or building stone; other monumental or building stone
11	Natural Sands	Silica sands and quarts sands for construction and other uses; other sands
12	Gravel	Gravel and crushed stone; limestone flux; agricultural limestone
13	Nonmetallic Minerals	Salt; table salt; dolomite; sulfur, other clays; pumice stone; gypsum
14	Metallic Ores	Iron; copper; nickel; aluminum; lead; zinc; uranium; titanium; other ores and concentrates
15	Coal	Bituminous coal; anthracite; lignite
16	Crude Petroleum	Crude petroleum oil and oil from bituminous minerals including tar sands
17	Gasoline	Gasoline; blends of gasoline; aviation turbine fuel; kerosene; ethanol; ethanol blends; other fuel alcohols

SCTG Code	Brief Description	Commodity Details
18	Fuel Oils	Diesel; bunker C; biodiesel; fuel oils; blends of fuel oils
19	Coal Products (Coal – n.e.c)	Lubricating oils and greases; other refined petroleum oils; gaseous hydrocarbons; petroleum products; bituminous mixtures
20	Basic Chemicals	Inorganic chemicals; sodium hydroxide; potassium hydroxide; sulfur; sodium sulfates; multiple others; organic chemicals; acyclic alcohols; phenols & phenol alcohols; organic acids; halogenated derivatives of hydrocarbons; misc. others.
21	Pharmaceuticals	Pharmaceutical products prepared or for preparation for medical use
22	Fertilizers	Animal or vegetable fertilizers; nitrogenous mineral or chemical fertilizers; phosphatic slag; other phosphatic mineral fertilizers; potassium chloride; other fertilizers
23	Chemical Products	Paints and varnishes; vegetable tanning extracts or coloring matter; inks; essential oils; perfumery; soaps; photographic film; insecticides; glues and prepared glues; prepared explosives; activated carbon; water treatment preparation; other chemicals
24	Plastics / Rubber	Plastics and rubber in primary form; articles of plastics; articles of rubber
25	Logs	Logs for pulping; logs for lumber; fuel wood; wood in the rough; other untreated wood
26	Wood Products	Wood chips or particles; treated wood; shingles and shakes; veneer sheets; particle board; plywood; windows, doors, frames and thresholds
27	Newsprint / Paper	Pulp or fibrous cellulosic materials; paper and paperboard in large rolls or sheets
28	Paper Articles	Toilet paper; facial tissue; sanitary napkins; sacks and bags of paper; packing containers of paper; wallpaper and similar wall coverings; envelopes and stationery; other paper articles
29	Printed Products	Printed books etc; newspapers; journals and periodicals; advertising material; printed or illustrated postcards; business-forms; other
30	Textiles / Leather	Textile fibers; knitted or crocheted fabrics; woven fabrics; tufted carpets; non-woven or felt fabrics; leather and articles of leather including footwear and luggage
31	Nonmetal Min. Products	Hydraulic cements; ceramic products; glass and glass products; worked granite; asphalt shingles; concrete pipes; prefabricated structural components; slag rock; building blocks; other
32	Base Metals	Ferro-alloys; copper; iron and steel; aluminum bars, rods, sheets, foil; lead; nickel; zinc; other nonferrous metal
33	Articles – Base Metal	Pipes, tubes, and fittings; structures and structural parts; hand tools, cutlery, interchangeable tools; metal containers; springs
34	Machinery	Turbines; boilers; internal combustion engines; other non-electric motors and engines; pumps; compressors; fans; ventilating or recycling hoods incorporating a fan; air-conditioning, refrigerating, or freezing equipment; materials-handling, excavating, boring and related machinery or equipment; other mechanical machinery

SCTG Code	Brief Description	Commodity Details
35	Electronics	Electric motors, generators, generating sets, rotary converters, transformers, static converters, and inductors; electric, electro-thermic, or electro-mechanical domestic appliances; line telephone or telegraph apparatus and electronic equipment and electronic entertainment products; computer and office equipment; prepared unrecorded or pre-recorded media; electronic components and parts; other electronic and electrical equipment
36	Motorized Vehicles	Motor vehicles; tractors; motorcycles
37	Transport Equipment	Railway equipment; aircraft and spacecraft; ships, boats, and floating structures
38	Precision Instruments	Optical elements, instruments, and apparatus; photographic and photocopying machines; surveying equipment; instruments and apparatus for medical, dental, veterinary or similar purposes
39	Furniture	Furniture; mattresses; lamps; illuminated signs
40	Misc. Mfg. Products	Arms and ammunition; toys and sporting equipment; miscellaneous manufactured products
41	Waste / Scrap	Metallic waste and scrap; nom-metallic waste and scrap (except from food processing)
43	Mixed Freight	Items for grocery and convenience stores; supplies for restaurants; hardware or plumbing supplies; office supplies; miscellaneous
99	Unknown	Unknown commodities

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Appendix C: Commuter Rail

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South Central Alaska Commuter Rail Concept of Operations

1 Introduction

The purpose of this appendix is to describe a conceptual operating plan for a Matanuska-Susitna Valley (Mat-Su) - Anchorage weekday commuter rail service. Included in the description are ridership estimates, a schedule for the service start-up, description of the type of rolling stock or equipment that the service would use, and the conceptual costs to build and sustain the service into the future. Governance concepts for sponsoring the commuter rail service, potential service operators, and next steps are also discussed.

Public commentary during development of the Alaska State Rail Plan (ASRP) indicated a substantial interest in commuter rail service between the residential communities in the Mat-Su Valley and job centers in Anchorage. This conceptual operating plan has been assembled in response to the interest expressed in commuter rail during the development of the ASRP.

2 Background

The concept of a commuter rail service linking the Mat-Su with Anchorage has been studied several times. The first analysis was the *Feasibility Analysis of Upgraded Passenger Rail in the Anchorage, Alaska Region* prepared by Allen M. Voorhees & Associates for the Municipality of Anchorage and the Alaska Department of Transportation & Public Facilities (DOT&PF) in 1979. The next analysis was the *Anchorage Commuter Rail* study prepared in 1988, sponsored by the Municipality of Anchorage with the Matanuska-Susitna Borough (MSB) and the Alaska Railroad Corporation (ARRC). This was followed by the *Girdwood Rail Service Feasibility Assessment* done for the Municipality of Anchorage in 1994, and the *Market Analysis for ARRC Anchorage International Airport Rail Station* completed in 1999. In 2000 the *Knik Arm Study* also explored commuter rail and ferry alternatives.

In 2002, the ARRC sponsored the *South Central Rail Network Commuter Study and Operation Plan*. In addition to service between Mat-Su and Anchorage, this study explored service between Girdwood and Anchorage. The effort's ridership analysis relied on quantification of the universe of weekday commuter trips to Anchorage. Modal splits typical of commuter rail elsewhere in the United States were then applied to the trip total to generate an estimate of potential commuter rail ridership. The analysis was supported by findings of a telephone survey and focus groups of Mat-Su - Anchorage commuters and was aimed at understanding commuter behavior and preferences. The survey/focus group findings confirmed strong interest in commuter rail.

The ridership element of that study was updated in 2009 with the *Wasilla-Anchorage Commuter Rail Concept of Operations*, a technical memorandum prepared for ARRC. Similar to the 2002 study, the update identified the universe of work trips that could be attracted to commuter rail between any pairing of origins and destinations along the route. This was done using the travel demand model developed for the Knik Arm Crossing project, a tool that did not exist in 2002. This universe of work trips was then reduced by updated commuter rail mode split information.

3 Ridership Forecast

The 2009 ridership study looked at five alternative ridership scenarios. Each scenario assumed two and three southbound morning trains with the reverse in the afternoon. The scenarios varied from one another in the number of stations used. Assumptions of stations ranged from two—Wasilla and Anchorage—to as many as nine. For two commute period round trips, the various scenarios estimated a range of between 600 and 1,200 riders per weekday in 2020. For three commute period round trips, the range was between 900 and 1,600 riders per weekday in that year. The scenario with the highest ridership included three commute round trips with nine stations (1,600 riders per weekday):

- Wasilla
- Matanuska (Glenn Highway/Parks Highway Interchange)
- Eklutna
- Birchwood
- Eagle River
- Elmendorf
- Anchorage
- Spenard
- Ted Stevens Anchorage International Airport (AIA)

This scenario also had the longest transit time of 1 hour and 18 minutes from end to end, and 1 hour and 8 minutes between Wasilla and a Ship Creek station in Anchorage. The latter was the same run time for the seven-station scenario, which excluded the two more southern stations of Spenard and AIA. The scenario with the lowest ridership was for service between just two stations: Matanuska and Ship Creek. It also had the shortest run time of 45 minutes.

However, another scenario combining a 60-minute run time and a three-station stopping pattern, generated a 2020 ridership forecast of 1,000 to 1,500 riders for two and three commute period round trips, respectively. The three stations were Wasilla, Matanuska, and Ship Creek. It is a variation of this scenario that is used for the conceptual operating plan and cost estimate described below. The ridership forecast for the scenario appears in Table 1. The base year for the forecast was 2005.

Table 1: 2009 Ridership Forecast for a Two-Station Service Scenario

Year	Weekday Passenger Trips	
	2 Round Trips	3 Round Trips
2005	600	900
2012	700	1,000
2020	1,000	1,500

If one round trip in the off-peak period were offered, it would be reasonable to add 10 percent to the figures stated above.[1] For example, with an estimate of 1,500 riders for three round trips, a mid-day round trip would add another 150 riders, providing for a total weekday ridership of 1,650 riders.

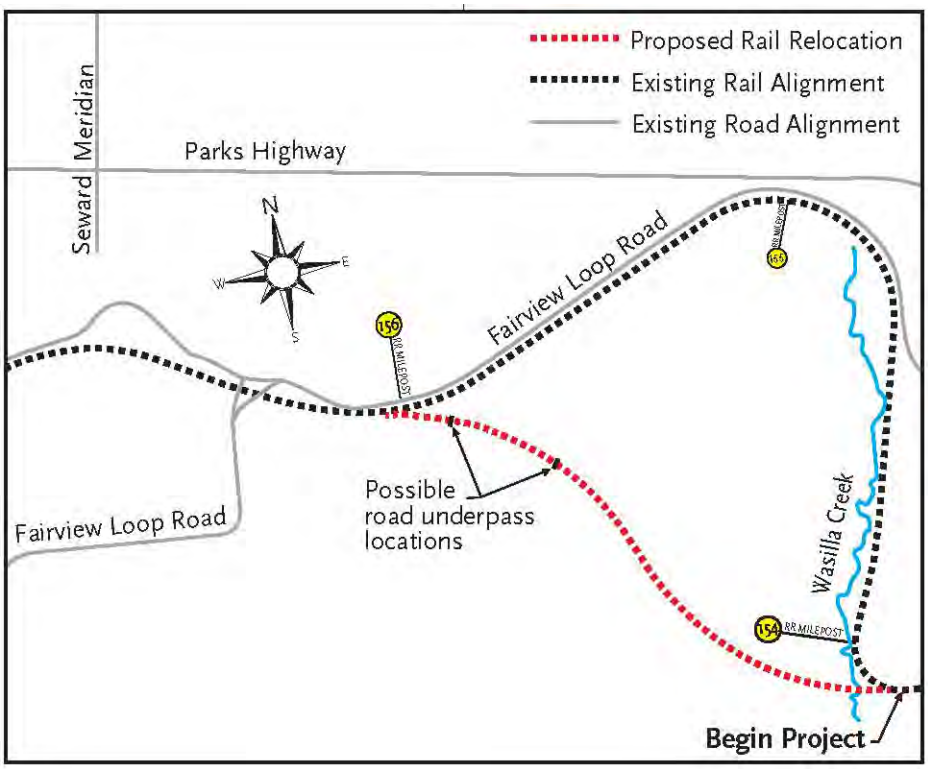
[1] Off-peak ridership is typically a small fraction of total weekday ridership. Caltrain, the commuter rail service on the San Francisco Peninsula, has off-peak ridership totaling about 12 percent of total weekday ridership. The 10 percent figure used in this analysis reflects a mid-day ridership that could be expected with a more modest mid-day service level (one round trip) versus Caltrain (eight round trips).

4 Operating Plan – Start-up System

The operating plan for a Wasilla - Anchorage commuter rail service details how such a system would work. It specifies a schedule, stations and amenities, equipment, maintenance of equipment, fare and fare collection, crewing, and integration with local transit. It is likely that ARRC would operate the service as the host railroad, provide crews, and maintain the trainsets. Alternatively, an outside contractor could operate the service. The service sponsor would be a public agency, responsible for all costs related to implementing and continuing operations.

For the three-station concept, the 2009 commuter rail ridership update assumed a one-hour run-time from Wasilla to Ship Creek, based on comments from ARRC. This operating plan assumes a faster run time, enabled by completion of the South Wasilla Rail Line Relocation, which potentially saves up to six minutes. The relocation project is shown in Figure 1.

Figure 1: South Wasilla Rail Line Relocation Concept



Source: Alaska Railroad Corporation, Project Facts, August 1, 2013

The purpose of the realignment is to replace two miles of circuitous, slow speed track with one mile of straighter, faster track. The ARRC has completed design and purchase of right-of-way. The estimated cost to complete the project is $37 million.

This plan is labeled as "start-up" because it is intended to provide a viable first phase in commuter rail service that could be expanded to add more stations and serve other points that have been suggested in previous analyses (e.g., AIA, Dimond Transit Center, or Girdwood). At the same time, it is important that the initial system be attractive enough for riders even if no expansion takes place.

4.1 Schedule

The following illustrative schedule, shown in Table 2, is modified from the one assumed for the 2009 ridership forecast update.

Table 2: Schedule for Three Peak Period Round Trips with a Mid-day Option

Southbound						Northbound				
Read Down										Read Up
C1	C3	C5	C7	*Denali Star*	Location	*Denali Star*	C2	C4	C6	C8
6:00	6:30	7:00	13:00	19:10	Wasilla	9:15	11:49	17:49	18:19	18:49
6:09	6:39	7:09	13:09	--	Matanuska	--	11:45	17:45	18:15	18:45
6:54	7:24	7:54	13:54	20:10	Anchorage	8:15	11:00	17:00	17:30	18:00

The commuter schedule calls for a 54-minute run time between Wasilla and Anchorage (Ship Creek) and a 45-minute run time between Matanuska and Anchorage. There would be three southbound peak period trips in the morning and the reverse in the afternoon/early evening. There would also be one mid-day round trip, providing the commuter a way to get home to Wasilla without having to wait for a late afternoon train.

As of 2016, the track distance between Ship Creek and Matanuska is 36.4 miles and between Ship Creek and Wasilla is 45.5 miles. If the South Wasilla Rail Line Realignment project is constructed, the track length to Wasilla will be reduced to 44.5 miles. However, a new station for Wasilla in the vicinity of the Wasilla Airport would add three miles to the distance. Thus, the total station-to-station distance would be 47.5 miles.

ARRC has advised that the commuter trains could be authorized for faster track speeds than are presently allowed for regular ARRC trains, passenger or freight. Existing maximum allowable passenger speeds on the route range between 20 and 60 miles per hour (mph).

The 54-minute schedule discussed above calls for an average train speed of 53 mph between Wasilla and Anchorage, a function of assumptions that include the South Wasilla Rail Line Realignment and higher maximum speeds allowed for commuter trains on sections of the route south of Matanuska. The average speed is higher than commuter rail services typically are able to achieve. However, the start-up service would only have one intermediate station (Matanuska), thus allowing for a faster average speed.

With the start-up of commuter rail service, it is possible that the run time of the *Denali Star* could be improved between Wasilla and Anchorage. The schedule above includes a one-hour run time for the *Denali Star*, with no conflicts with opposing commuter trains.

4.2 Stations and Amenities

The 2002 commuter rail operation plan assumed a Wasilla Station located near the Wasilla Airport, approximately three miles west of the current station in downtown Wasilla. A station in that location

would be convenient for both downtown residents as well as for commuters coming from points west and northwest of Wasilla. The plan assumed use of city land, thus saving on land acquisition cost.

