



**Alaska Department of  
Transportation & Public Facilities**  
*Alaska State Rail Plan  
Technical Advisory Committee*

February 26, 2013



# Welcome and Introductions





# Rail Plan Background and Goals



# Why a State Rail Plan?

- Rail plans are required by the Passenger Rail Investment and Improvement Act (PRIIA) of 2008.
- The plan outlines the State's vision for rail's role in freight and passenger (including commuter) transportation.
- The plan identifies funding needs and sources.



# What is PRIIA?

The Passenger Rail Investment and Improvement Act of 2008 (Public Law 110-432) requires states have a Federal Railroad Administration (FRA)-approved State Rail Plan to receive federal funding.



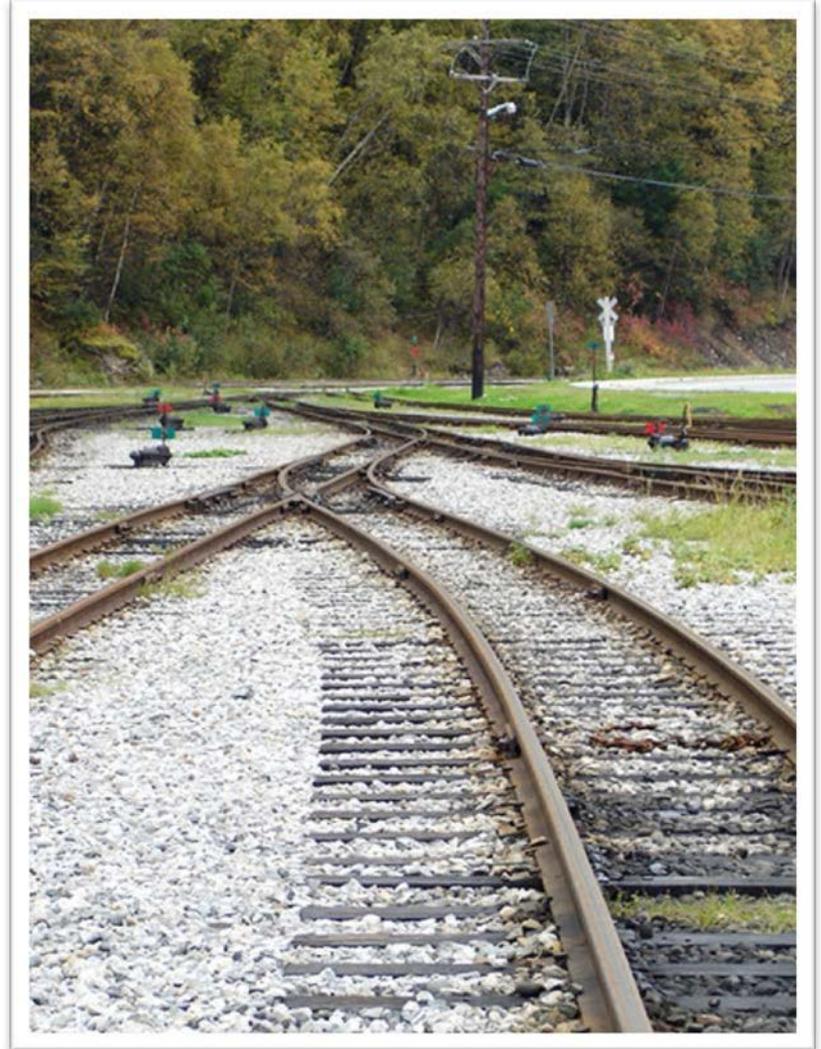
# Purposes of a State Rail Plan

- To set forth **state policy** involving freight and passenger rail transportation, including commuter operations (if relevant).
- To present **priorities and strategies** to enhance rail service that benefits the public.
- To serve as the **basis for federal and state rail investments** within the state.



# Rail Plan—Not in Isolation

- The State Rail Plan must be coordinated with the State's Long Range Transportation Policy Plan.
- MAP-21 (the bill to reauthorize Federal-aid highway and highway safety programs) allows for the development of a State Freight Plan, but does not yet require its development.



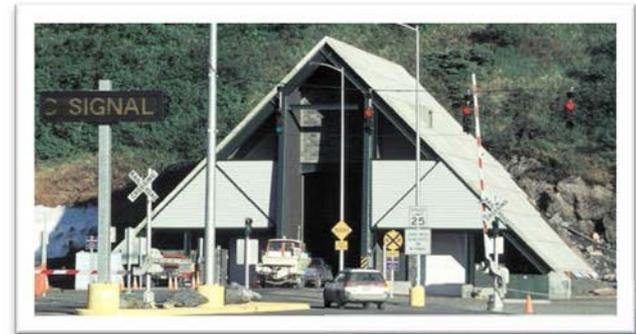


# Details

- Plan horizon: 20 Years
- Must be updated every 5 years at minimum.
- Must be approved by U.S. Department of Transportation.
- There are draft federal guidelines for state rail plans. Ours will meet those guidelines and all requirements of the federal rail law.

# Why ADOT&PF?

- Alaska Statute 44.42 assigns ADOT&PF the responsibility to plan for all modes of transportation.
- There is more than one railroad in the state; there may be more in the future.
- Movement of freight or passengers involves more than rail service alone – other modes of transport are involved.





# Public Input and Governmental Coordination

The plan allows for:

- ***Comment and other input*** from the public, units of local government, rail carriers, commuter and transit authorities where relevant, and other stakeholders and interested parties within the state.
- ***Intergovernmental coordination*** by means of a review of the freight and passenger rail service activities and initiatives by regional planning agencies, regional transportation authorities, and municipalities within the state and within the region.



# Steering Committee Members

- **Christopher Aadnesen**, President/Chief Executive Officer, Alaska Railroad
- **Susan K. Bell**, Commissioner, Alaska Department of Commerce, Community and Economic Development
- **Eugene N. Hretzay**, President, White Pass & Yukon Route Railroad
- **Pat Kemp**, Commissioner, Alaska Department of Transportation and Public Facilities
- **Daniel S. Sullivan**, Commissioner, Alaska Department of Natural Resources



# Technical Advisory Group

- 27 members from local governments, local agencies, and transportation user groups
- 15 State and Federal agency advisors
- Role: to assist the planning team by providing input on specific aspects of the plan's elements, including
  - = Shaping our long-term Vision for freight and passenger rail in Alaska;
  - = Identifying plan goals and objectives;
  - = Suggesting facility requirements, including multi-modal facilities; and
  - = Identifying possible policy needs and investment strategies.



# Guidance

1. Consider both rail and road in future transportation corridors.
2. Plan for continued growth, especially in the Anchorage (Girdwood) to Matanuska-Susitna Borough corridor.
3. Consider additional passenger service to meet seasonal employment needs (e.g., Denali Park).
4. Be aggressively enthusiastic (in plan development) for rail passenger services, both intercity and commuter service, particularly between the Mat-Su and Anchorage.
5. Cast a wide net, think big, and look afar. Rail line relocations and new rail extensions should both be considered.



# Guidance (Continued)

6. Keep the focus on resource development.
7. Look for opportunities to develop island railroad routes—those not connected to other railroads—for resource development.
8. The plan is part of a vision to develop the resources of Alaska and ensure that those resources can be shipped to the Lower 48 states, (and the rest of the world) contributing to additional US manufacturing.
9. The plan should account for the possible role of rail in expanded activity in the Arctic.
10. The state may need to clarify ambiguities generated by other legislation, such as some Department of Natural Resources legislation.