Station amenities would include a parking lot with a 300-vehicle capacity. The station would also accommodate local transit and passenger drop-off/pick-up commonly known as "kiss-and-ride." The parking lot and station platform would be lighted. There would be an enclosed waiting room and an electronic Ticket Vending Machine (TVM) to dispense single tickets and add value to electronic fare cards (see Section 4.7). Access would have to be built for motorized and non-motorized (bicycle and pedestrian) traffic.

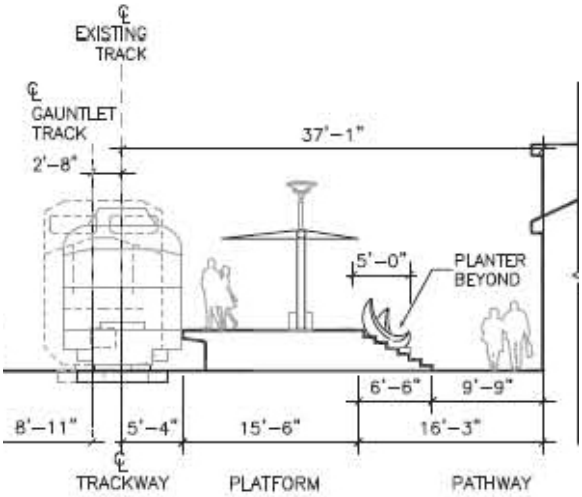
The cost estimate for this facility was $1.6 million in 2002. Adjusting for inflation (estimated at 2 percent per year), the cost in 2013 would be $2 million. However, given the 2009 ridership forecast, the station would need to have at least 500 parking spaces, a two-thirds increase, by 2020. Accordingly, a more appropriate station conceptual cost would be $3.3 million in 2013 dollars.

One strategy to mitigate station construction costs would be to include residential and commercial mixed-use transit-oriented development (TOD) into the station design. TOD can help defray public outlays for station construction.

The operating plan assumes that the cost of the Wasilla Station will be paid for by the City of Wasilla. As an example, cities served by the Metrolink commuter rail service in the Los Angeles area covered the costs of station construction.

The rolling stock assumed for this commuter service are self-propelled rail cars known as Diesel Multiple Units (DMUs; see Section 4.3). These rail cars have level boarding, which was not assumed in the previous cost estimates. Level boarding requires platforms be raised to the level of the car doors. The advantage of level boarding is that it enables passengers to walk into rail cars, rather than step up into cars, speeding the boarding process and minimizing station dwell time. A challenge is that level boarding platforms have to be configured so they do not foul the clearance envelope for freight trains. Fixes for this issue include freight train gauntlet tracks, or even bypass tracks, to shift freight trains further from the platform. The following schematic, shown in Figure 2, shows the clearance envelope for a diesel-electric freight locomotive on a gauntlet track and a DMU at a level boarding platform.

Figure 2: Clearance Envelopes for Locomotive and Self-propelled Rail Car at Station



Source: SMART DMU Presentation, December 15, 2010

A lump sum estimate of $1 million per station would be reasonable to provide for level boarding at a station, plus track work modifications preventing fouling of the freight train envelope. Thus, the total for the Wasilla Station would be $4.3 million. Level boarding and alighting of passengers on/off the *Denali Star* could be accommodated, depending on the car type. Alternatively, *Denali Star* boarding and alighting could occur at a conventional step-up platform along the gauntlet track opposite the level boarding platform.

Figure 3 shows a freight car on a gauntlet track passing at a level boarding platform under construction.

Figure 3: Freight Car on Gauntlet Track Passing Level Boarding Platform

Source: SMART DMU Presentation, December 15, 2010

For Matanuska, the 2002 plan called for parking space for 100 vehicles, a lighted parking lot and platform, and an enclosed shelter. The Matanuska station would serve both Palmer residents and residents from the eastern environs of Wasilla. Ideally, it would be constructed on publically owned land to minimize land acquisition costs. Its 2013 cost estimate is $1.4 million. However, given the ridership forecast for 2020, the station would need to have at least 300 parking spaces. Accordingly, a more appropriate station cost would be $2 million. With the assumption of a level boarding platform and related track improvements, the station cost is $3 million.

The 2002 plan assumed a new Anchorage Intermodal Station for commuter service, rather than the existing, historic Anchorage Station. However, the ARRC expects that the historic depot could host commuter rail service. The addition of a level boarding platform and related track improvements, estimated at $1 million, would be needed.

4.3 Equipment

The 2002 study explored use of self-propelled rail cars. Although ARRC's experience with its sole Colorado Rail Car DMU has been less than satisfactory, this analysis considers DMUs, as other models have been successfully used elsewhere in the U.S. Figure 4 includes an image of a trainset consisting of these cars. This vehicle type is currently being constructed for the Sonoma-Marin Area Rail Transit (SMART) commuter rail start-up in northern California by Sumitomo Corporation of America. A two-car train set, which could accommodate 158 seated passengers, would cost around $6.3 million.

Figure 4: Two-car Self-propelled Trainset for SMART

Source: Railway Gazette, December 21, 2010

However, a two-car trainset would not be adequate for handling the ridership projected for a three-round trip commute period rail operating pattern in year 2020. The solution, providing for more seated

capacity and resulting in fewer passengers potentially having to stand, would be a three-car trainset, at a cost of approximately $9.5 million. A three-car version of the Sumitomo DMU appears as in Figure 5.

Figure 5: A Three-car Self-propelled Trainset

Three trainsets would be required to support the three commute period round trips and the mid-day round trip. One spare set would be required to allow for federally mandated inspections of the equipment. Accordingly, the estimate for the purchase of four sets of equipment would be $38 million.

An alternative would be to use ARRC locomotives and trailing coaches as well as other existing equipment, although the operating cost of conventional equipment would likely be higher than the self-propelled rail car option. In addition, ARRC has its own passenger equipment needs, particularly during the summer months. Thus, it would be preferable to have an equipment fleet dedicated to the regularly scheduled commuter rail service.

4.4 Transit Integration

While it is likely that most commuters will drive to their boarding stations in Mat-Su, transit service to the Wasilla and Matanuska Stations could be provided by Mat-Su Community Transit, also known as MASCOT.

In Anchorage, People Mover buses could meet trains at the Anchorage Depot and ferry riders to work centers. Private or subscription shuttles services provided by major employers in Anchorage would also be an option to move commuters beyond Ship Creek, as would van pools organized to take workers to and from their jobs.

4.5 Support Facilities

The commuter rail equipment could be maintained at the ARRC's maintenance facility in Ship Creek. Federally mandated inspections of the equipment would occur there.

A layover facility would be required for the three three-car trainsets just west of the planned Wasilla Station, off the ARRC main line. The layover facility would require approximately 800 track feet to accommodate the three overnighting trainsets. The facility would be fenced and have an overhead cover to keep the rolling stock free of snow accumulation and to facilitate end-of-run light cleaning. It would also have standby power to prevent equipment from freezing up in winter. The facility would also have a secure shelter for crews reporting for duty in the mornings and ending their duty in the evenings. It would have limited parking for crews and an access road. Assuming the facility was built on city owned land (like the station), a lump sum estimate for such a facility would be $2 million.

4.6 Crewing

It is technically feasible that the self-propelled rail cars could be run solely with a locomotive engineer. However, the rail cars will be operating in an environment where freight trains, longer distance ARRC passenger trains, and commuter trains would share track. Because of the inherent complexity of a shared-use facility, the operating plan assumes a conductor for each trainset, in addition to the engineer, to ensure operational and passenger safety. The conductor could also spot check fare payment, as noted below.

4.7 Fare Instruments and Collection

This operating plan assumes that most fares would be collected by an electronic fare recognition system, using a fare card or even a smart phone. A typical commuter would swipe a fare card/phone at an electronic reader at the boarding station and again at the destination station (sometimes called a "tag-on/tag-off" system).

As noted in Section 4.2, the three stations would also be equipped with TVMs that can dispense paper tickets for occasional riders and those riders who forget to bring their electronic fare cards. TVMs will replenish the cash value of electronic fare cards.

A conductor, equipped with a hand-held reader, can spot check riders to confirm that they swiped their cards when boarding or that they possess TVM-purchased paper tickets.

Ideally fare cards would be accepted on connecting transit, along with paper tickets. As such, more discussion about the integration of fare cards and tickets with MASCOT and People Mover would be appropriate.

4.8 Fares

An illustrative average one-way fare from either Matanuska or Wasilla to Ship Creek would be $6.50. The fare calculation assumes a commuter fare of about $0.14 per mile, a ballpark figure based on a review of fares offered by the Caltrain commuter rail service on the San Francisco Peninsula. Total fare revenues for 1,650 riders per day (year 2020 estimate for three commuter round trips plus one mid-day round trip) would total $10,725. Assuming 254 work weekdays per year, total annual fare revenue would equal approximately $2.7 million.

4.9 Operating Costs, Operating Subsidy, and Fare Box Recovery

An end-to-end journey from the new Wasilla station to Anchorage would be just less than 48 miles. Eight trips or four round trips would equal 384 train-miles per weekday[2] and 97,536 train-miles per year. Assuming a typical commuter rail operating cost of $65 per train mile, annual operating costs would equal $6.3 million per year. The resulting operating subsidy (operating costs less fare revenue) would be $3.6 million per year.

[2] The 384-mile figure accounts for shuttling some equipment between Anchorage Station and Ship Creek shops for maintenance. Some light cleaning and minor repair can be accomplished during the day at the Anchorage Station.

Although $6.50 each way may initially strike some commuters as expensive, in reality it is roughly one-fourth the cost of commuting by private auto, as Table 3 illustrates. In comparison, the Valley Mover bus fare is S7.00 one-way or $10.00 for a one-day Mat-Su – Anchorage round trip.

Table 3: Comparison of Commuting Cost - Auto Versus Rail

Item	Daily		Monthly[a]	
	Rail	Auto	Rail	Auto
Rail/bus Round Trip	$17.00[b]		$374.00	
Auto cost, 60.8 cents/mile at 100 mile round trip[c]		$60.80		$1,337.60
Parking in Anchorage		$5.00		$110.00
Totals	$17.00	$65.80	$374.00	$1,447.60

[a] *Assumes an average of 22 Work days per month.*
[b] *Assumes $6.50 each way for the train and $2.00 each way for connecting buses.*
[c] *From the American Automobile Association; cost in 2013 for an average sedan.*

Fare revenue divided by operating costs equals fare box recovery, a common measure of the financial success of a public transit mode. Given the projected revenues and operating costs outlined above, the fare box recovery of Wasilla-Matanuska-Anchorage commuter rail service in 2020 would be 43 percent. This fare box recovery ratio is similar to those achieved by Caltrain in the San Francisco Bay Area and Metrolink in Southern California.

4.10 Track Improvements

The operating plan assumes that regularly scheduled commuter rail service can be operated without any major track improvements other than the South Wasilla Rail Line Realignment discussed above in this section. Any future planning work in advance of service implementation will confirm the physical improvements required to start commuter rail operations.

It is worth noting that there are various sidings between Wasilla and Anchorage, providing opportunities for freight trains to clear the way for the opposing, regularly scheduled commuter trains that will hold to the main line. These sidings are roughly every 6 to 9 miles, and have switches operated by a remote dispatcher using Centralized Traffic Control (CTC). They are, from north to south:

- Matanuska, Milepost (MP) 151.5-150.5
- Eklutna, MP 142-141
- Birchwood, MP 136-135
- Reeves, MP 129-128
- Elmendorf, MP 121-115.5 (the southern section of the siding is uncontrolled)

Any peak period northbound freight train longer than the shortest of these sidings will have to wait until the inbound commuter trains arrive in Anchorage before beginning their own trip.

Per the schedule in Table 2, the inbound commuter trains will reach Anchorage before the northbound *Denali Star's* departure at 8:15 AM and would provide no conflict for that train. Likewise, the southbound *Denali Star* would reach Wasilla after the last commuter train will have arrived there and moved onto the layover tracks, clear of the main line.

The operating plan assumes that South Wasilla Rail Line Realignment will be implemented by ARRC independently of a commuter rail start-up. Accordingly, it is not included in the cost estimate below.

5 Cost Summary

As noted in Section 4.9, the annual operating subsidy required to maintain the four round trips in 2020 would be $3.6 million.

The capital costs for initiating the commuter service areas are summarized in Table 4.

Table 4: Conceptual Capital Cost Projection

Capital Item	Station Cost	Item Cost
Stations		
Wasilla (with level boarding and a gauntlet track for freight trains)	$4.3 million	
Matanuska	$3.0 million	
Anchorage (with level boarding)	$1.0 million	
Total Station Costs		$8.3 million
Self-propelled Rail Car Equipment		$38.0 million
Wasilla Layover Facility		$2.0 million
Pre-Operations Testing		$0.5 million
TOTAL		**$48.8 million**

Table 4 includes a factor of pre-operations testing of all systems and facilities, excluding equipment. It is assumed that the self-propelled rail cars will be fully functional when delivered. The costs of pre-operations testing should be considered capital costs as they will be incurred in advance of opening the service to the public. They are assumed here to be 5 percent of station and layover facility costs. Pre-operations testing numbers vary widely for commuter rail systems, but a 5 percent allowance is within the range of what could be expected. Accordingly, total capital costs will be $48.8 million.

6 Governance

The operating plan assumes the establishment of a Regional Transportation Authority (RTA) by the Alaska Legislature to sponsor the commuter rail service. The agency will be responsible for covering the operating subsidy and capital costs for implementation, plus any further costs such as the additional rolling stock and stations. The RTA could sponsor all transit services in the Anchorage and Mat-Su areas, or it could sponsor just the commuter rail service and work with MASCOT and People Mover to transport riders to and from the commuter trains.

The RTA would be empowered to collect local revenues to support the transit services. An example of such an authority is Sound Transit in the central Puget Sound area, which sponsors and funds commuter rail (Sounder), light rail, and bus transit services.

Bills were introduced in the Alaska Legislature in 2009 and 2015 to allow the creation of a RTA in Alaska, but neither was enacted. Enabling legislation will be required to create a multi-jurisdictional agency that can fund and operate commuter service. The agency will need to be sufficiently independent to provide long-term continuity of service and fares.

At the same time, there are multiple examples of state sponsorship of commuter rail. One is Connecticut, whose Department of Transportation (ConnDOT) runs the Shore Line East commuter service between New London, New Haven, and Stamford. It will soon implement a new commuter rail service on the Amtrak Springfield Line between New Haven and Hartford, Connecticut and Springfield, Massachusetts. ConnDOT works with the Metro North service to run commuter trains between southern Connecticut and New York City.

Another example of a state sponsoring commuter rail service is the Utah Transit Authority (UTA), an agency of the State of Utah, which operates the FrontRunner commuter rail service between Ogden, Salt Lake City, and Provo.

7 Service Operator

It is likely that the ARRC would operate the commuter rail service, host the trains and provide crews, maintain equipment services, collect revenue, provide security, and dispatch trains. At the same time, there are various examples of public agency sponsors of commuter rail service hiring third party operators to run trains on host freight railroads. One example is Altamont Commuter Express (ACE), which hired Herzog Transit Service to run its trains between Stockton, Pleasanton, and San Jose, California.

8 Next Steps

The basic concept of commuter rail service between Mat-Su and Anchorage has been studied several times. Ridership and revenue have been forecasted, capital and operating costs estimated, and operating subsidy calculated. By 2020, a four-round trip weekday service has the potential to generate nearly the same fare box recovery levels that mature commuter rail services on the West Coast achieve today.

8.1 Confirming Commuter Market Details with Mat-Su Officials

Ridership estimates are based on market research and analysis performed several years ago. Therefore, a logical next step would include discussions with Mat-Su planning officials to understand their thoughts on the attractiveness and sustainability of commuter service in light of recent demographic trends there.

8.2 Demonstration Service

Another near-term step, helpful in confirming the utility of commuter rail, would be establishing a demonstration service. This service would be operated by ARRC and use existing ARRC facilities and

equipment during the winter. This initiative could show the potential for improving the quality of life for Mat-Su commuters. A demonstration service could be simply one trainset doing one round trip per weekday between Wasilla and Anchorage.

Assuming 100 round trip passengers (200 one-way trips) per weekday,[3] revenues for a six-month operation would be $165,100. Operating costs for this service could be $792,500[4], requiring a subsidy of $627,400.

The ARRC has one self-propelled rail car, with a seated capacity of 110 that could be deployed for this demonstration. When the DMU may not be available due to maintenance or federally mandated inspections, ARRC conventional rolling stock could be used. No additional rolling stock is needed for a demonstration service provided it is operated during the winter when the ARRC equipment is not needed for other ARRC services.

The major capital cost would include a temporary overnight layover facility west of the existing Wasilla Station. The facility would consist of a siding approximately 300 feet long, a powered switch and signalization for operation on and off the mainline, standby power to prevent motors and onboard equipment from freezing, and security fencing. Additional costs would include parking improvements sufficient for at least 100 vehicles as well as for pedestrian and bicycle access improvements and lighting at Wasilla.

A lump sum estimate for the layover facility, along with parking/access and lighting improvements, is $1.5 million. The layover facility assumption is key, as it would obviate the need to account for cost for deadheading (positioning) the equipment between Ship Creek and Wasilla before and after revenue service, which would almost double operating costs. It is assumed that no property acquisition would be required for the layover facility and additional parking.

8.3 Moving Forward with Regular Service

Assuming a successful result of the demonstration service, work could begin on establishing regularly scheduled commuter rail service with new self-propelled trainsets. Over time, new stations (e.g., Eagle River, etc.) could be considered. However, maximum operating speeds would need to be increased to add stations without impacting run times. Other service improvements could include more off-peak/mid-day service and service on weekends.

8.4 Establishing a Governance Structure

The identification of a sponsor for the service, whose mission it will be to secure the capital funding for implementation and ongoing financial assistance for continuing operations, would be fundamental to implementation of regular service. It will be important to assure a funding stream for commuter rail that does not displace existing transportation funding shares for the Anchorage and Mat-Su areas.

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[3] The ridership estimate is less than half the 2012 estimate for two round trips (and less than a quarter of the 2012 estimate for three round trips), but it is realistic given the lower service level.

[4] A high-side estimate that assumes a $65 per train-mile operating cost for the single DMU, the same cost estimate for a three-car DMU trainset.

Two models for governance are discussed above which have proved to be successful in sustaining commuter railroads. These are: the formation of a RTA, such as Sound Transit in the Seattle area; and state sponsorship, similar to what Connecticut and Utah have done.

Once the public sponsor has been identified and empowered to implement commuter service, the sponsor would need to negotiate an operating agreement with ARRC. The operating agreement would specify the terms and conditions for commuter rail use of the ARRC facilities and other resources. This agreement also would specify whether ARRC or a third party operates the service. The public sponsor would also contract for the planning, engineering, and construction of physical improvements, including stations and related facilities, and the purchase of self-propelled equipment.

Appendix D: Economic Impact of a North Slope Rail Extension on Northern Energy and Mineral Development

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Economic Impact of a North Slope Rail Extension on Northern Energy and Mineral Development

By

Paul Metz[(1)], Colin Brooks[(2)], and Mike Billmire[(2)]

Economic Constraints on Northern Development

Petroleum, natural gas, and mineral development in northern Alaska is constrained by higher capital and operating costs relative to other regions of Alaska and much higher costs relative to the contiguous states. The remote region has long supply chains, high transportation costs and is burdened with historic total tax burdens relative to jurisdictions with lower total costs. The evidence for the negative impact of cost differentials is the rapid increase in non-conventional oil and gas development through horizontal drilling and hydrofracturing of source bed shale deposits in mature sedimentary basins (Bakken, Eagle Ford, Permian) in the contiguous states and the absence of such development in Alaska.

The high cost of North Slope operations was well documented by the Department of Defense (DoD) from World War II on through the Cold War era before and even after oil was discovered in Prudhoe Bay in 1968 by the Atlantic Richfield Company (ARCO). Published historical DoD Construction Cost Factors for the North Slope range from five to six times the cost factors for shale oil producing areas in Texas (Eagle Ford) and North Dakota (Bakken) (Staff, USAF, 2012). John M. Miller (2010), the former Chief Financial Officer for ARCO and author of ***The Last Alaskan Barrel*** documented that ARCO essentially went out of business due to the high capital and operating costs and permitting delays during the development of the Giant oil field that it discovered at Prudhoe Bay.

Reducing oil taxes in Alaska was an essential and necessary first step. Developing a railroad system to the North Slope to handle the large volumes of bulk freight at competitive cost is an absolutely necessary condition for non-conventional oil and gas development. These resources are characterized by large material factor inputs, low initial production (IP) rates and thus small profit margins. Rail transport to the North Slope can also provide backhaul capabilities for the low cost transport of mineral commodities to ice-free ports in south-central, Alaska.

Example of Proposed North Slope Shale Oil Development

In November 2012, Petroleum News reported on a proposal by Great Bear Petroleum to drill 200 wells per year in shale-oil targets on the North Slope including the Shublik Formation (Bailey, 2012, 2014; AEDC, 2013). As in shale oil developments in the contiguous states (Eagle Ford and Bakken) each well would include horizontal drilling technology and hydrofracturing of the shale units. Fracturing in the relatively shallow shales in Texas and North Dakota requires one to two million pounds of “frac sand” per well. The wells in the deeper portions of the Shublik Formation are expected to have longer horizontal laterals and require more sand, steel, cement, chemicals, and fuel to complete the wells and the reworking of the wells after initial production. It is estimated that the logistic requirements for each well in the Shublik Formation over the well’s expected life cycle is 12,000 tons. Thus to maintain a production rate of 200

wells per year, the annual freight load to the North Slope is expected to be 2,400,000 tons. This is equivalent to 165 trucks (40 tons each) per day one way 365 days per year or nearly five 10,000 ton freight trains per week 52 weeks per year.

The comparative cost of trucking versus rail transport per well is as follows: (a) trucking distance from Fairbanks to Prudhoe is 470 miles; (b) trucking cost is estimated at $1.00 per ton-mile; (c) estimated cost of trucking per well is $5,640,000; (d) rail distance from Nenana to Prudhoe is 450 miles; (e) rail cost is estimated at $0.11 per ton-mile; (f) estimated rail transport cost per well is $594,000. The above analysis does not include the cost savings associated with loading materials on railcars at the freight source location and rail/barging the material to Alaska and on to the North Slope without off-loading the rail shipments and transferring it to trucks. Thus the cost saving per well for rail transport is at least a factor of 10 times.

Capital Cost Estimate for Nenana to Prudhoe Bay Rail Extension

From Dunbar siding just north of Nenana the total estimated distance for the Railroad Extension to Prudhoe Bay is 450 miles (See Location Map in Appendix). From Dunbar, the proposed route extends along the east side of the Minto Flats Basin to approximately five miles south of Livengood. From there, the route follows the Hess Creek drainage to the Yukon River, crosses the Yukon River near the Dalton Highway Bridge, then proceeds up the Ray River along the western margin of the Trans-Alaska Pipeline Corridor to the Koyukuk River drainage, then up the Koyukuk to the Dietrich River and on to Atigun Pass, down the Atigun River to Pump Station 4, then into the Sagavanirktok River drainage, and finally down the Sag River to Prudhoe Bay.

Estimates from the Alaska/Canada Rail Link Phase I Pre-Feasibility Study and the Eielson, AFB to Delta Junction Rail Extension Study (Metz and others, 2005), for the total cost per mile of the railroad embankment, ties, rail, and ballast were $6,000,000. From the recent construction costs of these items for the Port MacKenzie Rail Extension and for the estimated item costs for the Alberta to Alaska Rail Link Pre-Feasibility Study the estimated costs for the North Slope Rail Extension is $4.5 billion (450 miles x $10,000,000 per mile). At least two tunnels will be required for the North Slope Rail Extension project, one just south of the Yukon River and a second at Atigun Pass. Based on a very long (over 34 miles) and very deep (3000 feet) tunnel near completion in the Swiss Alps (at a unit cost of $285 million per mile) the cost of theses two relatively short and shallow tunnels are estimated at $456 million (1.6 miles x $285 million per mile) and $1,283 billion (4.5 miles x $285 million per mile) respectively. A bridge across the Yukon River is estimated at $500 million. This very preliminary estimate for the Yukon crossing is considered high as it is 2.5 times greater than a longer railroad bridge across the Tanana River recently completed for the Eielson, AFB to Delta Junction Railroad Extension. The estimated cost of the proposed railroad bridge is 15 times greater than the original highway bridge across the Yukon ($31 million). Other bridges and a rail terminal at the North Slope are expected to add another $250 million for a total project capital cost of $6.989 billion.

Benefits/Cost Analysis

In order to simplify this analysis, it is assumed that the only benefits that would accrue to the State of Alaska are from a one eighth interest in the increased oil production (1/8 royalty oil).

Benefits from other taxes will probably accrue but the amount is uncertain. It is also assumed that the increased oil production from the unconventional shale units will be at rates similar to the (IP) rates from other shale oil sources in the contiguous states. It is also assumed that the annual production will be limited to the IPs for the wells drilled during each year. In fact, production from each new well will continue on considerably longer and cumulative production will be significantly greater than the number of wells drilled per year and the IP rates of those wells. Thus we shall underestimate annual benefits by the difference between the IP and the anuual decline rate for each well. The average IP rates for wells currently drilled in the Bakken ranges between 2000 and 3000 barrels per day. Thus 200 wells per year would add 400,000 barrels per day to the Trans-Alaska Pipeline. Assuming an oil price of $85 per barrel, the royalty oil would generate an expected $1.55 billion per year to the State of Alaska. For this analysis, the North Slope Rail Extension is assumed to have only a 30 year project life. This is a very conservative estimate as this time period is less than one half the current life of the Alaska Railroad and less than one quarter of the life of many railroads in the contiguous states.

With a capital cost of $6.989 billion, annual revenues of $1.55 billion, and a 30 year project life, the rate of return on the investment would be approximately 22%. Alternatively, stating that if the minimum attractive rate of return to the State of Alaska is assumed to be 10%, the discounted benefits would exceed costs by 2.1 times. Thus at IRR of 10% the benefit/cost ratio is 2.1/1.0.

Benefits to Northern Mineral Development

Of the more than seven thousand mineral occurrences in Alaska only two of the base-metal occurrences which have large tonnages and high grades and are near tidewater have been developed (Red Dog and Greens Creek Mines). Base metal mineral production from the Brooks Range Copper Belt and other base metal deposits north of the Yukon River are constrained by the high cost of transport of the relatively low unit value mineral concentrates to ice-free ports. For example, a 5,000 ton per day mine in the Ambler Mining District would produce approximately 1,500 tons per day of mineral concentrates composed dominantly of chalcopyrite. A pure 100 percent chalcopyrite ($CuFeS_2$) concentrate contains 34% copper. At a copper price of $3.20/lb., the concentrate would have a place value at the mine site of $2,160/ton (0.34 x 2000 x $3.20). The trucking distance from the Arctic Deposit to Port MacKenzie is 779 miles, thus the trucking cost at $1.00 per ton mile is $779.00. This is 36% of the value of the concentrate at the mine site. From the tidewater port, the concentrate must be shipped to a smelter and refining complex and the value of the concentrate will be further reduced by those costs On the average mines have mineral transportation costs that are 5-6% of total operating costs not total gross revenue.

With the availability of rail transport in the Pipeline Corridor, trucking from the Ambler Mining District can be limited to two hundred miles from the Arctic Deposit to the Corridor. The 579 mile rail transport at $0.11 per ton-mile to Port MacKenzie would reduce transport costs to $263.69. In addition to the Arctic Deposit and those along the proposed Ambler Mining District Road there are 685 known mineral occurrences within 50 miles of the centerline of the Pipeline Corridor from Nenana to Prudhoe Bay (See Appendix). At least one of these occurrences is expected to be developed as a consequence of a North Slope Rail Extension. Such developments will encourage more exploration and the discovery of additional mineral prospects and mines in northern Alaska.

Project Financing

The Alaska Railroad Corporation (ARRC) has the statutory authority to finance projects through the sale of non-recourse tax exempt revenue bonds. The sale of such bonds is predicated on the definition of a revenue source over the bonding period. Thus such bonds could be sold if the ARRC entered into long-term agreements with North Slope operators for the delivery of oilfield freight and possibly petroleum products. The annual cost of debt on the entire $7.0 billion capital cost of the project at a 5% interest rate would be $350 million. One alternative would be to cover the cost of interest on the debt with a portion of the royalty revenues. A second alternative would be to cover the interest cost out of freight revenues. Table 1 is an estimate of such revenues based on the above assumptions.

Table 1. Estimated sources and amounts of annual rail freight revenues

Revenue Source	Tonnage/Year	Distance	Freight Rate	Revenue
	(Tons)	(Miles)	($0.11/ton-mile)	
Frac Wells (200 per year)	2,400,000	800	$0.11/ton-mile	$211,200,000
Conv. Oil Field Ops (1)	750,000	800	$0.11/ton-mile	$66,000,000
Incremental Oil Ops (2)	150,000	800	$0.11/ton-mile	$13,200,000
Incremental Oil Prod (3)	1,090,000	450	$0.11/ton-mile	$53,9550,000
Fairbanks LNG	146,000	470	$0.11/ton-mile	$7,5480,200
Ambler Copper	550,000	600	$0.11/ton-mile	$36,300,000
Second Base Metal (4)	550,000	600	$0.11/ton-mile	$36,300,000
Nat Gas Pipeline (5)	LS	800	$0.11/ton-mile	$65,000,000
Total Annual Revenue				$489,503,200

Notes:

(1) Based of ADOT&PF truck traffic for 2007.
(2) Incremental investment in conventional reservoirs expected from changes in oil taxes.
(3) Incremental total production of 20,000 bpd above pipeline capacity.
(4) One base metal mine in addition to Ambler Copper in northern Alaska.
(5) Annualized logistics (3% of total project cost) associated with the $65 billion LNG export project distributed over a 30 year period.

Thus the total estimated annual revenue is $489.5 million and the interest expense on the capital investment is $350 million, the estimated balance is $139.5 million or $0.035 per ton mile. This is an expected unit cost of operations for a railroad with this annual volume of freight.

Conclusion

A North Slope Rail Extension shall reduce transportation costs to the North Slope oil fields and provide for a more competitive economic climate for the development of the non-conventional oil and gas resources in the Arctic. In addition it will reduce the costs of additional production from the mature conventional oil reservoirs. The project is expected to have at least a 22% return on investment based on very preliminary cost and revenue estimates. Truly the easy and low cost oil from the North Slope has been produced however very large volumes of oil and

natural gas remain. The production of this oil and gas will be dependent on the reduction of the historic high cost of operations in the region.

For the North Slope Rail Extension Project to move forward and definitive business case must be presented by the Alaska Railroad Corporation to the U.S. Surface Transportation Board. If approved by the STB and with funding made available the project would progress into the Environmental Impact Statement stage. Work in progress and work completed by the University of Alaska Fairbanks and its sub-contractors has and will continue to contribute to this endeavor.

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Appendix:

Location map for North Slope Rail Extension and known mineral occurrences in the 100 mile wide transportation corridor from Dunbar siding near Nenana to Prudhoe Bay, Alaska.

Author Affiliations: (1) Department of Mining and Geological Engineering, University of Alaska Fairbanks; (2) Michigan Tech Research Institute, Michigan Tech University

Appendix E: Public Involvement

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ASRP Open House Summary

Following project initiation and the creation of a draft Vision Statement, the Alaska State Rail Plan (ASRP) hosted a series of seven public open houses in Skagway, Haines, Wasilla, Seward, Anchorage, Fairbanks and Nome between May 21, 2013 and June 6, 2013. The purpose of these events was to inform the public about the ASRP's development and to seek input on the plan Vision Statement, plan goals, and potential system-wide needs. Comments regarding the Vision Statement and overall statewide rail needs were collected at the open houses, as well as continuously online, and will be used to assist the planning team in updating the ASRP.

Each meeting was held between 5:00PM-8:00PM and featured posters (Appendix A) with ASRP information including rail plan elements, a map of Alaska's current rail system, and a map of Alaska's resource locations. A PowerPoint slideshow (Appendix B), followed by questions, was presented at each open house. The presentation can be viewed in its entirety here: http://dot.alaska.gov/railplan/docs/Spring_2013_OH_Pres.pdf.