# Rail Plan Content

1. An inventory of the existing overall rail transportation system and rail services and facilities within the State and an analysis of the role of rail transportation within the State's surface transportation system.
2. A review of all rail lines within the State, including proposed high-speed rail corridors and significant rail line segments not currently in service.
3. A statement of the State's passenger rail service objectives, including minimum service levels, for rail transportation routes in the State.
4. A general analysis of rail's transportation, economic, and environmental impacts in the State, including congestion mitigation, trade and economic development, air quality, land use, energy-use, and community impacts.
5. A long-range rail investment program for current and future freight and passenger infrastructure in the State.





# Rail Plan Content (Continued)

6. A statement of public financing issues for rail projects and service in the State, including a list of current and prospective public capital and operating funding resources, public subsidies, State taxation, and other financial policies relating to rail infrastructure development.
7. An identification of rail infrastructure issues within the State that reflects consultation with all relevant stakeholders.
8. A review of major passenger and freight intermodal rail connections and facilities within the State, including seaports, and prioritized options to maximize service integration and efficiency between rail and other modes of transportation within the State.
9. A review of publicly funded projects within the State to improve rail transportation safety and security, including all major projects funded under section 130 of title 23.
10. A performance evaluation of passenger rail services operating in the State, including possible improvements in those services, and a description of strategies to achieve those improvements.



# Alaska Railroads Background



# Alaska's Railroads





# ARRC Corporate Information

# Alaska Railroad Quick Facts

## Organization (following State purchase)

- Independent corporation owned by State
- Managed by a seven-member board of directors appointed by Governor
- Mandated to be self-sustaining, responsible for financial and legal obligations

## Operating Data

- 656 Total miles of track
- 1,381 Freight cars (owned & leased)
- 45 Passenger cars
- 51 Locomotives

## Operating Statistics (Jan - Dec 2012)

- 415,279 passengers
- 5.56 million tons of freight
- \$190.4 million total revenue (preliminary unaudited)

## Employees (January 2013)

- 626 year-round employees
- 456 members of 5 unions



# Freight Services



**Oilfield Supplies**



**Petroleum Products**



**Military**



**Coal**



**TOFC/COFC**

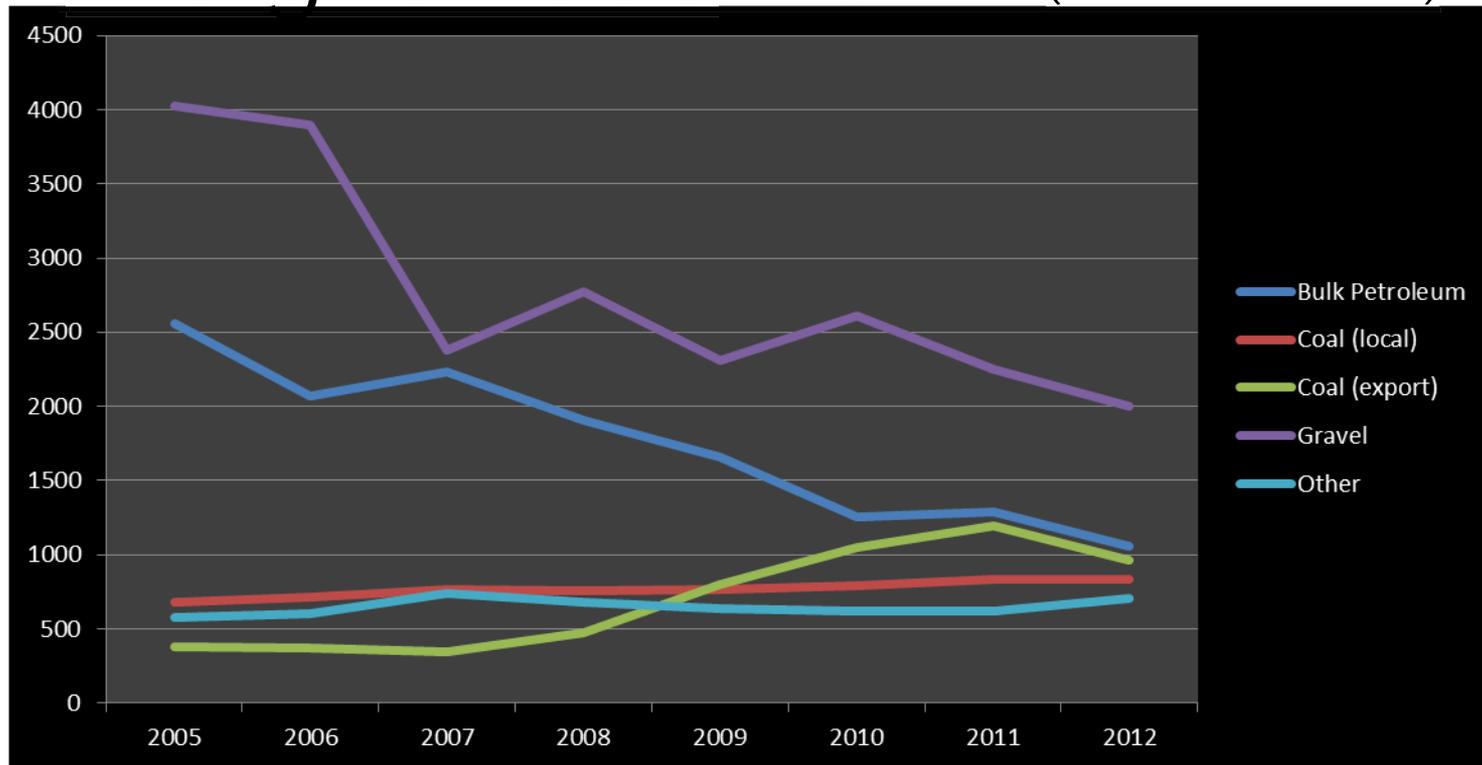


**Gravel**



**Intermodal**

# Freight 2005-2012 (millions of tons)



Tons	2005	2006	2007	2008	2009	2010	2011	2012	% Chg 2011-12
	-----in millions of tons-----								
Bulk Petroleum	2,555	2,068	2,230	1,910	1,657	1,254	1,292	1,057	-18.2%
Coal (local)	683	713	766	761	762	791	836	838	0.2%
Coal (export)	384	374	342	471	801	1,051	1,195	961	-19.6%
Gravel	4,024	3,900	2,377	2,776	2,306	2,614	2,252	2,003	-11.1%
Other	580	607	742	681	637	622	619	702	13.4%
<b>TOTAL</b>	<b>8,226</b>	<b>7,662</b>	<b>6,457</b>	<b>6,599</b>	<b>6,163</b>	<b>6,332</b>	<b>6,194</b>	<b>5,561</b>	<b>-10.2%</b>

# 2012 Freight Facts

- 57,250 railcar trips moved 5.6 million tons
- Accounted for 67% of customer revenue
- Intermodal, Interstate, Interline and International
- Longest Rail-Haul in North America
  - Alaska Railroad from Seattle to Fairbanks
    - 1815 Miles
  - Interline service from Panama City, Florida to Fairbanks
    - 4842 Miles



# Intrastate Freight

## Within Alaska

- TOFC & COFC
- Scrap Metal
- Coal (Local & Export)
- Construction Materials
- Gravel
- Jet Fuel



# Interstate Freight

## Lower 48 to Alaska

### Alaska Railbelt Marine



- Seattle – Whittier
- BNSF & Union Pacific
- 52 Voyages/Year
- 7 Day Transit
- 45 – 50 Railcar Capacity
- Railcar Tracking
- Safe, Reliable, Affordable Service