Station boards were hung on the walls at each venue for members of the public to peruse at their leisure. Members of the staff were available to answer any questions that arose and actively engaged the public on their thoughts and ideas regarding rail for Alaska's future. The station boards can be viewed in their entirety here: http://dot.alaska.gov/railplan/docs/Spring_2013_OH_Posters.pdf.

Staff/Agency Attendees:

Murray Walsh (DOT&PF)
Bob Laurie (DOT&PF)
Jim Potdevin (DOT&PF)
Sara Mason (DOT&PF)
David Post (DOT&PF)
Bruce Carr (ARRC)

Tom Brigham (HDR)
Julie Jessen (HDR)
Laurie Cummings (HDR)
Jessica Abbott (HDR)

Meetings: Sign-in Sheets (Appendix C)

	Date	Venue	Staff	# of Attendees
Skagway	May 21	Skagway Assembly Chambers	Potdevin, Laurie (DOT&PF) Jessen, Cummings (HDR) Carr (ARRC)	10
Haines	May 22	Haines Borough Public Library	Potdevin, Laurie (DOT&PF) Jessen, Cummings (HDR) Carr (ARRC)	15
Wasilla	May 29	Menard Memorial Sports Center	Laurie (DOT&PF) Jessen, Cummings, Abbott (HDR) Carr (ARRC)	10
Seward	May 30	Seward Community Library	Laurie (DOT&PF) Brigham, Jessen (HDR) Carr (ARRC)	20
Anchorage	June 4	Loussac Library	Walsh, Laurie (DOT&PF) Brigham, Jessen, Abbott (HDR)	35
Fairbanks	June 5	FNSB Assembly Chambers	Walsh, Laurie, Mason (DOT&PF) Brigham, Jessen (HDR)	39
Nome	June 6	Old St. Joe's Hall	Walsh, Laurie, Mason (DOT&PF) Jessen, Abbott (HDR) Carr (ARRC)	6

Advertising:

The open houses were advertised in local print media, via post card and e-mail announcements to individuals on the project mailing list, fliers posted by the ASRP Technical Advisory Group members, and information posted on the project website.

Postcard invitations were mailed to approximately 1200 individuals; an e-mail with a pdf attachment of the postcard was sent to nearly 800 individuals.

Alaska State Rail Plan--Community Open Houses

The Alaska Department of Transportation and Public Facilities wants to hear from you!

Rail plans develop a state's long-term vision for rail freight and passenger transportation. They identify needs, prioritize potential projects, determine funding needs, and outline future rail policy direction.

We want to hear from you! What is your vision for our rail system? What transportation needs could be met through rail improvements? What opportunities are just down the track?

Future open houses will be in an on-line format. To learn more about the planning process, sign up for e-mail notifications, or send us your comments, visit www. dot.alaska.gov/railplan.

Spring 2013 Open House Dates and Locations

May 21 Assembly Chambers
700 Spring Street, **Skagway**
May 22 Haines Borough Public Library
111 Third Avenue, South, **Haines**

May 29 Curtis D. Menard Memorial Sports Center
1001 South Mack Drive, **Wasilla**
May 30 Seward Community Library
239 Sixth Avenue, **Seward**

June 4 Loussac Library
3600 Denali Street, **Anchorage**
June 5 North Star Assembly Chambers
809 Pioneer Road, **Fairbanks**
June 6 Old St. Joe's Hall
Anvil City Square, **Nome**

All meetings will be from 5 PM to 8 PM, with a brief presentation at 6:30 PM.

ADOT&PF operates Federal Programs without regard to race, color, national origin, sex, age, or disability. Full Title VI Nondiscrimination Policy: www.dot.alaska.gov/tvi_statement.shtml. To file a complaint go to: www.dot.alaska.gov/cvlrts/titlevi.shtml.

Figure 1: ASRP Open House Invitation Post Card

Newspaper ads were published in local newspapers generally one week in advance of the local open house pending individual print cycles.

- Chilkat Valley News (May 16)
- Skayway News (May 10)
- Juneau Empire (May 15)
- Talkeetna Good Times (May 23)
- Frontiersman (May 26 and May 28)
- Anchorage Daily News (May 29 and online ad May 23 - June 6)
- Seward Phoenix Log (May 23 and May 30)
- Fairbanks Daily News Miner (May 30 and June 5)
- Arctic Sounder (May 30)
- Petroleum News (Weeks of May 20 and May 27)
- Alaska Dispatch (Online ad May 17 – June 6)

ALASKA STATE RAIL PLAN

Alaska State Rail Plan—Community Open Houses

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809 Pioneer Road, **Fairbanks**

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All meetings will be from **5 PM** to **8 PM**, with a brief presentation at **6:30 PM**.

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Figure 2: Sample Newspaper Ad

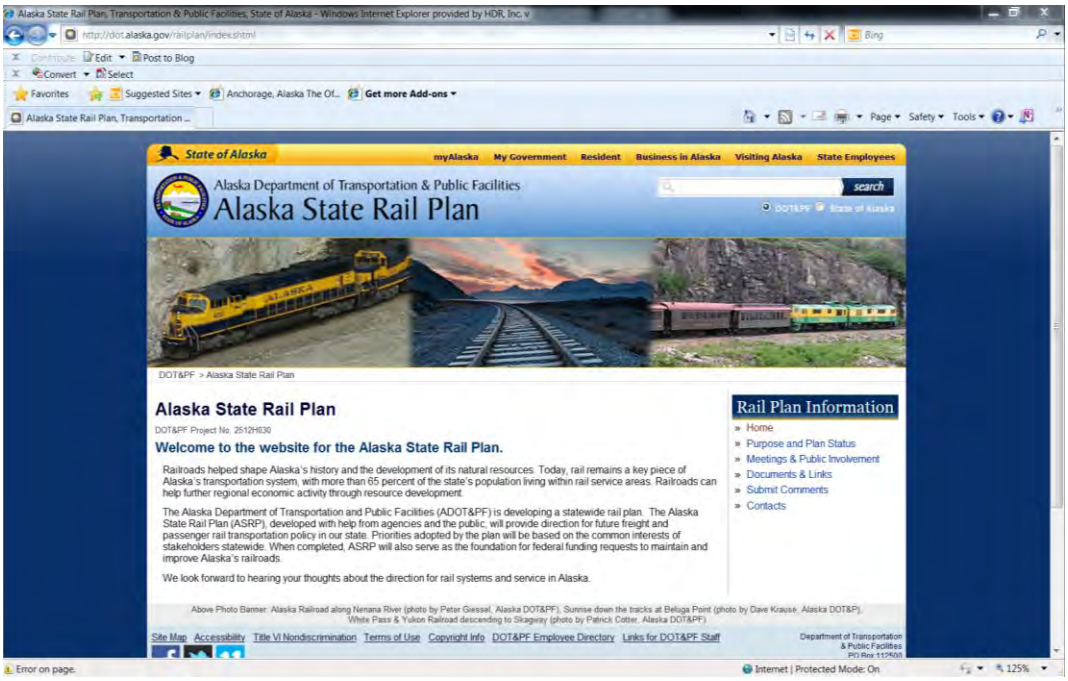


Figure 3: Project Website (http://dot.alaska.gov/railplan)

Attendance

A total of 135 people signed in to the seven open houses. The sign-in sheets resulted in a number of additional email addresses that have been added to the distribution list for future ASRP online open houses.

Handouts Provided

An ASRP Fact Sheet, Frequently Asked Questions, and comment forms (Appendix D) were available at the sign-in table. Comment forms were available at a designated comment table/station.

Other Presentations

The presentation used at each of the seven public open houses (Appendix A) was also presented at the FMATS Technical Committee meeting in Fairbanks on June 5, 2103 and at a combined meeting of the Kenai and Soldotna Chambers of Commerce in Kenai on June 19, 2013. There were 15 people present at the FMATS Technical Committee meeting (Appendix E) and 28 people at the Kenai and Soldotna Chambers of Commerce meeting (Appendix F). Attendees at these meeting were given the same opportunities to participate in the rail planning effort as those who attended the programmed public meetings.

Media Coverage

In addition to paid display ads, local news outlets provided earned media for the plan before and after the open houses.

- Prior to the start of the Open House series, the Mat-Su Valley Frontiersman published an online notification within their Local Events section on May 18, announcing the meeting taking place in Wasilla on May 29.
- A few days after the May 21 Open House in Skagway, Skagway News published a story related to the ASRP. It ran on May 24.
- The Seward Phoenix Log attended the May 30 Open House, resulting in a news story published on June 6, 2013: http://www.thesewardphoenixlog.com/story/2013/06/06/business/arrc-and-dot-on-same-track/1505.html (accessed July 9, 2013).
- Murray Walsh was interviewed live on KTUU Channel 2 by Mike Ross at the Anchorage Open House on June 4: http://www.ktuu.com/videogallery/76171332/News/Interview--Alaska-Rail-Plan-Public-Open-Houses#pl-62893695 (accessed July 9, 2013).
- Emily Schwing of KUAC Morning Newscast included an audio clip regarding the Alaska State Rail Plan: http://fm.kuac.org/post/newscast-wednesday-060513 (beginning at minute 4:10; accessed July 9, 2013).
- Diana Haecker of The Nome Nugget, attended the Open House on June 6 and published a story on June 13, 2013: http://www.nomenugget.net/archives/2013/06.13.13%20NN.pdf (page16; accessed July 9, 2013).

Comments Received

A total of 77 comments have been received from the public via written comment forms, project website submissions, and emails with 23 different topic areas identified (Appendix G). Each of these comments will be shared with the planning team for consideration in the ASRP. Some of the comment topics include:

- Economic Development
  - Maintain existing services first, expand later
  - Bush hubs (i.e. Nome) would benefit from vehicle use on railcars
- Finance
  - G7G has funders ready to finance the $12 billion building and rolling stock
  - Make sure that there is a financing plan in place to operate any new line before building any new trade.
- Freight Rail
  - Extend rail from Fairbanks to resources further north
  - Transition freight from truck to rail
- Goals and Objectives
  - Instead of 'Roads to Resources' or 'Rails to Resources' we would like to see 'Corridors to Resources'
  - Most important concept of ASRP should focus on 'intermodal transport'
  - First priority should be the continued investment in existing freight and passenger service before just laying track into new regions of the state.
- Infrastructure
  - Relocate Fairbanks rail yard
  - Reduce number of at-grade railroad crossings
- Intermodal Connectivity
  - Ports and intermodal connectivity for freight transportation
  - Policy that establishes guidelines to assure a seamless integration of all rail with other forms of transport including marine highway and other public transport.
- Operations
  - Ensure Positive Train Control (PTC) is enforced
  - Connections through Canada to lower 48
  - Reroute rail corridors used for the transport of hazardous materials away from residential and densely populated areas.
  - Improve safety and reliability of railways.
- Passenger Rail
  - Commuter service between Anchorage and Mat-Su / Girdwood
  - Rail service to Ted Stevens Anchorage International Airport
  - Anchorage to Fairbanks commuter service (late night/early morning)
  - Commuter costs for Alaskans

Alaska State Rail Plan

Welcome to the Alaska State Rail Plan Open House!

Please sign in.

Alaska State Rail Plan

Tonight's Purpose

We want to hear from you!

- What are your thoughts on the draft Vision?
- What do you think the future of freight and passenger rail service should include?
- Where are there opportunities to change or improve service?
- What other information do we need to include in the plan?

Alaska State Rail Plan

What IS a Rail Plan?

- **A plan for Alaska's railroads**
  - Rail plans set the state's Vision for rail's role in freight and passenger (including commuter) transportation
  - Rail plans develop state policy
- **A federal requirement**
  - Rail plans are required by the Passenger Rail Investment and Improvement Act (PRIIA) of 2008
  - The ASRP must be formally approved by the Federal Railroad Administration, US Department of Transportation
- **An opportunity for support**
  - Rail plans are the basis for federal and state rail investments

Alaska State Rail Plan

Rail Plan elements include...

- An inventory of the existing railroads
- An assessment of safety, freight rail, passenger rail needs, and transportation economics
- Potential investment opportunities
- A long-range service and capital investment program
- A Vision for the future of Rail in Alaska

Alaska State Rail Plan

Alaska's Railroads

The Alaska Railroad Corporation is a freight and passenger service; the White Pass & Yukon Route is an excursion service.

Passenger service includes passenger, commuter, and excursion service.

- **Passenger:** traveling from one point to another by rail, often from one city to another, often over long distance
- **Commuter:** traveling from home to work and return by rail, usually in an urban/suburban setting
- **Excursion:** traveling by rail for the experience, usually roundtrip

Alaska State Rail Plan

Rail works best if...

- **Economics**

Roads and trucks are better for:
- carrying a little bit of this and that
- short distances
- relatively small volumes
- short-term development providing general public access to new corridor

Rail is an excellent choice for:
- large quantities
- over long distances
- over a long period of time
- limiting access to new corridor

Rail has a high labor efficiency--a two person crew can pilot 100 rail cars. And, with recent energy costs, rail has increased cost advantages. For many kinds of freight, costs are lower for rail transportation.

Alaska State Rail Plan

Rail is challenged by...

- **Geography**
  - Relatively easy grades needed – 2% or less in loaded direction
  - Large radius curves ideal
  - Gentle grades and easy curves mean typically higher construction costs than needed for a road

Alaska State Rail Plan

Resources and Rail in Alaska and the Yukon

Alaska State Rail Plan

A key element in the Alaska State Rail Plan is a Vision Statement. This statement will guide the future of freight and passenger rail in our state.

Draft Vision Statement

"The pioneering ambition that built Alaska was both practical and visionary; using roads, waterways and rail to haul resources to market and connect communities to each other and the world. Future rail development in Alaska will follow the same route: fostering growth, building prosperity, supporting communities, and providing efficient freight and passenger services coordinated with other transportation modes."

What is YOUR Vision for the future of rail in Alaska?

Alaska State Rail Plan

Our Goal

The plan will develop specific goals for Alaska, which may include promoting efficient movement of passengers and freight, enhancing economic development, fostering connectivity, or supporting safe railroad operations.

What are YOUR goals for the plan?

For rail in Alaska?

Alaska State Rail Plan

What are your ideas for a vision and goals?

Your thoughts here

Alaska State Rail Plan

Given the location of known resources, geographic constraints, and land ownership, where are there opportunities for...

- **Passenger/commuter rail?**
- **Freight rail?**
- **Intermodal connectivity** *(freight, ports, trucking, etc.)?*

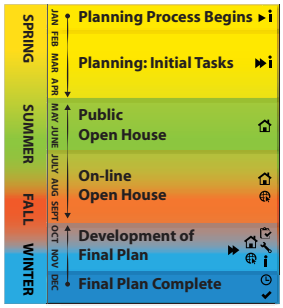
Alaska State Rail Plan

Transportation Needs

What are transportation needs?

Where are new potential connections in Alaska?

Alaska State Rail Plan



Project Schedule

January 2013--planning process begins

May-June 2013--public open houses

Summer 2013--on-line open house

Fall 2013--on-line open house

December 2013--final plan complete

Alaska State Rail Plan

Contact Us

For more information, to submit a comment, or to sign up for electronic updates, visit our website at www.dot.alaska.gov/railplan

PLEASE NOTE: All future meetings will be held ON-LINE! Sign up for e-mail announcements tonight or at www.dot.alaska.gov/railplan

Alaska State Rail Plan

Public Open House Presentation
May-June 2013

Rail Economics—Passenger

- State Rail plans must include a statement of the State's passenger rail service objectives, including minimum service levels
- Every dollar invested in public transportation (including buses, ferries, and rail) generates approximately $4 in economic returns*

- Information courtesy of the American Public Transportation Association

Photos courtesy of the University of Alaska Fairbanks, Lomen Family Collection

Geographic Constraints

- Relatively easy grades needed – 2% or less in loaded direction
- Large radius curves
- Gentle grades and easy curves often mean higher construction costs than for a road

Stakeholder Involvement

- Kick-off public open houses in Haines, Skagway, Seward, Anchorage, Fairbanks, Wasilla, and Nome
- On-line open houses (2) to be held for future stages of the plan
- Technical Advisory Group meetings (3) to provide input
- Steering Committee meetings to provide overall guidance

We seek input on…

- What are the opportunities for economic development utilizing existing or new railroads?
- In what additional ways can Alaska's railroads serve the State?
- What new services should the State consider?

Proposed Vision Statement

We want your input on the proposed vision statement—what will Alaska's freight and passenger rail system look like in 20 years?

The pioneering ambition that built Alaska was both practical and visionary; using roads, waterways and rail to haul resources to market and connect communities to each other and the world. Future rail development in Alaska will follow the same route: fostering growth, building prosperity, supporting communities, and providing efficient freight and passenger services coordinated with other transportation modes.

Schedule

- Summer 2013—Service and investment program and investment opportunities identified
- Summer 2013—On-line public open house
- Fall 2013—Draft plan released
- Fall 2013—On-line public open house
- December 2013—Final plan released

Sign up TODAY to receive e-mail notifications about our future on-line open houses!

Contact Us

Provide your comments by

- Submitting a comment at tonight's open house or
- Send a comment and sign up for our e-contact list at:

http://dot.alaska.gov/railplan

Why Plan?

The Passenger Rail Investment and Improvement Act of 2008 (Public Law 110-432) requires states have a Federal Railroad Administration-approved State Rail Plan to receive federal funding.

ALASKA STATE RAIL PLAN

Why prepare a State Rail Plan?

- A rail plan develops the state's vision for rail's role in freight and passenger (including commuter) transportation.
- Establish state policy
- Identify long-term investments and prioritize improvements to enhance rail services
- Serve as the basis for federal and state rail investments within the state

ALASKA STATE RAIL PLAN

Plan Elements

- Rail programs, railroads overview
- Vision for Alaska rail
- Service and investment needs
- Long-range service and investment program
- Financing
- Intermodal connectivity and development
- Rail safety assessment

ALASKA STATE RAIL PLAN

WHY DOT&PF?

- DOT&PF is responsible for highways, airports, ferries and many ports, and plans for all modes of transportation (AS 44.42)
- There is more than one railroad in the state; there may be more in the future.
- Other modes of transport are involved in moving freight and passengers.
- The State Rail Plan must be coordinated with the State's Long Range Transportation Plan.
- The plan must be approved by the US Department of Transportation.

ALASKA STATE RAIL PLAN

Alaska's Railways

- White Pass & Yukon Route (WP&YR)
  - Alaska's first rail line (1898)
  - Currently carries passengers between Skagway and Carcross, YT
  - More than 380,000 passengers in 2012
- Alaska Railroad (ARRC)
  - Completed in 1923
  - Approximately 470 miles of mainline track
  - More than 415,000 passengers served and 6 million tons of freight hauled in 2012
- More than 65 percent of Alaska's population lives within the service area of WP&YR and ARRC.

ALASKA STATE RAIL PLAN

New Connections in Alaska?

- Rail is an excellent choice for:
  - large quantities
  - over long distances
  - over long period of time
  - limiting access to new corridor
- Roads and trucks better for:
  - some of this and that
  - short distances
  - relatively small volumes
  - short-term development
  - providing general public access to new corridor

ALASKA STATE RAIL PLAN

Rail Economics—Freight

- On average, railroads are **four times more fuel efficient than trucks**.
- Moving freight by rail **reduces particulate emissions by 90 percent**, especially important in communities such as Fairbanks.
- Moving freight by rail also **reduces highway wear and tear**.

ALASKA STATE RAIL PLAN

Rail Economics—Freight

Tons	Bushels	Gallons	Miles per Gallon (1 ton of cargo)
1,500	52,500	453,600	514
100	3,500	30,240	
10,000	350,000	3,024,000	469
26	910	7,865	59

For many kinds of freight, internal costs (to the shipper) plus external costs (to society) are lower for rail transportation

Information courtesy of the Iowa Department of Transportation

ALASKA STATE RAIL PLAN

Alaska State Rail Plan

Public Open House – Tuesday, May 21, 2013 5:00 PM
Assembly Chambers | 700 Spring Street Skagway, AK

ALASKA STATE RAIL PLAN

Please Sign In.

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*This information is **voluntary**. Its purpose is to ensure fair and equal representation by the public in all projects and programs administered by the Alaska Department of Transportation and Public Facilities. Race Categories: White (W), Alaska Native (AN), Native American (N), Black (B), Hispanic (H), Asian (A), Pacific Islander (P), and Other (O).

Alaska State Rail Plan

Public Open House – Wednesday, May 22, 2013 5:00 PM
Haines Borough Public Library | 111 Third Avenue South Haines, Alaska

ALASKA STATE RAIL PLAN

Please Sign In.

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Alaska State Rail Plan

Public Open House – Wednesday, May 29, 2013 5:00 PM

Curtis D. Menard Memorial Sports Center | 1001 South Mack Drive Wasilla, Alaska

ALASKA STATE RAIL PLAN

Please Sign In.

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Alaska State Rail Plan

Public Open House – Thursday, May 30, 2013 5:00 PM
Seward Community Library | 239 Sixth Avenue Seward, Alaska

ALASKA STATE RAIL PLAN

Please Sign In.

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Alaska State Rail Plan

Public Open House – Thursday, May 30, 2013 5:00 PM
Seward Community Library | 239 Sixth Avenue Seward, Alaska

ALASKA STATE RAIL PLAN

Please Sign In.

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Alaska State Rail Plan

Public Open House – Tuesday, June 4, 2013 5:00 PM
Loussac Library | 3600 Denali Street Anchorage, Alaska

ALASKA STATE RAIL PLAN

Please Sign In.

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Alaska State Rail Plan

Public Open House – Tuesday, June 4, 2013 5:00 PM
Loussac Library | 3600 Denali Street Anchorage, Alaska

ALASKA STATE RAIL PLAN

Please Sign In.

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Alaska State Rail Plan

Public Open House – Tuesday, June 4, 2013 5:00 PM
Loussac Library | 3600 Denali Street Anchorage, Alaska

ALASKA STATE RAIL PLAN

Please Sign In.

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Alaska State Rail Plan

Public Open House – Tuesday, June 4, 2013 5:00 PM
Loussac Library | 3600 Denali Street Anchorage, Alaska

ALASKA STATE RAIL PLAN

Please Sign In.

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Alaska State Rail Plan

Public Open House – Wednesday, June 5, 2013 5:00 PM
North Star Assembly Chambers | 809 Pioneer Road Fairbanks, Alaska

ALASKA STATE RAIL PLAN

Please Sign In.

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Alaska State Rail Plan

Public Open House – Wednesday, June 5, 2013 5:00 PM

North Star Assembly Chambers | 809 Pioneer Road Fairbanks, Alaska

ALASKA STATE RAIL PLAN

Please Sign In.

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Alaska State Rail Plan

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ALASKA STATE RAIL PLAN

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Alaska State Rail Plan

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Alaska State Rail Plan

Public Open House – Thursday, June 6, 2013 5:00 PM
Old St. Joe's Hall | Anvil City Square Nome, Alaska

ALASKA STATE RAIL PLAN

Please Sign In.

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Alaska State Rail Plan

Public Open House – Thursday, June 6, 2013 5:00 PM
Old St. Joe's Hall | Anvil City Square Nome, Alaska

ALASKA STATE RAIL PLAN

Please Sign In.

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Alaska State Rail Plan
Fact Sheet

Alaska State Rail Plan

The State Rail Plan will define the State of Alaska's interest in and policy about the future of railroads in the state.

Plan Background

State rail plans are required by the Passenger Rail Investment and Improvement Act of 2008. Plans generally look 20 years into the future and must be updated every 5 years. The State of Alaska's first rail plan, developed in 1985, has not been revised since 1990. Alaska must update its rail plan to be eligible for federal rail funding opportunities. The final Alaska State Rail Plan must be formally approved by the Federal Railroad Administration.

Plan Elements

The state rail plan develops state policy for freight and passenger rail, prioritizes potential projects, and provides a basis for future investment in the rail system. Key elements of the plan include:

- An inventory of the existing rail system, services, and facilities;
- An assessment of safety, freight rail, and passenger rail needs and transportation economics;
- Potential investment opportunities, projects, and services;
- A long-range service and capital investment program; and
- A forward looking Vision for the future of rail in Alaska.

Alaska State Rail Plan

Project Team

The **Alaska Department of Transportation and Public Facilities (ADOT&PF)** is the project lead. ADOT&PF has responsibility to plan for all modes of transportation, including rail, under Alaska Statute 44.42. A five person **Steering Committee** is comprised of executives from the Alaska Railroad, the White Pass & Yukon Route, and Commissioners from the departments of Commerce, Community, and Economic Development, Natural Resources, and Transportation and Public Facilities. The Steering Committee provides guidance on the plan's overall direction. Members of a 26-person **Technical Advisory Group** joined by 15 **Agency Advisors** provide geographic and subject matter advice to ADOT&PF and the **Consultant Team**, HDR Alaska. HDR is charged with developing the draft and final Alaska State Rail Plan.

Schedule

Work on the Alaska State Rail Plan started in January 2013 and a final plan will be completed by December 2013.

Public meetings will be held in Haines, Skagway, Seward, Anchorage, Wasilla, Fairbanks and Nome in Spring 2013. Two future meetings will be held as on-line open houses. These on-line formats allow participants to view PowerPoint presentations, documents, maps, and videos, and make direct comments on the plan's elements. The on-line open houses will be available for 24 hours a day, 30 days at a time and allow for even greater geographic participation.

Contact Us

For more information, to submit a comment, or to sign up for electronic updates, visit our website at www.dot.alaska.gov/railplan or contact Julie Jessen, HDR Senior Public Involvement Specialist at 907-644-2000 or julie.jessen@hdrinc.com.

Alaska State Rail Plan
Frequently Asked Questions

What is a state rail plan?
Rail plans develop a state's long-term vision for rail freight and passenger transportation. Rail plans identify needs, prioritize potential projects, determine funding needs and potential sources, and outline future rail policy direction.

Why do we need a state rail plan?'
Rail plans are encouraged by Federal Law—the Passenger Rail Investment and Improvement Act (PRIIA) of 2008. Alaska must prepare a plan, approved by the Federal Railroad Administration, to be eligible for federal rail funding and investment. The plan must be coordinated with other transportation plans, such as the State's Long-Range Transportation Plan.

What are the plan's goals?
The plan will develop specific goals for Alaska, which may include promoting efficient movement of passengers and freight, enhancing economic development, promoting connectivity, or supporting safe railroad operations.

When was the last time Alaska did a rail plan?
Alaska's last rail plan was completed in 1985 and updated in 1990.

Why is ADOT&PF leading the planning effort?
Alaska Statute 44.42 assigns ADOT&PF responsibility for planning for all modes of transportation, including rail.

Will the rail plan promote resource development?
Rail would support, but not drive resource development. For some resources, rail is essential. To be cost effective, rail works best when high volumes of freight are to be shipped over a long period of time. However, the plan will look at ways to support existing and developing resources and how those resources could be moved to market.

Alaska State Rail Plan

What is an Island Railroad?
"Island railroads" are independently located lines that are not connected to the main rail system. For instance, the historic railroad from the Kennicott Mine to Cordova would have been considered an island railroad.

Are there different types of passenger service?
Passenger service includes passenger, commuter, and excursion service.

- Passenger: traveling from one point to another by rail, often from one city to another, often over long distance
- Commuter: traveling from home to work and return by rail, usually in an urban/suburban setting
- Excursion: traveling by rail for the experience, usually round-trip

Will commuter rail be considered?
Alaska must plan for continued growth, especially in the Girdwood to Anchorage to Matanuska Susitna Borough corridor. This corridor may need additional interconnectedness and intermodal support. The plan must also consider connectivity between different modes of transportation, such as rail to bus.

What is the project schedule?
A draft plan will be available for public review in fall 2013. A final draft plan will be submitted to the Federal Railroad Administration for review and approval by December 2013.

How can I be involved?
The Planning Team will have public meetings communities across the state in Spring 2013. Additional meetings will be in an "on-line open house format." These on-line meetings will be available for a month at a time, allowing more individuals in more communities an opportunity to participate in a time and manner convenient to them. To learn more about the planning process, sign up for e-mail notifications, or send us your comments, visit www.dot.alaska.gov/railplan.

Alaska Department of Transportation & Public Facilities

Alaska State Rail Plan Comment Sheet

The planning process depends on open communication amongst community members throughout the state of Alaska. Please share *your* Vision for the future of Alaska's railway systems. Specifically, where there are opportunities to change / improve service, what the future of freight and passenger rail service should include, and any other information you believe should be considered for inclusion in the plan. We hope you will share your ideas for the future of rail in Alaska as we develop this comprehensive, statewide rail plan.

Please provide comments on this sheet or send a separate letter or e-mail

Comments (Please Print):_____

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Your input may also be provided on-line:
www.dot.alaska.gov/railplan

(Optional)
Name: _____
Address: _____
Phone: _____
Email: _____
☐ Please include me on the project e-mail list

----------*FOLD HERE*----------

_____

_____

_____

Alaska State Rail Plan
C/O: HDR Alaska, Inc.
Attn: Julie Jessen
2525 C Street, Suite 305
Anchorage, AK 99503

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FAIRBANKS METROPOLITAN AREA TRANSPORTATION SYSTEMS

TECHNICAL COMMITTEE MEETING

SIGN IN SHEET

PROJECT NAME: Technical Committee Meeting **DATE:** June 5, 2013

	NAME (PLEASE PRINT)	MAILING ADDRESS and *EMAIL	PHONE	*GENDER (M/F)	*RACE (W, AN, N, B, H, A, P, O)
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2	Margaret Carpenter	DOT & PF	451-2252	F	W
3	Judy Chapman	DOT + PF	~~264~~ 451 5150	F	W
4	Joan Hardesty	DEC-AQ	on file		
5	Lynda Mahlen	DOT & PF	451-2385	F	W
6	Kellen Spillman	FNSB	459-1266	M	W

RACE CATEGORIES: WHITE (W), ALASKA NATIVE (AN), NATIVE AMERICAN (N), BLACK (B), HISPANIC (H), ASIAN (A), PACIFIC ISLANDER (P), and OTHER (O)

effective: December 2004

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PROJECT NAME: Technical Committee Meeting **DATE: June 5, 2013**

	NAME (PLEASE PRINT)	MAILING ADDRESS and *EMAIL	PHONE	*GENDER (M/F)	*RACE (W, AN, N, B, H, A, P, O)
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9	MURRAY WALSH + 4	DOT&PF & HDR RAILTEAM	465-6973	M	
10	JULIE JESSEN	HDR JULIE.JESSEN@HDRINC.COM	644-2075	F	W
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12					
13					
14					
15					

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effective: December 2004

Please Sign In.