# International Freight

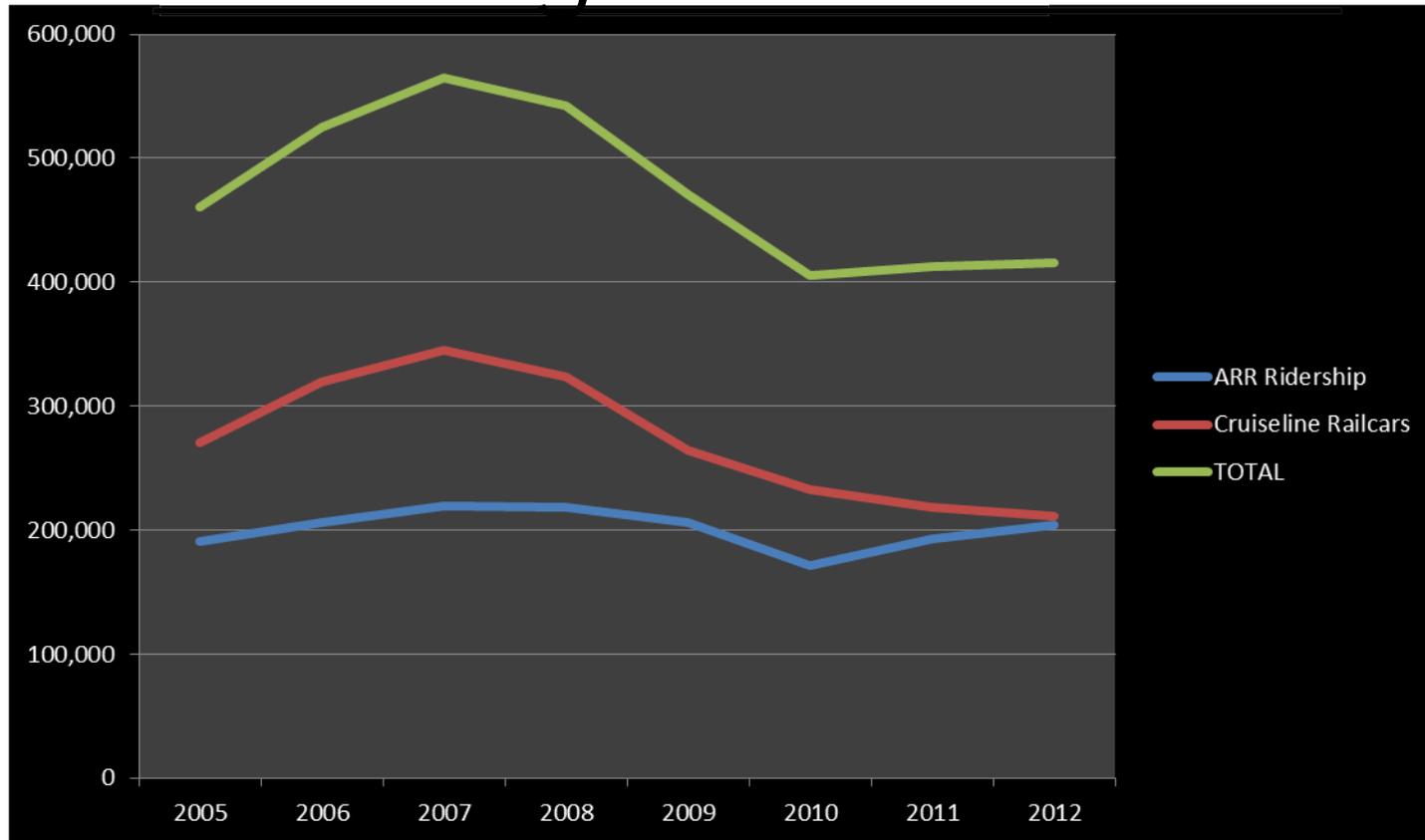
## Canada to Alaska

### Canadian National Railroad



- Prince Rupert – Whittier
- 30+ Voyages/Year
- 4 Day Transit
- 45 – 50 Railcar Capacity

# Passengers 2005-2012



Passengers	2005	2006	2007	2008	2009	2010	2011	2012	% Chg 2011-12
ARR Ridership	190,963	205,924	219,370	218,833	206,410	171,975	193,293	204,120	5.6%
Cruiseline Railcars	270,155	319,369	345,430	323,838	264,376	233,160	218,916	211,159	-3.5%
<b>TOTAL</b>	<b>461,118</b>	<b>525,293</b>	<b>564,800</b>	<b>542,671</b>	<b>470,786</b>	<b>405,135</b>	<b>412,209</b>	<b>415,279</b>	<b>0.7%</b>

# Regularly Scheduled Year-Round Passenger Service

- Full summer schedule of ARR trains and support to cruise lines
- Hurricane Turn and Aurora winter train
  - Flag stop service
  - Provides critical access for Alaska residents living and playing where there are no roads
- Provides eligibility for federal formula funds



# Real Estate

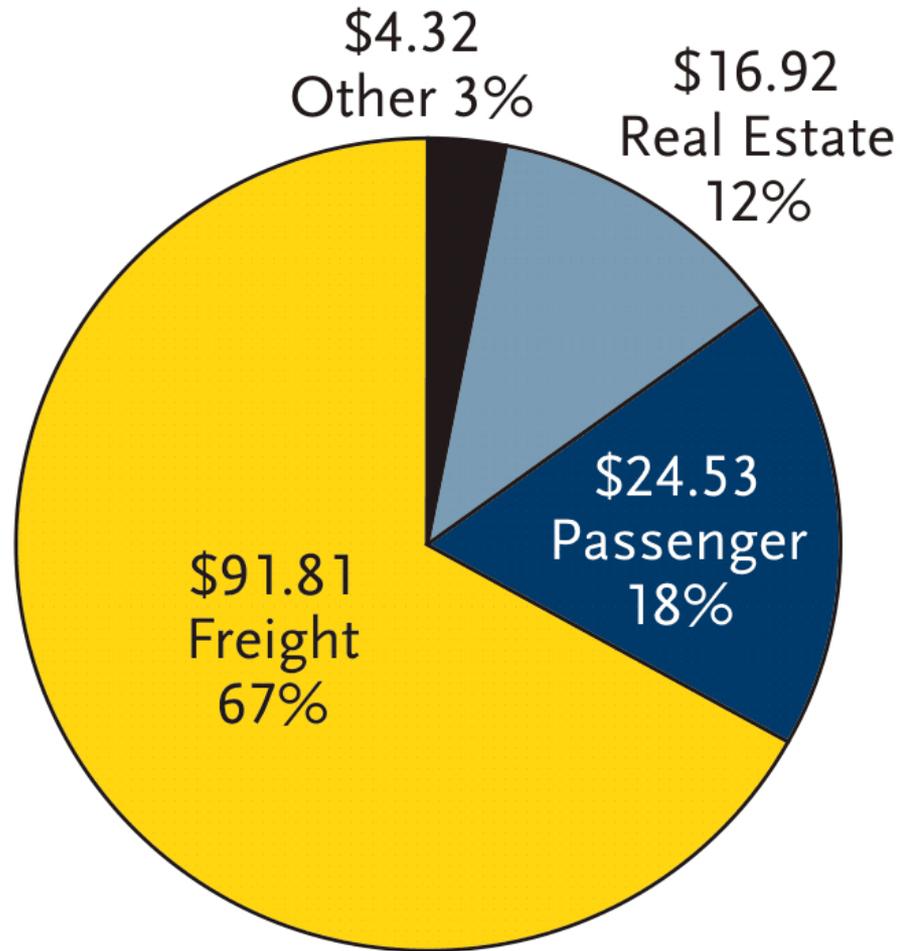
- Property Development
- Leases and Permits
- Dockage and Wharfage
- Facilities Maintenance and Management
- Approximately 36,000 acres



**Clockwise from bottom left: Fairbanks depot; Ship Creek basin includes highly valuable leasable land; upland from the Seward freight dock is being developed**

# 2013 Budget Revenue Sources

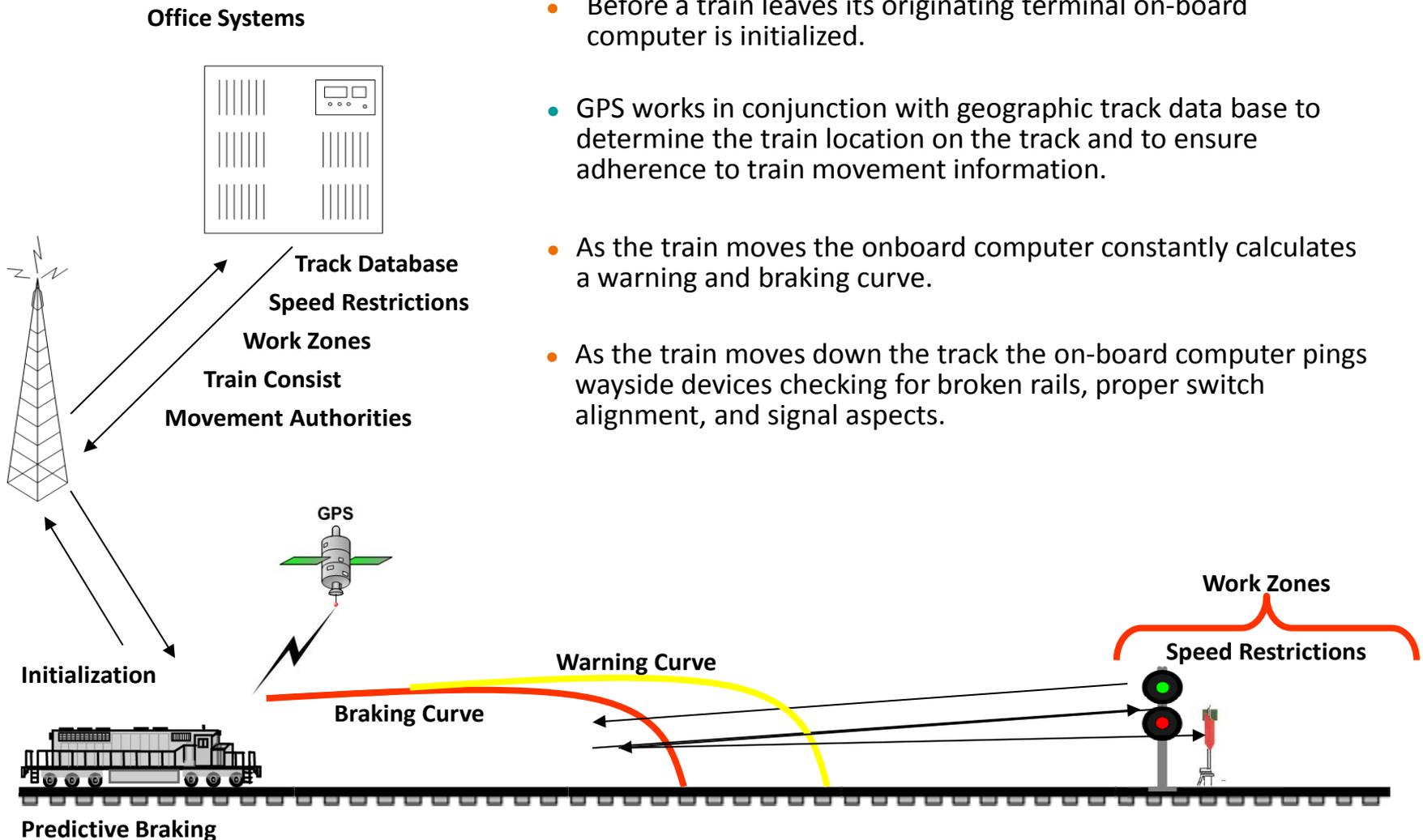
*(millions of dollars)*



# Positive Train Control

- Unfunded federal mandate
  - Federal law requires technology system to prevent:
    - Train to train collisions
    - Overspeed derailments
    - Incursion into established work zone limits
    - Train movement through a main line switch in the improper position
  - Unattainable deadline Dec. 2015
  - ARRC investment through Dec. 2012: **\$55 million**
  - Would prohibit passenger service if not implemented

# How Does PTC Work?





# ARRC Project News

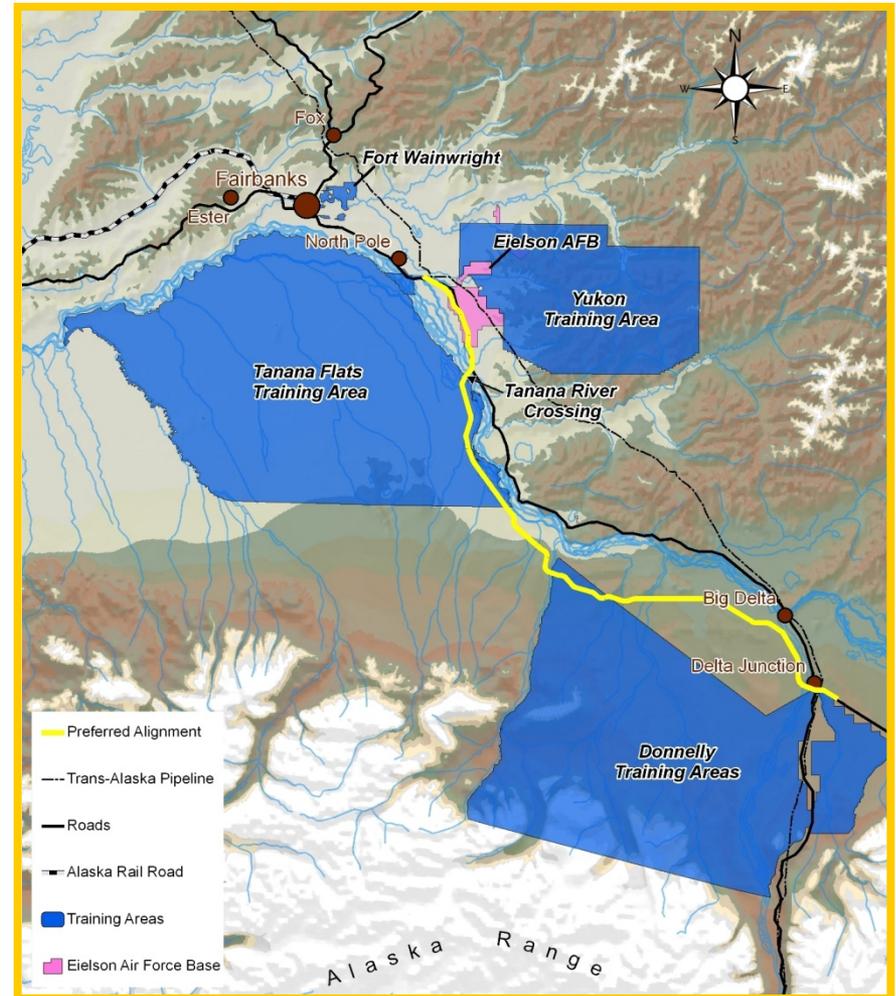
# Northern Rail Extension



# Northern Rail Extension

## 4 Phase Project

- 80+ miles of rail from North Pole to Delta Junction
  - **Phase 1 : Bridge over Tanana River, approach road and levee near Salcha**
  - Phase 2 : 13 miles of rail from Moose Creek / Eielson AFB to Tanana River Crossing
  - Phase 3 : 30 miles of rail from Tanana River Crossing to Donnelly Training Area
  - Phase 4 : 38 miles of rail from Donnelly Training Area to Delta Junction