Alaska State Rail Plan

Kenai Chamber of Commerce

June 19, 2013

ALASKA STATE RAIL PLAN

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Page ____ of ____

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Alaska State Rail Plan

Kenai Chamber of Commerce

June 19, 2013

ALASKA STATE RAIL PLAN

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Alaska State Rail Plan

Kenai Chamber of Commerce

June 19, 2013

ALASKA
STATE RAIL PLAN

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Alaska State Rail Plan

Kenai Chamber of Commerce

June 19, 2013

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Alaska State Rail Plan

Kenai Chamber of Commerce

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Kenai Chamber of Commerce

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Alaska State Rail Plan

Kenai Chamber of Commerce

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Alaska State Rail Plan
Comment Summary

Comment	Commentor Name	Source	Venue	Date	Issue Area	Issue Area 2	Issue Area 3
…is there a proposed route passing close to Tok on the way to the Yukon Territory?	J Jernigan	Public Comment	Other E-mail	1/21/2013	New Line		
Has the Alaska railroad ever considered a rail line from either Anchorage or Fairbanks to Bethel? Maybe with connecting lines to all villages? Maybe this would lower the costs of delivery of fuel and supplies to the bush and allow our native villages to grow and create instate employment, it would be less invasive than a road as it would only stop at villages?	Evelyn Thomas	Public Comment	Website	4/3/2013	New Line	Economic Development	Rural Development
Culverts are killing young salmon and making it hard for adults to get back to their spawning grounds. ADFG documented this decades ago.Your thoughts on taking out culverts (some that are rusted and collapsed) and putting in small bridges letting streams flow naturally. This is especially important on the Turnagain arm streams that flow directly into salt water.I also reviewed the summary of the new plan and not much is addressed on the environmental impacts of the Alaska Railroad.	Konrad Mittlestadt	Public Comment	Website	4/4/2013	Environment	Bridges	
More frequent passenger rail service--current schedules are skeletal at best, particularly in the winter. Optimize schedules to serve local and commuter interests, as well as the successful tourist interests.	Eric Schneider	Public Comment	Website	4/5/2013	Passenger Rail	Operations	Service Needs
Explore commuter/shuttle rail service--in conjunction with bus, taxi, and walking/biking options. The majority of Fairbanks North Star population lives within a few miles of the railroad between Eielson AFB and Murphy Dome.While I do not live in the Anchorage area, it seems to me that similar patterns are present there, as well, from north of Wasilla clear down to the Potter Marsh, with the branch to Palmer. There is a large amount of road traffic between Anchorage and Girdwood, as well.	Eric Schneider	Public Comment	Website	4/5/2013	Passenger Rail	Intermodal Connectivity	Service Needs
Efforts should be made to increase track speeds to make passenger travel more comparable to driving time. However, as experienced elsewhere in the country, reliability and frequency of passenger service is more important than actual speed of such service.	Eric Schneider	Public Comment	Website	4/5/2013	Infrastructure	Passenger Rail	Service Needs
Consider "mixed" trains with both passenger and freight cars to provide frequent service and maximize efficiency of locomotive and crew usage.	Eric Schneider	Public Comment	Website	4/5/2013	Operations		
Seek better rail passenger connections with airports--the tracks and a nice station are in place in Anchorage, and the tracks are in place (albiet not currently used) to Fairbanks airport.	Eric Schneider	Public Comment	Website	4/5/2013	Intermodal Connectivity	Passenger Rail	
Aggressively seek the rail connection via Canada to the rest of the North American railroad network. As I understand it, the value in mining alone makes this economically viable immediately; other connections, such as long distance passenger rail and some through freights (some freight may still ship more cheaply via barge) will have added value.	Eric Schneider	Public Comment	Website	4/5/2013	New Line	Economic Development	Freight Rail
Natural gas powered trains may significantly improve the economics of railroading--see research past and current by the BNSF railroad in natural gas powered trains.	Eric Schneider	Public Comment	Website	4/5/2013	Infrastructure	Financing	
Continue efforts to improve and enlarge the port of Anchorage, noting recent engineering problems. The Port MacKenzie rail extension should benefit the freight service of the Alaska Railroad (there could be a role for passenger service, as well, to decrease automobile commuting distance for port personnel).	Eric Schneider	Public Comment	Website	4/5/2013	Intermodal Connectivity	Freight Rail	
Use rail to move Wishbone Hill coal to port or Alaskan power plants. Upgrade and extend the Palmer branch as needed to maximize rail efficiency and minimize the negative impact of this project on area roads. Take advantage of rail's inherent efficiency over trucks/autos. As oil prices rise in the future, the difference will only magnify.	Eric Schneider	Public Comment	Website	4/5/2013	Freight Rail	Infrastructure	Economic Development
The railroad is already in place and already hauls oil, so a pipeline from Fairbanks to anchorage is redundant and not nearly as safe as transport by rail. Make one from Prudhoe to Fairbanks, but no further.	Tristan Maxwell	Public Comment	Website	4/10/2013	New Line	Safety	

Alaska State Rail Plan
Comment Summary

Comment	Commentor Name	Source	Venue	Date	Issue Area	Issue Area 2	Issue Area 3
The state should invest in commenter rail instead of an overly costly Kink Arm Bridge. It's time to step into the 21st century and start acting like a city instead of a redneck town. With these investments, the railroad can rely upon profits instead of federal dollars. The RR is looking at serious financial difficulty with the FRA mandate of positive train control. Invest in local business that employs hundreds of Alaskans, not out of staters. Lets keep ur money here.	Tristan Maxwell	Public Comment	Website	4/10/2013	Passenger Rail	Financing	Operations
It seems like commuter rail between the Valley and Anchorage would help with Glenn Highway congestion and would provide a consistent revenue source for the AK RR (although I am sure they would incur greater costs). Train service seems to have greater appeal to some people as it is often less affected by uncertainty in traffic and thus can stay on-time more. I don't know if it is feasible to have commuter trains on the current rail system, but that sounds better than a bridge across Knik to me.	Wendy Loya	Public Comment	Other E-mail	4/11/2013	Passenger Rail	Financing	
Request to have a TAG and SC meeting in Fairbanks	Fairbanks North Star Borough	Public Comment	Other E-mail	4/11/2013	Public Involvement		
In regard to the proposed railway connection linking the Alaska Railroad to Canadian National's system in British Columbia, I was please wanting to ask about one major feature of the plan: Would the land necessary for the right-of-way be donated by the State, Federal and Provincial governments involved (as was done during the building of the U.P. - C.P. transcontinental railroad in 1869), or would it all have to be purchased by the railroad-building organization?	Lindsey Jauregui	Public Comment	Other E-mail	4/16/2013	Right of Way	New Line	
Expedite getting ur rail service into Point MacKenzie.....U need to be operational before a gas line or other big development on the North slope occurs.	Gerald Timmons	Public Comment	Website	4/17/2013	Freight Rail	New Line	
The Fairbanks Convention & Visitors Bureau would like to see winter service between Fairbanks and Denali offered as a day trip option.	Deb Hickok	Public Comment	Website	4/22/2013	Passenger Rail	Operations	
The Regions and areas of Alaska with no rail system should be prioritized. In Western Alaska, we're faced with high cost of living with heating and gasoline costs unimaginable. Our communities in western Alaska don't even benefit from the oil being pumped from our very own state. Yes, funds availability through taxes, etc. we benefits. Bethel, Alaska is a hub town for the Yukon and Kuskokwim Delta villages, and where the cost of living is the highest in the nation and the world. A rail system to Bethel would have huge benefits for our region. We're voting citizens of Alaska and the United State of America, we shouldn't be overlooked for ideas for constructing rail systems for our state.	Howard T. Amos	Public Comment	Website	5/16/2013	Rural Development	New Line	Economic Development
The Anchorage Regional ITS Architecture Implementation Plan includes real-time Highway-Rail Intersection (HRI) warnings. This should be included in your document review and needs assessment, along with a review of the DOT&PF Iways Architecture. Bruce Carr with AKRR may wish to share his thoughts as well for specific HRI deployment. Implementation Plan: See Chapter 6 at bottom of link below: http://www.muni.org/Departments/OCPD/Planning/AMATS/Pages/ITS1.aspx	Vivian Underwood	Agency Comment	Other E-mail	5/16/2013	Safety	Crossings	Operations
Would love to see rail from Kenai Peninsula (Soldotna/Kenai) to Anchorage in future. Would be nice alternate to driving to Anchorage for residents of the Peninsula.	Sue Essert	Public Comment	Website	5/16/2013	New Line	Passenger Rail	

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Comment	Commentor Name	Source	Venue	Date	Issue Area	Issue Area 2	Issue Area 3
There should be a high speed passenger rail for Wasilla, Palmer, Eklutna, Chugiak, Eagle River and Anchorage that makes regular trips during each day. There should be parking areas at each of these locations for people who use the rail to commute. This arrangement would reduce the need for greater highway expansion and the Knik bridge thereby reducing those costs which could be diverted to establishing the passenger rail system. By relieving commuter traffic on the road system, it would save lives of people and animals from auto crashes, and it would free the highways for commercial traffic.	John Angell	Public Comment	Website	5/17/2013	Passenger Rail	Intermodal Connectivity	Safety
Further, as Southcentral population increases a high speed commuter rail system will become a necessity, so why not begin the building process now by establishing the policy, plans and beginning the upgrades to the rail system. America is so far behind other developed countries in this transportation area that we are damaging our economy by trying to retro fix our outdated highway and road system. We need a transportation policy change.	John Angell	Public Comment	Website	5/17/2013	State Policy	Infrastructure	
Native Village of Nunam Iqua council members are interested in seeing how the rail plan could possibly effect freight costs and even fuel shipments.	Aaron Brown	Public Comment	Website	5/20/2013	Freight Rail	Rural Development	
Will this plan provide any solutions for Mat-Su/Anchorage commuters?	Valerie	Public Comment	Open House	5/21/2013	Passenger Rail		
Have you considered establishing ports on major rivers were the track crosses the river? At these sites, freight and fuel can be brought in by rail and stored for transport along the river system just before the ice breaks apart to allow for earlier first shipments of goods to the rural communities. These ports also have the possibility of more freight shipments to some communities along the river system then once a year. With new rail lines going to the towns of Nome, Bethel, and Dillingham, new hub communities could be established along the rail route for the airplane industry. New freight hubs give the option of airplanes flying shorter flight plans and increase safty for supplies. Along with the freight and fuel being shipped into the area, rail would allow an increase of building supplies to assist in rebuilding homes in rural Alaska. To assist in some electric production, one option is to use coal from the Usibelli Coal Mine. Another option is to buy fuel from Flint Hills Refinery at North Pole. The Flint Hills Refinery is capable of produing 220,000 barrels of fuel per day.	David K. Beals	Public Comment	Open House	5/21/2013	Economic Development	Intermodal Connectivity	New Line
1.) Please consider the historical value of the original Iditarod Trail which starts in Seward and crosses through railroad property. Dan Seavey has approached the Seward Council in preserving the trail.	Mayor David Seaward	Public Comment	Open House	5/22/2013	Environment		
2.) Please consider the value of Seward's impact and contribution to passenger market. Seward represents approximately 40 plus % market of railroad passenger service during cruiseship season. During the winter, there are no railroad service to Seward which hurts Seward's economy.	Mayor David Seaward	Public Comment	Open House	5/22/2013	Passenger Rail	Economic Development	
Please provide service directly to the Ted Stevens International Terminal. Please support communities by eliminating the use of pesticides and defoliantes.	Anonymous	Public Comment	Open House	5/22/2013	Passenger Rail	Environment	Intermodal Connectivity
Please provide railroad day programs in Seward similar but to equal to those experienced in Anchorage. Please allow the extension of the bike path along Seward Highway in your right-of-way.	Anonymous	Public Comment	Open House	5/22/2013	Operations	Right of Way	
Provide light rail service point-to-point like Anchorage to Wasilla/Palmer - get cars off road as a service. Work towards sustainability, good stewardship, protect wetlands and critical habitat.	Anonymous	Public Comment	Open House	5/22/2013	Passenger Rail	Environment	

Alaska State Rail Plan
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Comment	Commentor Name	Source	Venue	Date	Issue Area	Issue Area 2	Issue Area 3
As the Seward Master Plan Project progresses: 1.) Road to resources - Ship material / ores to Seward for transfer to vessels. 2.) Haul Seward's (and vicinity's) nuisance - the high tensile strength gravel north and load vessels. Very few places in AK have this quality rock.	Jim Hunt	Public Comment	Open House	5/22/2013	Intermodal Connectivity	Freight Rail	Economic Development
3.) Double-stack containers. 4.) Build a railroad ___(illegible)___ on bench land overlooking bay. Seward appreciates the railroad.	Jim Hunt	Public Comment	Open House	5/22/2013	Operations	Right of Way	
Through Canada, up to Coldfoot, out to west	Anonymous	Public Comment	Website	5/28/2013	New Line		
Connect WP & YR to other transportation connections in Carmacks, YT, Cananda.	Anonymous	Public Comment	Open House	5/29/2013	New Line		
Underground like tracks paralleling I-25 between Santa Fe, NM and Albuquerque, NM. Maybe it goes well to the east and loops back. - Big Boy	Anonymous	Public Comment	Open House	5/30/2013	Infrastructure	Environment	
I don't believe that we can build prosperity; I think prosperity is the indirect Result of good economic decision-making. I would prefer that the vision statement be pared down to focus on the efficiencies of rail in getting resources to market.	Anonymous	Public Comment	Open House	5/30/2013	Vision Statement		
Trains! Yes! Let's do it.	Anonymous	Public Comment	Open House	5/30/2013	General Support		
It seems to me that if the primary purpose of the train to haul resources, those resources belong to some corporation and the corporation is who should be paying for the train. Or perhaps a public/ private partnership?	Sally McGuire	Public Comment	Open House	5/30/2013	Financing	Economic Development	
I would like to see rail and highways put on a level playing field when the state initiates a transport project in response to a resource access need.	Anonymous	Public Comment	Open House	5/30/2013	State Policy		
Corridors to resources - I encourage AK DOT to give railroad alternatives to road development greater & more upfront (earlier in the project) consideration	Debra Schnabel	Public Comment	Open House	5/30/2013	Freight Rail	Goals and Objectives	State Policy
The State of Utah (UTA) seems to have a great rail system from passenger standpoint. I'm interested in seeing freight and passenger rail service connecting Haines or Skagway to the interior & North America.	Anonymous	Public Comment	Open House	5/30/2013	Freight Rail	Passenger Rail	New Line
I feel very strongly that our railroad should be a viable transportation option for Alaskan residents - not just used for freight or for outside visitors on Holland America/Princess Cruise railcars. I think the railroad can be a real player in transit oriented development - where vibrant mixed use communities are built around rail stops. I think focusing on building a commuter train route from Wasilla/Palmer and from Girdwood into Anchorage should be a priority. I also think the rail line could be an amazing opportunity to redevelop Anchorage's neighborhoods. Imagine if Anchorage residents could commute downtown or to the airport with a stop in Ocean View, the Diamond Mall, Spenard, etc. Also, imagine if a resident of Alaska could actually take the train to the Anchorage International Airport. It is an embarrassment that our airport train depot is primarily used as a venue for fundraisers and black tie events. I also support programs like the whistle stop option to Spencer Glacier and Grandview. For examples of transit oriented development look at how development of the trolley system in San Diego helped spur revitalization.	Tanya Iden	Public Comment	Website	6/4/2013	Passenger Rail	Intermodal Connectivity	
Very disappointed I was not sent an invitation to the Open House until it was over. This was not a Public friendly way to do business.	B Weinig	Public Comment	Website	6/4/2013	Public Involvement		