# Northern Rail Extension Project Benefits

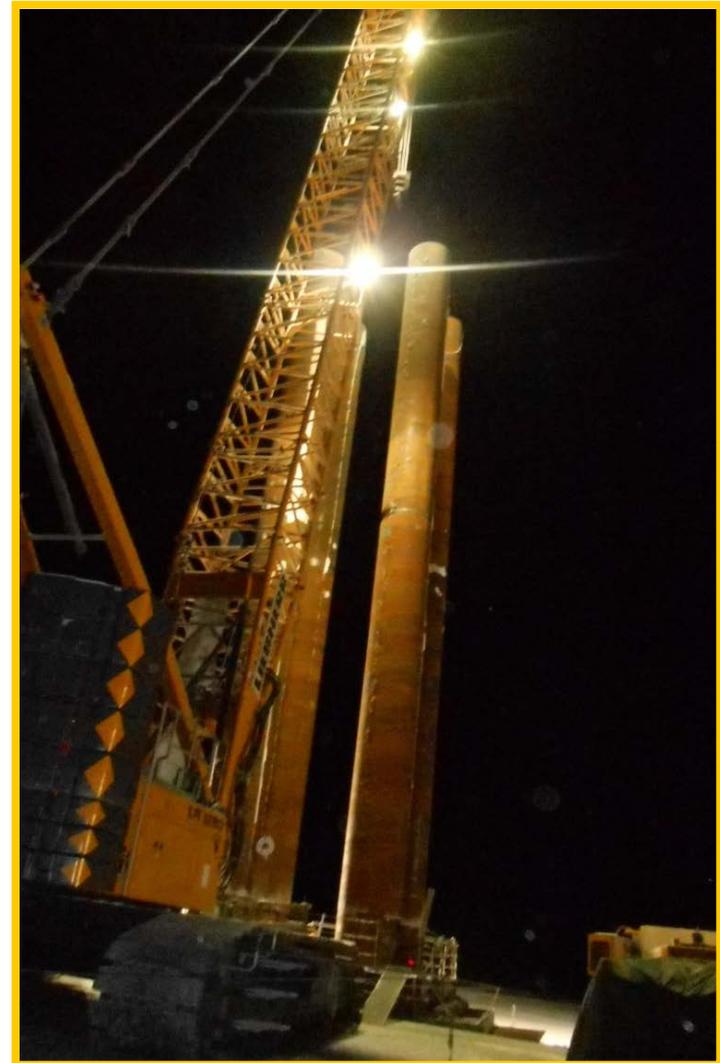
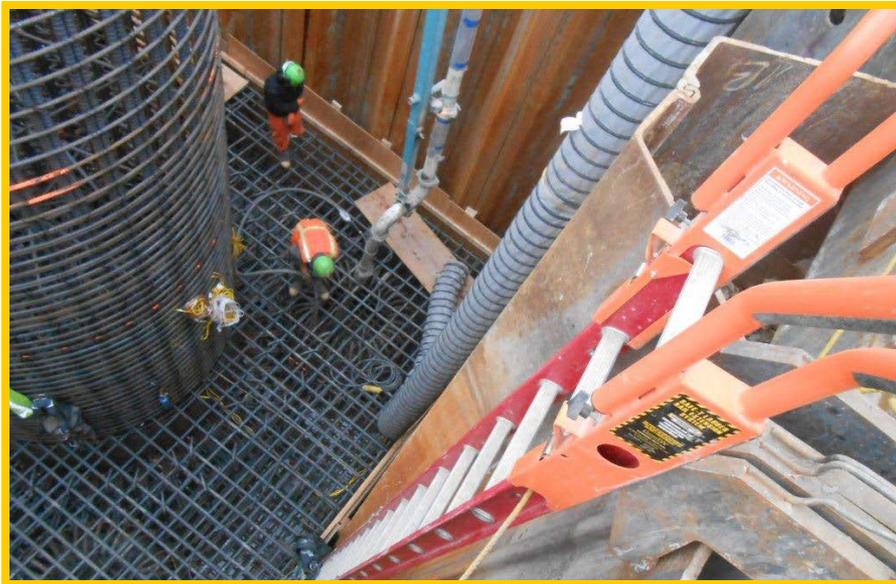
- Commercial freight and passenger service supporting communities
- Transportation alternative to Richardson Highway
- Connects military at JBER, Wainwright, Eielson, Clear and Delta Junction by rail to each other and to 3 Alaska ports
- Support regional tourism
- Economic and Resource Development Potential
- Future Canadian Connection?



# Phase 1 – Tanana River Crossing

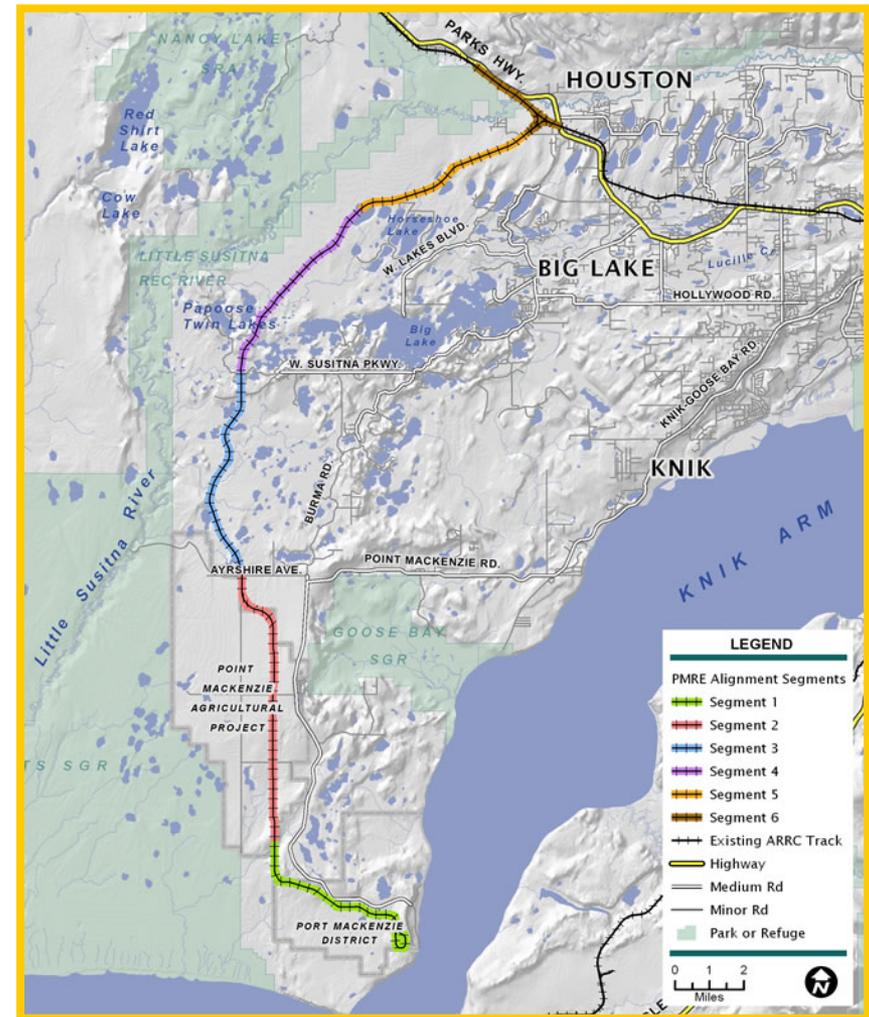
- Next Steps

- Pile driving and pier building to continue through 2013
- Continued bank protection and stabilization in Summer 2013
- Phase 1 Complete July 2014



# Port MacKenzie Rail Extension

- 32 mile rail extension
  - Houston to Port MacKenzie
  - ARRC serving as program manager to Mat-Su Borough
- All funding from State of Alaska
- Will be 4<sup>th</sup> Alaskan Port served by Alaska Railroad



# Port MacKenzie Rail Extension 1 mile - 100 railcar industrial loop



# The Canada Connection

- Alberta Tar Sands oil on trains to Delta Junction
- Generating for Seven Generations (G7G)
  - Vancouver Based Consortium
  - Looking for \$40 million to fund study
- 1,500 miles of track
  - Fort MacMurray, B.C. to Delta Junction, AK.
  - Single Track \$8.4 billion, 1.5 million barrels/day
  - Double Track \$10.4 billion, 5 million barrels/day



# White Pass & Yukon Route

# Alaska's Railroads





# Rail Economics



# Railroads circa 1850

## Blossoming of a new mode

- Could carry heavy loads (compared to wagons)
- Could go fast (20 mph)
- Passenger comfort (for land transportation)
- Became the primary intercity land mode
- Water cheaper but slower and limited to waterways or canals
- Rail lines built to every town of commercial significance



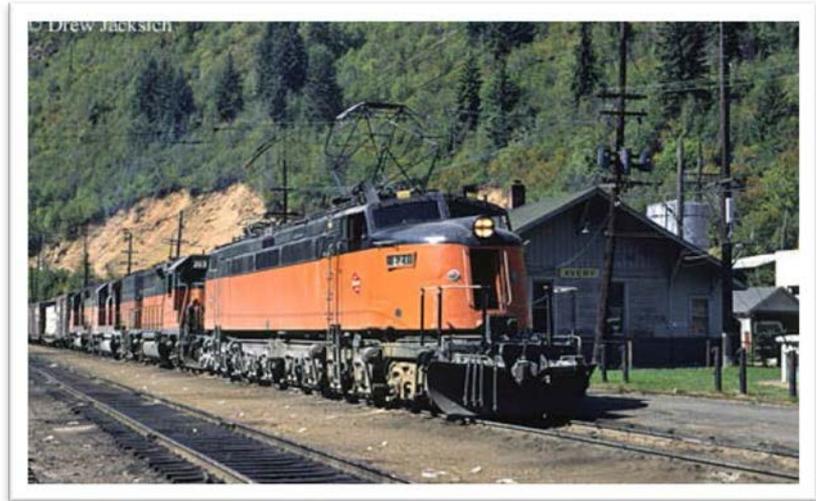
# Railroads circa 1925

- Intercity travel market dominance
- Freight market dominance, but trucks beginning to make inroads
- Key part of industrial landscape
- Auto ownership and travel growing, but highways poor
- Restrictive regulatory environment included service, rates



# Railroads circa 1980

- Interstate Highway System largely complete
- Nadir of the American rail industry
- Failure of the Penn Central, Milwaukee Road, other railroads
- Federal government interested in selling the Alaska Railroad
- Staggers Rail Act Passed



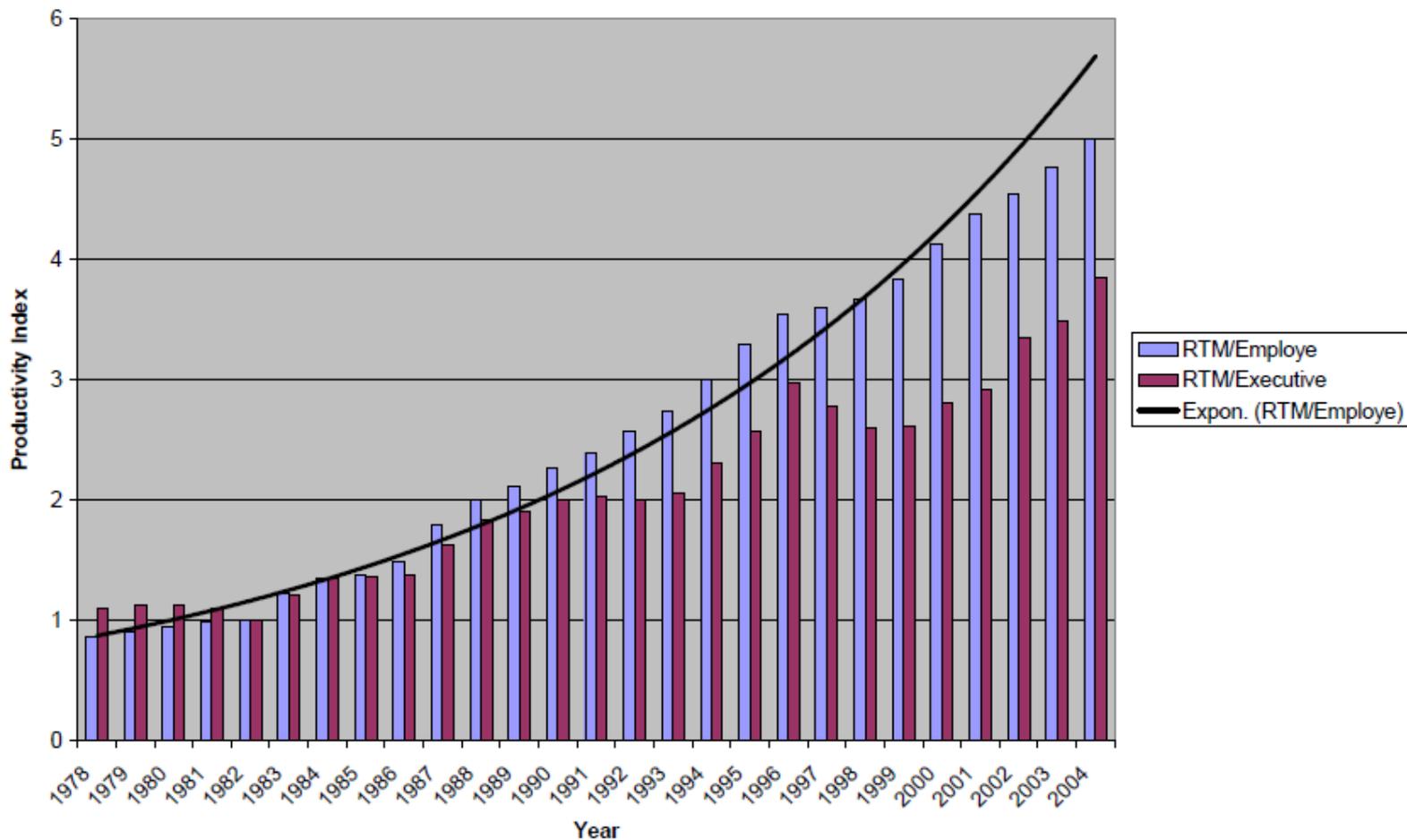
# Railroads circa 2010

- Staggers Act freed rail management
- Rail company consolidation complete
- Branch lines closed or transferred to small companies
- Increased equipment capacity
- Dramatic improvements in labor and equipment efficiency
- Decreased rail rates (cost to shippers) in real dollars