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Comment	Commentor Name	Source	Venue	Date	Issue Area	Issue Area 2	Issue Area 3
The railroad is a dinosaur!! It is useless except in a few instances. Let us not waste any more money on expanding it. Just take a look on the value added benefit of the airport extension that dear old Ted Stevens gave us. What a boondoggle that is. And now you are talking about extending the line to Nome??? Please, let's get real. If the oil companies, miners, natives or anyone else wants access let them provide it. The rest of us should not be underwriting their projects.	Rich Melms	Public Comment	Website	6/4/2013	Financing	General Opposition	
Please consider a policy that establishes guidelines to assure a seamless integration of all rail with other forms of state transport including marine highway and other public transport.	Michael Powell	Public Comment	Open House	6/4/2013	Intermodal Connectivity	State Policy	
First priority should be the continued investment in existing freight and passenger service before just laying track into new regions of the state. Make sure that there is a financing plan in place to operate any new line before building any new trade.	Mark Butler	Public Comment	Open House	6/4/2013	Operations	Financing	
Update costs for operating commuter rail from Mat-Su to Anchorage	Anonymous	Public Comment	Open House	6/4/2013	Financing	Passenger Rail	
New 126 and 129 cars, greater 89 car capacity, convertible 126 and 129 cars to pipe carriers, bunk cars. Port of Seward expansion: Double dock face (lay down) Improve restrictive vessel security to 'best practice' STDs.	Anonymous	Public Comment	Open House	6/4/2013	Infrastructure	Operations	
Glad to see "coordination with other T.P" as being part of vision. As rail goes through boroughs/cities - such opportunities to create 'stops'/'stations' that allow users to utilize rail, bus, bicycle, etc. Multi-purpose travel stops.	Anonymous	Public Comment	Open House	6/4/2013	Intermodal Connectivity	Vision Statement	
What can be done to use the rail station at the airport more? It is an under used station. Commuter rail between Mat-Su Valley - Anchorage - Girdwood - needs to be a priority.	Anonymous	Public Comment	Open House	6/4/2013	Intermodal Connectivity	Passenger Rail	
Rail connection to Canada - to open up trade, and tourism would be great.	Anonymous	Public Comment	Open House	6/4/2013	New Line	Economic Development	
What large resources are identified to be moved by rail? Identify those resources and make sure the beneficiary of that resource helps pay for rail extension to move their resources to market.	Anonymous	Public Comment	Open House	6/4/2013	Economic Development	Freight Rail	Financing
Extend rail from Fairbanks to Ambler mining district - open up mining potential to NW and Western AK. Mining companies would then have year round access (via rail) to deep water ports. Ice free in the case of Whittier.	Anonymous	Public Comment	Open House	6/4/2013	New Line	Economic Development	Intermodal Connectivity
City of Whittier is interested in becoming an ore trans- shipment terminal. Rail to mining districts solves two problems --> energy --> diesel fuel in and transportation route out for ore. Added benefit - ability to ship heavy items (and expensive).	Anonymous	Public Comment	Open House	6/4/2013	Economic Development	Freight Rail	Intermodal Connectivity
All of the lower 48's major west coast seaports (plus at least one in Mexico) are often operating above capacity. Inbound cargo ships often have to wait for a turn to unload. Existing rail systems are also stretched to carry all these containers inland. If Anchorage-Seward-Whittier (and Port MacKenzie) had rail access to the rest of the continental system, they could take a share of this backlog of traffic.	Tim Coahran	Public Comment	Website	6/5/2013	Intermodal Connectivity	Economic Development	
They would also become the closest American seaport to the vast Asian market. I would like to see the Alaska Railroad and Canada build the final leg of infrastructure required to make this possible. Such a line could also provide another alternative for shipping Liquified Natural Gas south, and would fill one of the requirements for any future rail construction toward Nome or the Bering Strait.	Tim Coahran	Public Comment	Website	6/5/2013	New Line	Economic Development	
I would also like to see fast commuter service between Anchorage and the Mat-Su.	Tim Coahran	Public Comment	Website	6/5/2013	Passenger Rail		

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Comment	Commentor Name	Source	Venue	Date	Issue Area	Issue Area 2	Issue Area 3
We have rails, let's use them! How many residents do you know that have never been on our train? Vision: ARRC expands its passenger service with a balance of (out-of-state) tourist and (local) passenger service.	Kimberly Varner Wetzel	Public Comment	Website	6/5/2013	Passenger Rail	Goals and Objectives	
The State should subsidize passenger service provided by ARRC because the savings or net benefits captured from reduced road maintenance, reduced parking lot construction (for instance, at parks and trailhead), reduced road widening, and increased tourism. There are commuter opportunities using hard rail and an unmet demand for recreational travel by locals to public lands via rail.	Kimberly Varner Wetzel	Public Comment	Website	6/5/2013	Passenger Rail	Financing	State Policy
I just have a gut sense that ARRC's core competency is the movement of goods and passengers. ARRC owns a lot of property. I don't know if they manage it because they have to or because it was land-granted to provide revenue. At any rate, I'm not sure land management should be one of their core competencies. There may be a better organization to maximize the use of their lands for the public good.	Kimberly Varner Wetzel	Public Comment	Website	6/5/2013	Right of Way	Financing	Operations
Outstanding idea and one that needs State backing and cooperation, all working towards the same goal of creating world class rail transportation system for a world class State and resource developement.	Jim Simko	Public Comment	Website	6/7/2013	Vision Statement		
A cargo train with a passenger caboose from a 'big city' like Anchorage or Fairbanks would help. It would help ship items needed during the winter because our main supply comes from a barge which can't transport during the winter. Also, we won't have to ship a bunch of stuff to be prepared which would save resources. Another thing is that it would be a more reliable system, for example: the barge wasn't able to get this year's school supplies here.	Brayden Bahnke & Shyloah Shannon	Public Comment	Open House	6/5/2013	Passenger Rail	Freight Rail	Rural Development
To bush hubs such as Nome; there may be significant vehicle use or traffic on rail cars - both directions.	Jim Hansen	Public Comment	Open House	6/5/2013	New Line	Freight Rail	Rural Development
We want to make sure rail is considered for the Bering Strait Region and the Western Access Corridor study ie road to Nome. Rail has a long history in the Nome census area with mining.	Denise Michels (Mayor of Nome & Transportation Director of Kawerak)	Public Comment	Open House	6/5/2013	Rural Development	Freight Rail	New Line
A VISION THAT'S TIME HAS COME ---- In the mid 1980s ownership of the Alaska Railroad (ARR) was transferred from the Federal Government to the State of Alaska. Around that time the technical committee for the Fairbanks Metropolitan Area Transportation System (FMATS) under the leadership of Mim Dixon, Director of Planning for Alaska Department of Transportation Northern Region (AKDOT), undertook an assessment and review of the location and operation of Alaska Railroad (ARR) facilities in Fairbanks. As a result of that effort a report was issued with the conclusion that ARR facilities, railroad yard, and train operations should be relocated from its current location in the heart of Fairbanks to an area South and/or East of town. Specifically train operations should be rerouted south of town eliminating the major at-grade crossings and increased train and vehicle conflicts that would result from the continued inevitable growth of the community and train traffic. In 2007 a Memorandum of Understanding (MOU) was developed between the ARR and Fairbanks North Star Borough (FNSB) to comprehensively reroute train traffic south of town dramatically decreasing the numerous at-grade crossings and more importantly the growing number of train and vehicle conflicts from Sheep Creek Road to Moose Creek. A copy of that MOU was provided at the recent scoping meeting for the State`s Rail Master Plan held in the FNSB assembly chambers.	JC Phillips	Public Comment	Website	6/16/2013	Operations	Infrastructure	Safety

Comment	Commentor Name	Source	Venue	Date	Issue Area	Issue Area 2	Issue Area 3
The logical first step in addressing the intent of the MOU, which should be included in the State Rail Master Plan, is identifying and establishing the new rail bypass corridor from beginning to end along with identifying an area for a new and expanded railroad yard adequate for the next 100 years. Then and only then should phase construction proceed. T**he greatest concentration and number of train and vehicle conflicts occur within the City of Fairbanks along a one mile section of the Eielson Spur**. Also, due to recent and continuing retail development along this section, it will be the area of greatest growth of train and vehicle conflicts in the future. **This one mile section is located just east of the railroad yard beginning at the College Road at-grade crossing continuing through the Old Steese at-grade to the Steese Expressway at-grade crossing**. In addition to these three heavily trafficked multi lane at-grade crossings **a fourth at-grade crossing will be constructed this summer** to facilitate the continuing traffic growth and circulation needed in the growing retail area known as North Town. This is the area bounded by College Road, the Johansen Expressway and the Steese Expressway and bisected by the Eielson Spur. Arguably even another at-grade crossing will be needed to handle inevitable future traffic growth and associated congestion.The average daily traffic (ADT) for the three existing multi lane at-grade crossings and the one being constructed this year will be in the range of 100,000 vehicles or more.	JC Phillips	Public Comment	Website	6/16/2013	New Line	Safety	Crossings
The highest priority goals of the State of Alaska with regard to its railroad should be: 1. Proactively improving and ensuring the safety and reliability of the rail system. These are not just problems within the ARR. They are failures of the leadership and people of Alaska to prioritize our financial resources to address technically well understood problems. These failures will not be overcome if the policies and goals adopted by the state do not demand action and provide guidance to our future legislators and administrators as to how to progress, including:	Cole Sonafrank	Public Comment	Website	6/14/2013	Safety	Goals and Objectives	State Policy
A. Move the industrial railroad out of the middle of Fairbanks to a safe distance. It is unconscionable that this has not been done decades ago. The risks to Fairbanks should have been deemed unacceptable long before now and they will only increase as Fairbanks grows and its role of supplying the development of rural Alaska continues. Factoring a catastrophic mass casualty event into the cost of the railroad's doing business is in effect the status quo which, again, is utterly unconscionable.	Cole Sonafrank	Public Comment	Website	6/14/2013	Safety	Infrastructure	
B. Eliminate at-grade railroad crossings of public roads. One of the most heinous failures of American public policy is our deliberate choice to minimize public understanding of the real risks associated with driving. To the degree possible, we hide rather than publicize the cost benefit analyses that include probabilistic determinations of lives lost which our transportation planners necessarily have to consider. This is a far greater problem for the road system than for rail. However, as a matter of policy it should no longer be acceptable for new track to intersect public roads at-grade. Nor should any increased rail traffic be allowed through existing at-grade crossings. Fix the problems. Do not allow them to get worse.	Cole Sonafrank	Public Comment	Website	6/14/2013	Crossings	Safety	

Comment	Commentor Name	Source	Venue	Date	Issue Area	Issue Area 2	Issue Area 3
C. Improve, replace and maintain the track wherever necessary to increase reliability. If those responsible for operating the Alaska Railroad do not already have well developed and robust predictive models enabling them to access the probabilities of problems of any conceivable nature at any point along the rail system, it is only to enable plausible deniability. Even without appropriate mathematical models, the intelligence, expertise and experience of the ARR professionals ensures that they have a good idea of all the potential problem areas of the track, how those problems should be remedied, and a stronger desire than most to get that work done. Yet Alaska's railroad continues to have what should be deemed an unacceptably high rate of derailments and washouts. Alaska's standards must be raised before our rail system is expanded. (To be clear, safety and reliability are even more problematic with regard to Alaska's roads.)	Cole Sonafrank	Public Comment	Website	6/14/2013	Infrastructure	Safety	
2. Diversifying Alaska's economy and creating local jobs. Transportation infrastructure development and maintenance are two of the most significant engines driving local economies. Their effectiveness is largely determined by public policy. This makes it especially important that the goals and policies included in Alaska's official plans emphasize increasing the long-term, progressive impacts of all public projects on local economic development.	Cole Sonafrank	Public Comment	Website	6/14/2013	Economic Development	Goals and Objectives	State Policy
A. Coordinate with the Alaska Industrial Development and Export Authority (AIDEA) and other agencies to develop supporting businesses within Alaska whenever possible. Money invested in public projects in Alaska should not leave the state if a competitive, viable business can be established in Alaska that can get the job done. This is particularly true for infrastructure projects that typically have a long enough lead time for the local business potential to be investigated and developed. Any legally sound preferences should be given to Alaskan businesses.	Cole Sonafrank	Public Comment	Website	6/14/2013	Economic Development	Financing	
i. Railroad Sleepers (aka Ties) Can and Should Be Manufactured in Alaska Using Locally Produced Geopolymer Concrete. Locally producing economically competitive, sustainable and superior cement, concrete and derivative products like railroad sleepers in Alaska develops Alaska's economy rather than exporting our investments outside. Locally manufacturing such a fundamental product as cement at significantly reduced cost makes the local manufacturing of a myriad of additional products economically viable. The local production of geopolymer concrete ties is an ideal initial driver for the development of an Alaskan concrete and derivative product industry.	Cole Sonafrank	Public Comment	Website	6/14/2013	Economic Development	Infrastructure	

Comment	Commentor Name	Source	Venue	Date	Issue Area	Issue Area 2	Issue Area 3
B. Proactively expand Alaska's rail system to enable the development of natural resources necessary to America's prosperity and human progress. Supporting the increasing human population in the face of global change requires advanced technology. This technology requires strategic and rare-earth elements that are known to exist in remote areas of Alaska. Even perfect recycling of these elements can not meet the growing need; therefore more resources must be mined and processed. In Alaska this can be done diligently with due regard for environmental protection, but this requires advancing along every available avenue toward reducing the cost of prudent practices. This means using rail rather than roads or river. The higher reliability of rail should be a State requirement, despite its up-front cost, whenever it would significantly increase the environmental protection from potential industrial (e.g. mining) impacts. To the degree the rail development can be demonstrably construed to contribute to long-term local economic development, its higher cost should be offset by government investment through AIDEA.	Cole Sonafrank	Public Comment	Website	6/14/2013	Economic Development	State Policy	New Line
3. Decreasing the cost of transportation infrastructure maintenance. Alaska needs to shift its transportation infrastructure economic engine away from maintenance by investing in more durable and reliable systems. The sustainability of Alaska's economy requires that the progressive development of low-maintenance, long life-cycle infrastructure becomes a more effective engine than perpetual, premature maintenance that could only be afforded while federal subsidies were abundant. A. Adjust the relative costs of rail and truck freight such that they reflect the total true relative costs of maintaining the rail and road systems. The public needs to be educated regarding the true total costs of Alaska's transportation systems. The lack of any appreciation for how heavily our consumer prices are subsidized through the federal government's funding of our road maintenance has led to egregious transportation policies that stymie Alaska's economic development. The necessity for continued government subsidy, increasingly more from Alaska, is certain. Its focus must shift toward being more sustainably effective in the long-term. Among other things, this means more State funding should subsidize rail freight to reduce truck traffic.	Cole Sonafrank	Public Comment	Website	6/14/2013	Infrastructure	Financing	State Policy
B. Build more rail and decrease truck traffic on roads built to higher standards. The decrease in trucking jobs should be offset by new rail development and upgrading roads to higher quality standards.	Cole Sonafrank	Public Comment	Website	6/14/2013	General Support		
C. Decrease the construction and maintenance cost of the railroad. Geopolymer concrete, more properly knows as Alkali-Activated Alumina-Silicate Concrete, can be produced in Fairbanks for approximately 30% less cost than Portland-cement-based concrete. Geopolymer concrete is stronger and more durable than Portland-based concretes yielding more reliable railroad sleepers with a longer working life. Geopolymer sleepers are presently used in Spain, Australia and Finland.	Cole Sonafrank	Public Comment	Website	6/14/2013	Infrastructure		

Comment	Commentor Name	Source	Venue	Date	Issue Area	Issue Area 2	Issue Area 3
4. Decreasing CO2 emissions and other pollution while recycling whenever possible. The long-term environmental impact of all public projects must be beneficial. Past practices of postponing solutions to environmental problems can not continue for any new development. A. Transition freight from truck to rail. While this is (literally) a particular problem in Fairbanks with its PM2.5 non-attainment problem, it can be a problem wherever trucks (and cars) are used. It continues to be exacerbated by our refusal to require lower sulfur fuels. In other situations, such as ore transport (e.g. Red Dog mine), fugitive toxic dust issues could be mitigated through the use of rail rather than trucks. B. Use geopolymer cement rather than Portland cement. Traditional Portland cement is limestone-based, geopolymer cement is not. 80% less CO2 is released in the production of geopolymer cement than of Portland cement. The fly ash from the coal-fired power plants in Interior Alaska has been proven to produce excellent geopolymer concrete. Fly ash, among other locally available waste products, such as mine tailings and ground glass, can and should be recycled into cements that will decrease the environmental impact and cost of infrastructure development in Alaska. If coal-fired power generation is phased out rather than its CO2 production mitigated, geopolymer cements can be made using alternatives to fly ash such as readily available clays.	Cole Sonafrank	Public Comment	Website	6/14/2013	Environment		
The State Rail plan should include several areas of focus. The goals should be broken into immediate intermediate and long range plans. I also believe that the plan should have a commuter focus and a separate commercial/industrial focus.	Bryce Ward (Mayor of North Pole)	Public Comment	Website	6/17/2013	Goals and Objectives		
When it comes to identifying goals I think that safety should be the number one concern with expansion and market penetration being the close second. Tending to the existing infrastructure will be crucial to any future plans, as well as connecting the networks and projects. Some of the goals I think that would help short term would be realignment of existing track to better fit the communities that have grown around the rail.	Bryce Ward (Mayor of North Pole)	Public Comment	Website	6/17/2013	Goals and Objectives	Safety	Economic Development
Expansion to existing markets along roadways would also be important. I also believe that connection of the Alaska Rail system to the Canadian system and the Lower 48 would be of great benefit to Alaska and the Connectivity of the North American Continent. Long term plans should include an International expansion to Canada and also to the European Market. A Rail connection to Russia through the land bridge although not immediate would require many years of careful planning. International and continental connections can be highly controversial and expensive but should be part of a Alaska Statewide Rail and general transportation plan.	Bryce Ward (Mayor of North Pole)	Public Comment	Website	6/17/2013	Economic Development	New Line	
RELOCATION: 1 - Support the relocation of the main rail line around the Fairbanks Area. 2 - Encourage the relocation of the Alaska Railroad yard outside of the Fairbanks urban core in accordance with the Fairbanks Area Rail Line Relocation plan. A - Develop a long-term land-use plan for the existing Railroad Industrial area. B - Investigate development of a railroad depot at the south end of Peger Road as an aspect of the Fairbanks Area Rail Line Relocation Project. 3 - Acquire land for new railyard(s) and begin transfer elements of Terminal use, especially hazardous materials storage transfer. A - Investigate FNSB owned Section 36 as possible location. B - Investigate the western Goldsteam Valley area. C - Investigate Eielson Farm Road/ Moose Creek area.	Mayor Luke Hopkins (Fairbanks North Star Borough)	Public Comment	Letter	6/5/2013	Infrastructure	Right of Way	