# American Railroad Revenue Ton-Miles per Employee

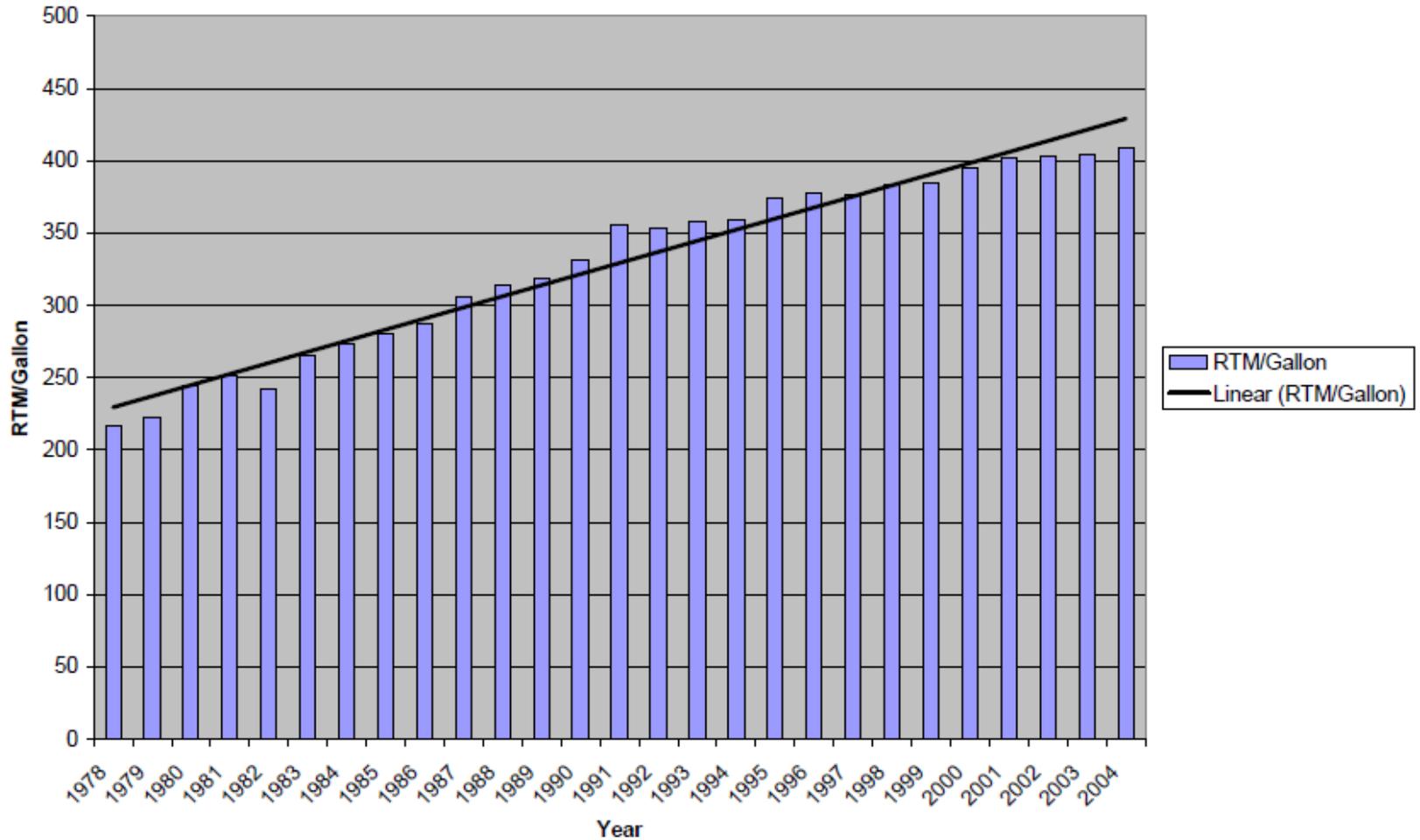
Labor Productivity



Source: Gerald J. McCullough, US Railroad Efficiency: A Brief Economic Overview

# Revenue Ton-miles per Gallon of Fuel

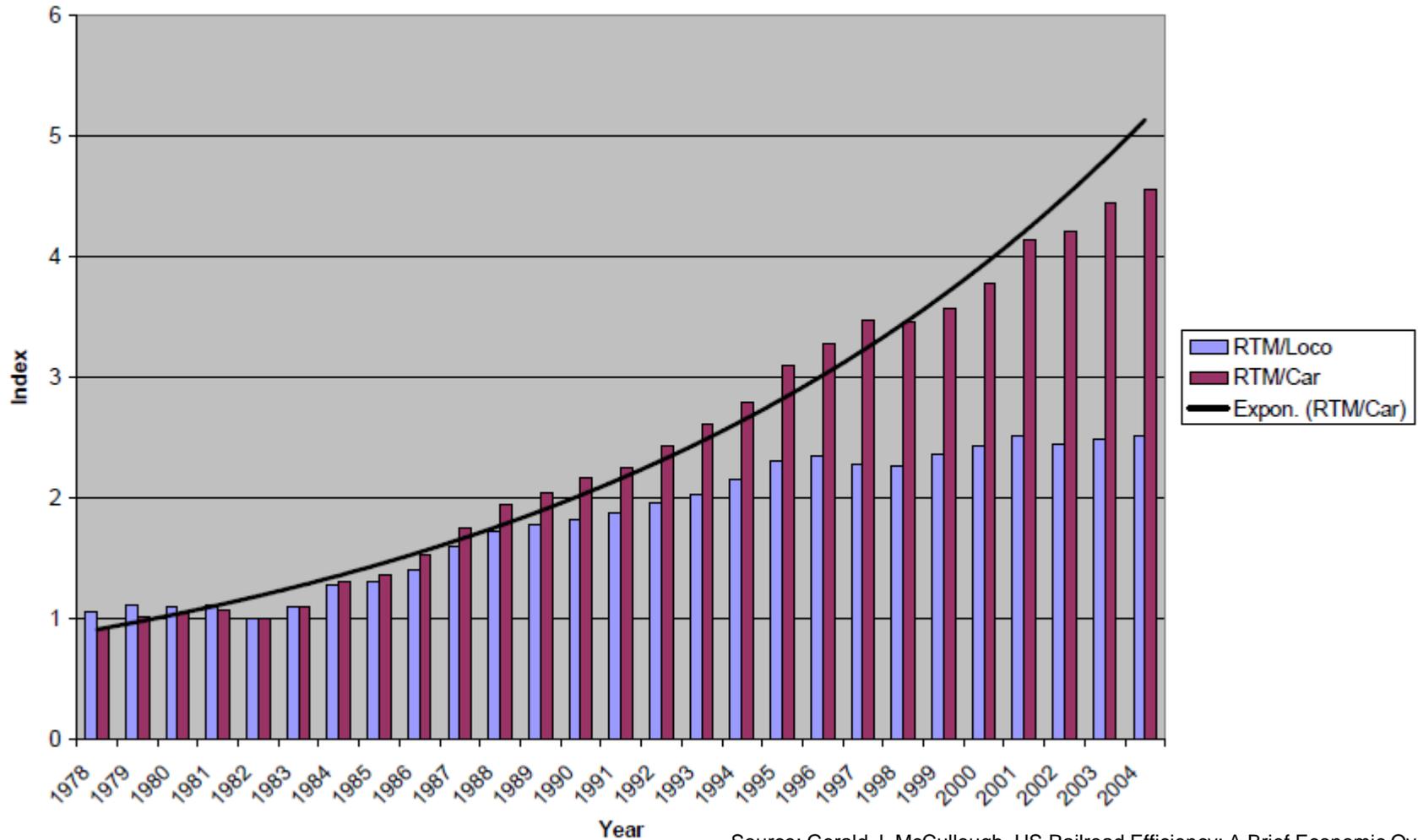
Fuel Productivity



Source: Gerald J. McCullough, US Railroad Efficiency: A Brief Economic Overview

# Revenue Ton-miles per Unit of Equipment

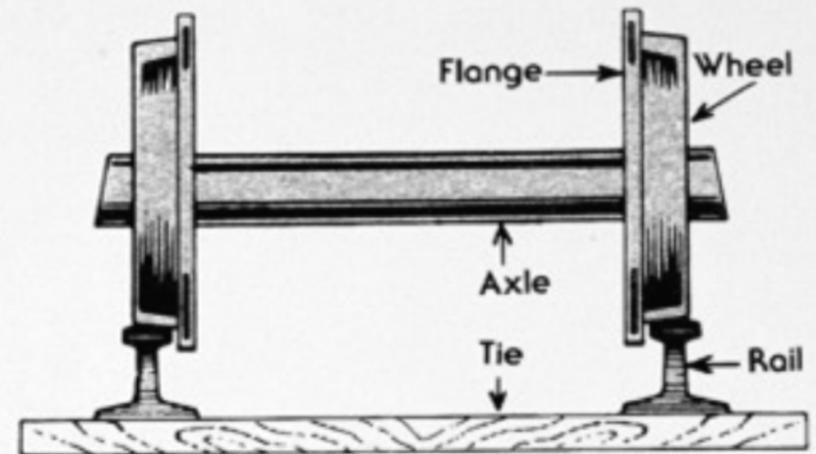
Equipment Productivity



# Economic Advantages of Rail

- Energy efficiency:
  - = Steel wheels on steel rails produce very little friction
  - = Relatively recent higher energy costs have given railroads increased cost advantages
- Labor efficiency – 2-person crew can pilot 100 rail cars (200 truckloads)
- Lower pollution and safety impacts than trucks

The Steel Wheel on The Steel Rail





# Economic Advantages of Rail

- Independent studies have shown railroads have allocative efficiency advantages over other modes
- For many kinds of freight, internal costs (to the shipper) plus external costs (to society) are lower for rail transportation
- These advantages may not be seen as it is hard for political authority to impose external costs (pollution, congestion, road wear and tear) on other modes

# Rail Constraints

- 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





# New Connections in Alaska?

- Rail 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



# Future Landscape





# SWOT

Strengths

Opportunities

Weaknesses

Threats



# Break





# Creating a Vision





# Vision Elements

- Safe, reliable mobility for people and goods
- Contributes to a balanced transportation system
- Sufficient line capacity for efficient rail operations
- Rail transportation to meet freight and passenger market demands
- Others?



# Sample Vision Statements

*California has a premier, customer-focused rail system that successfully moves people and products while enhancing economic growth and quality of life.*

*The State of Michigan has a robust rail system that consists of both freight and passenger rail services. The rail system is an important component of Michigan's economy and will continue to evolve with state, national and global economic trends.*

*Provide safe, cost effective transportation for Illinois in ways that enhance quality of life, promote economic prosperity, and demonstrate respect for the environment.*

*Washington supports a sustainable, reliable, and high performance rail system that provides enhanced mobility and accessibility to both passenger and freight users, promotes both economic and community development, provides safe travel to all users, and minimizes environmental impacts through connectivity and multimodalism.*

Some states have separate vision statements for freight and passenger rail systems.



# Draft Alaska Statement



# Planning Session: Information Needs





Information needs may include:



# Next Steps





# Next Steps:



## Track laying videos

<http://www.youtube.com/watch?v=piBEReydBU>

<http://www.youtube.com/watch?v=uEKEfkL00rs>

[http://www.youtube.com/watch?v=\\_MKcTbYDP7w](http://www.youtube.com/watch?v=_MKcTbYDP7w)



Geothermal Resources			
AA-1	Linde Hills	NO-1	Pilgrim
AA-2	Saint Ignace	NO-2	Pilgrim Wells
AA-3	Kanaga	NO-3	Serpentine
AA-4	Aiahk	NO-4	Lava Creek
AA-5	Great Sitkin	NO-5	Bathshep Mountain
AA-6	Kovinik	NO-6	Kevitak
AA-7	Kilohaf	NO-7	Clear Creek
AA-8	Nikly River	NO-8	Granite Mountain
AA-9	Sagavan	NO-9	Hawk
AA-10	Chignikook	NO-10	South
AA-11	Kagamil	NO-11	Upper Division
AA-12	Oyster Right	NO-12	Lower Division
AA-13	Parson Cove	NO-13	Duchas
AA-14	Hot Springs Cove	NO-14	San Mountain
AA-15	Chukchi Caldera	NO-15	Red River
AA-16	Makusha Valley	NO-16	Heron
AA-17	Chitina Valley	NO-17	Melara
AA-18	Makusha Valley	NO-18	Franklina
AA-19	Bismarck Bay	NO-19	Tanukhin Lake
AA-20	Shannon Bay Wet	NO-20	Linda Melanina
AA-21	Alaknans Pass	NO-21	McKenzie
AA-22	Hot Springs Bay	NO-22	Inhailina
AA-23	Alaknans	NO-23	Hills
AA-24	Shishaldin	NO-24	Upper Bay River
AA-25	Fair Pass	NO-25	Konias
AA-26	Kumukuk	NO-26	Lower Bay River
AA-27	Egg Island	NO-27	Maskey
AA-28	Cold Bay	NO-28	Maskey Wells
AA-29	Kanukuk Lake	NO-29	Hedden
AA-30	Hague	NO-30	Dall
AA-31	Furber	NO-31	Talman
AA-32	Fair Middle	NO-32	Chana
AA-33	Kogawood	NO-33	Clarke
AA-34	Ambukuk	NO-34	Big Windy
AA-35	Melara Cove	NO-35	Okpikak
AA-36	Chignikook	NO-36	Red Hill Spring
AA-37	Ukukuk		
AA-38	Olas Barok		
BB-1	Cybor	BB-2	White Buller
BB-3	Chukchik	BB-4	Taka Bay
BB-5	M. Martin	BB-6	Tanukhin Inlet
BB-7	M. Martin	BB-8	North Ford Strait
BB-9	M. George	BB-10	Tanukhin
BB-11	Katmai Caldera Lake	BB-12	Tanukhin Wells
BB-13	M. Treadwell	BB-14	Nylon
BB-15	Stoney Mt.	BB-16	Flah Bay
BB-17	Ekahak	BB-18	Gakhalak
BB-19	M. Douglas	BB-20	Barrow
BB-21	Augustine	BB-22	Baker Island
BB-23	Stonum	BB-24	Two Lakes
BB-25	Kadashak	BB-26	M. Ryan
BB-27	M. Spur	BB-28	Chief Shaluk
BB-29	White Hill	BB-30	Barrow Lake
BB-31	Lower Klavum	BB-32	Brookfield Canal
BB-33	Upper Klavum	BB-34	Halley Bay
BB-35	North Outer Wrangell	BB-36	Paul Island
BB-37	Copper Glacier		

**Major Faults**

- Thrust Fault: faultwork on upper tectonically higher plate
- Strike-Slip Fault, Right-Lateral Offset: across shear relative motion

**Geothermal Resources**

- Thermal Springs:
  - Surface temperature unknown
  - Surface temperature 50°C or lower
  - Surface temperature higher than 50°C
- Thermal Wells:
  - Surface temperature 50°C or lower
  - Surface temperature higher than 50°C
- Heat Flow:
  - Geothermal gradient test hole (range of heat flow values in well-water-bearing) shown for individual wells

**Sedimentary Basins** (Contoured in this map portion of basin)

- Onshore Tertiary sediment
- Offshore Tertiary sediment
- Moderately folded sedimentary basins of mostly Mesozoic age

**Geographic Features**

- Populated place
- Exploration well
- Major road
- Trans-Alaska Pipeline System
- Oil field
- Cool field or province
- Isobars: In millibars, isobars in direction of lowest pressure value, interpolated by regular contour lines every 1 to 3 mb range
- Sedimentary Basin Isoach: Contours in kilometers. All contours in map except for basin depths in North Slope that use Mesozoic and younger
- Edge of mapped area

MISCELLANEOUS PUBLICATION 146

Compiled by Marvin A. Wartts and James R. Weakland

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Department of Natural Resources  
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**EXPLORATION WELLS**  
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U.S. Energy Information Administration, 2011, Maps—Exploration, Resources, Reserves, and Production, <http://www.eia.doe.gov/country/alaska/>

**SEDIMENTARY BASINS**  
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