Alaska State Rail Plan
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Comment	Commentor Name	Source	Venue	Date	Issue Area	Issue Area 2	Issue Area 3
PASSENGER SERVICE: 4 - Ensure that Positive Train Control is implemented to legally continue passenger service to the interior. 5 - Reduce the travel time between Fairbanks and Anchorage to better compete with other modes of transportation. 6 - Investigate the use of commuter trains for transportation and commuter purposes for the rail belt communities and between the City of Fairbanks, the City of North Pole, Eielson Air Force Base, Salcha and Delta Junction. 7 - Continue the development of winter passenger service through self propelled diesel motor units, which are insulated for winter use.	Mayor Luke Hopkins (Fairbanks North Star Borough)	Public Comment	Letter	6/5/2013	Passenger Rail	Operations	Infrastructure
8 - Develop a pedestrian connection between the existing railroad depot and downtown Fairbanks. 9 - Develop a railroad depot in the City of North Pole.	Mayor Luke Hopkins (Fairbanks North Star Borough)	Public Comment	Letter	6/5/2013	Intermodal Connectivity	Infrastructure	
EXPANSION: 10 - Develop and maintain Fairbanks as the transportation hub for the Interior by encouraging the expansion of the rail system to: A - Delta Junction. B - Canada. C - Northern Alaska. D - Western Alaska (Nome).	Mayor Luke Hopkins (Fairbanks North Star Borough)	Public Comment	Letter	6/5/2013	Goals and Objectives	New Line	
11 - Incorportate the possibility of a rail corridor into the Western Alaska Access Planning Study. 12 - Coordinate future rail expansion projects with the development of natural resources locations. A - Investigate the possibility of a rail line to Livengood in support of limestone and gold mining industries. 13 - Investigate and plan for the possibility of a gas-to-liquids site within the FNSB serviced by rail line.	Mayor Luke Hopkins (Fairbanks North Star Borough)	Public Comment	Letter	6/5/2013	New Line	Economic Development	
SAFETY/NOISE: 14 - Construct the railbed to the standards of a certified levee as an aspect of the second phase (Eielson to Tanana River Bridge) of the Northern Rail Extension project.	Mayor Luke Hopkins (Fairbanks North Star Borough)	Public Comment	Letter	6/5/2013	Infrastructure	New Line	
15 - Reroute rail corridors used for the transport of hazardous materials away from residential and densely populated areas. 16 - Reduce the number of at-grade railroad crossings; create separate grade crossings for the remainder, when possible. A - Construct the North Pole Road / Rail Reduction project. B - Construct railroad overpass / highway interchange in the vicinity of Ft. Wainwright's current 3-Mile Gate rail access. C - Construct railroad overpass over University Avenue to eliminate serious traffic problems experienced at the present at-grade crossing. D - Construct auxiliary stop lanes on the Richardson Highway crossings to facilitate the legally mandated stopping of fuel trucks and buses.	Mayor Luke Hopkins (Fairbanks North Star Borough)	Public Comment	Letter	6/5/2013	Safety	Crossings	Infrastructure
17 - Minimize right-of-way acquisition if the Parks Highway alignment is the preferred alternative for main line relocation (i.e., single-track). 18 - Maintain motorized and non-motorized access to areas on and past the Tanana River Levee, when the ARRC main line is relocated in the area.	Mayor Luke Hopkins (Fairbanks North Star Borough)	Public Comment	Letter	6/5/2013	Right of Way	Access	
Attached (on file at HDR) is the Memo of Understanding between the FNSB & ARR agreeing to define a new rail corridor around metro Fairbanks dated 25 June 2007. Also attached are just 2 of the many resolutions approved by the City of Fairbanks and the FNSB encouraging ARR to relocate or construct new track and trains around, south, of the metro area. This is due to conflicts of the railroad and the trains with our roads and streets. The number and magnitude of the conflicts is growing (this was received at a public meeting as a comment form).	JC Phillips	Public Comment	Open House	6/5/2013	Infrastructure	Crossings	Safety

Alaska State Rail Plan
Comment Summary

Comment	Commentor Name	Source	Venue	Date	Issue Area	Issue Area 2	Issue Area 3
GOAL: Satisfy visitor needs by offering flexibility in schedule/route year round. STRATEGY #1: "Denali Express' for charter service / schedule Fairbanks - Denali in Winter. Construct winter facility in Fairbanks for passenger cars. Revive: tour offerings, independent tourism, stock promotions. STRATEGY #2: "Denali Express" Fairbanks - Denali in Summer. More robust schedule to offer tour excursions and independent trips - flexible schedule. STRATEGY #3: More frequency ANC - FAI service in winter (5 year plan: Offer service late February through March).	Deb Hickok	Public Comment	Open House	6/5/2013	Goals and Objectives	Passenger Rail	Operations
An Anchorage to Fairbanks commuter service, late night/ early morning service	Victor Apudaca	Public Comment	Open House	6/5/2013	Passenger Rail		
Plan must make a connection to proposed links through Canada to the lower 48!	Dave Lanning	Public Comment	Open House	6/5/2013	New Line		
How about a bullet train "shinkansen" between Anchorage and Fairbanks :)	Anonymous	Public Comment	Open House	6/5/2013	Passenger Rail		
Rather than 'Roads to Resources' or 'Rails to Resources' we would like to see 'Corridors to Resources' - corridors that would incorporate the physical constraints of rail transport - and utilizing only one tract through typically undeveloped areas of the state for both road & rail. Secondly, I think one of the most important concepts of the plan should be the focus on 'intermodal' transport - leading to Alaska as a forerunner in international transport.	Kathy Marx	Public Comment	Open House	6/5/2013	State Policy	Environment	Intermodal Connectivity
Consider PTC and how that would affect potential freight movement on White Pass & Yukon. Fairbanks Rail yard has run out of room (land) for potential growth. Any growth will be difficult to accommodate without it.	Katrina Martolano	Public Comment	Open House	6/5/2013	Operations	Infrastructure	Freight Rail
I think the railroad should provide passenger service between Anchorage and Fairbanks that is competitive to driving an automobile between the two destinations in terms of time. Passenger service should take 6 to 7 hours.	Anonymous	Public Comment	Open House	6/5/2013	Passenger Rail		
Please get the stupid model railroad out of the Fairbanks Depot!	Anonymous	Public Comment	Open House	6/5/2013	General Opposition		
I'd like to see an improvement in passenger service, especially from Fairbanks to Anchorage. Currently the trip is too long and costs too much.	Jerry McBeath	Public Comment	Open House	6/5/2013	Passenger Rail		
At the present time G7G is working hard to serve the $40 million required to facilitate our feasibility study. We have prospective funders ready to finance the $12 billion build and rolling stock. We would appreciate formal discussions to being with Alaska Rail.	Matt Vickers	Public Comment	Open House	6/5/2013	Financing	New Line	Economic Development
As the result of rapidly thinning arctic sea ice the City of Nome is in an excellent position for maritime development as a regional hub for Alaskan and United States commerce.	Gary Kasper	Public Comment	Website	6/20/2013	Intermodal Connectivity	Economic Development	

Alaska State Rail Plan
Comment Summary

Comment	Commentor Name	Source	Venue	Date	Issue Area	Issue Area 2	Issue Area 3
The State of Alaska current developmental policy calls for an increased development of mineral, oil, and gas resources in the arctic region. The Alaskan Governor's Program has implemented the program of "Roads to Resources" for unlocking the State's resources for the Nation's energy needs for the coming future. In order to build such a highway infrastructure, vast amounts of road building material will be needed to achieve this vision. Building a railroad first would supply the highway project with the necessary materials while servicing the port of Nome with reasonable access to interior Alaska and interconnecting commerce. Alaska Deep Draft Arctic Port Study listed Nome highly favorable as a future development site for increased maritime activity. Our world is changing rapidly, the opportunities for Alaskans is great. The coming era will demand greater resources and the necessary infrastructure to facilitate world commerce. The City of Nome will be sitting on a super international maritime highway of commerce. Will Alaska be ready?	Gary Kasper	Public Comment	Website	6/20/2013	State Policy	Economic Development	Intermodal Connectivity
The City of Nome supports the State of Alaska's efforts to update the State of Alaska's Rail Plan and requests that Nome, Alaska be included for future development. The City of Nome has been identified on DOTPF's short list for a deep draft port study along with Port Clarence. Intermodal transportation is key to economic and resource development in the Bering Straits region.	Denise Michels (Mayor of Nome & Transportation Director of Kawerak)	Public Comment	Letter	6/21/2013	Intermodal Connectivity	Economic Development	General Support
The City of Nome supports the State of Alaska's Western Access Study and has requested that rail be considered for that project. The route opens access for mineral exploration and resource development (rock, quarries, mines) and alternative energy development (geothermal, wind, etc.)	Denise Michels (Mayor of Nome & Transportation Director of Kawerak)	Public Comment	Letter	6/21/2013	Economic Development	New Line	
During the gold rush days in Nome (Bunker Hill and Dixon) rail played an important role in moving ore to the docks of Nome. Graphite One Resources has announced the discovery of a graphite desposit at Graphite Creek 40 miles north of Nome (April 29, 2013 press release announced high purity of 99.2% on first test). There are other exploration activities happening within the Bering Strait. Infrastructure is required to access those deposits and it is our belief that rail could play an important role with exploration and resource development.	Denise Michels (Mayor of Nome & Transportation Director of Kawerak)	Public Comment	Letter	6/21/2013	New Line	Economic Development	
With the increase in Arctic shipping, this year the cruise ships have scheduled an additional stop in Nome. Having a rail to Fairbanks would increase tourism opportunities and job creation.	Denise Michels (Mayor of Nome & Transportation Director of Kawerak)	Public Comment	Letter	6/21/2013	New Line	Passenger Rail	Economic Development
Adopted and draft land use planning elements of the Municipality of Anchorage Comprehensive Plan include references to rail and its relationship to planned future growth and development. The Municipality has also completed studies of future residential and commercial growth projections and is scheduled to complete an updated land use plan. There may be use in providing this information, summarized, for consideration by the State Rail Plan project planners. The rail plan will also be likely to affect ongoing draft plans, including the Anchorage Bowl Land Use Plan.	Tom Davis, MOA Planning	Public Comment	Website	6/25/2013	Service Needs		
Perhaps Alaska and United States should seriously consider the importance of transportation to the arctic coast. For Alaska railroad from Fairbanks to the north slope Might be most productive. That with the Alaska Canada Rail link including to the Haines port would open arctic trade to the whole northern hemisphere.	Bill Kurz (Haines Port Development Council -TAG Member)	TAG	Other E-mail	6/26/2013	New Line	Economic Development	
Consider the relocation of the main rail line around the Fairbanks Area.	Ronald M. Johnson (Department of the Army)	Agency Comment	Letter	6/17/2013	New Line		

Alaska State Rail Plan
Comment Summary

Comment	Commentor Name	Source	Venue	Date	Issue Area	Issue Area 2	Issue Area 3
Develop and maintain Fairbanks as the transportation hub for the Interior by encouraging the expansion of the rail system to Delta Junction.	Ronald M. Johnson (Department of the Army)	Agency Comment	Letter	6/17/2013	New Line	Economic Development	
Construct railroad overpass/highway interchange in the vicinity of Ft. Wainwright's current 3-Mile Gate rail access. These goals would support safe railroad operations and reduce existing safety hazards on the installation and support Army movement of people and/or equipment.	Ronald M. Johnson (Department of the Army)	Agency Comment	Letter	6/17/2013	Safety	Crossings	
Do you forsee using rail for commuters in the Anchorage area? We live in Fairbanks but have always been disappointed that the very expensive train terminal at the Anchorage airport, built with public funds sits mainly unused because it was built for the express use of a tour company so cannot be used, apparently, for public transportation as an airport rail link to downtown Anchorage. How can this be justified and are there any plans to have a commuter rail car operate between there and downtown Anchorage, similar to what Seattle and Portland have? Please consider using this wonderful terminal for the public.	John Unruh	Public Comment	Website	7/3/2013	Intermodal Connectivity	Passenger Rail	Infrastructure
I would love to see AK RR put the Airport spur to use. I am a volunteer at Visit Anchorage and often get questions regarding taking the train from the airport to your terminal at Ship Creek. I have no answer. I refer those visitors to you.That facility was built with considerable fanfare and expense - and for what? It was great publicity at the time and provided great jobs for AK RR employees. To date, I can see no other benefit. Hosting AK Salmon tasting? Really?Please take the politics out and make the asset available! What a great advertisement and PR boon for Anchorage, the airport, and of course, YOU! Until that happens I see no reason for the RR to waste its time touting other expansion as the likely end result is more hype.	Sandra Knight	Public Comment	Website	7/11/2013	Intermodal Connectivity	Infrastructure	
I would like the following to be considered in the plan:1. Expanded passenger and commuter rail service.2. Preservation of the existing railroad depots and trackage in downtown Fairbanks, to ensure access for passenger and commuter trains, even if freight rail traffic is relocated.3. Incentives for small private operators of passenger or commuter service, as a possible supplement to service operated by the Alaska Railroad.4. Non-chemical means of vegetation control, e.g. brush cutting rather than the use of herbicides which may cause environmental contamination.	Jay Baxter	Public Comment	Website	7/11/2013	Passenger Rail	Infrastructure	Environment
Recommended Vision Statement: The State of Alaska will implement policies, programs and projects for future rail development that foster growth of existing and emerging businesses, build prosperity, support communities and provide efficient, reliable and safe freight and passenger service in coordination with other transportation modes. Also, did the State consider having two vision statements with goals, objectives, strategies and performance measures tied to each: one for freight and one for passenger service?	Donna Gardino	Agency Comment	Letter	7/17/2013	Vision Statement	Goals and Objectives	
State and Efficiency: The plan should address the relocation of the main line rail and railroad yard around the Fairbanks area. There has already been extensive study by the Alaska Railroad on this project and over 50 at-grade railroad crossings in the core of Fairbanks and North Pole are safety issues. The potential for train/vehicle is a very real safety concern. Traffic congestion results from vehicles and public transportation waiting for slow moving trains to clear the crossing resulting in considerable delay and degradation to air quality, a significant issue in Fairbanks. The efficiency of the delivery of freight and passengers would also be a positive result of this realignment.	Donna Gardino	Agency Comment	Letter	7/17/2013	Crossings	Safety	

Alaska State Rail Plan
Comment Summary

Comment	Commentor Name	Source	Venue	Date	Issue Area	Issue Area 2	Issue Area 3
Opportunities for Growth, Economic Development and Prosperity: Expand service for the development and extraction of natural resources. Develop a railroad depot in North Pole. New Passenger Rail Services: Consider commuter service between Fairbanks, North Pole, Eielson Air Force Base, Salcha and Delta Junction. Consider inclusion of possible passenger rail between Pioneer Park and Downtown Fairbanks, most likely as a seasonal service. Consider the development of winter passenger service.	Donna Gardino	Agency Comment	Letter	7/17/2013	Economic Development	Infrastructure	Passenger Rail
FMATS has already contributed $1 million to complete the Environmental Assessment for the North Pole Road/Rail Crossing Reduction segment. Implement Positive Train Control to ensure passenger service continues in Alaska.	Donna Gardino	Agency Comment	Letter	7/17/2013	Crossings	Operations	Safety