EXECUTIVE SUMMARY

Proposed Alaska-Canada Rail Link:

A Review of Potential Benefits

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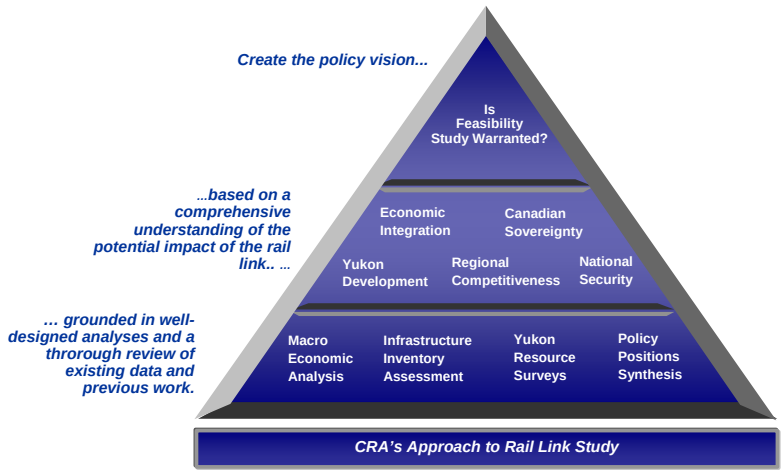
THE POTENTIAL BENEFITS OF THE PROPOSED ALASKA-CANADA RAIL LINK WARRANT PURSUING A DETAILED FEASIBILITY STUDY.

People have been discussing the potential benefits of connecting the Alaska Railroad to the balance of the North American rail system since before the Alaska Railroad was completed in 1923. The Alaska Railroad is a point-to-point railroad connecting the Alaskan interior with the state's major cities and seaports. It is a stand-alone operation and is not connected to any other rail lines in North America. Consequently, rail shipments between Alaska and the rest of Canada, the lower 48 States, and Mexico, must be trans-loaded to or from ocean-going vessels or trucked thousands of kilometers over land.

In 2002, the United States government authorized the expenditure of six million dollars to undertake a detailed feasibility study regarding the proposed rail link connecting the existing Alaska Railroad to the rest of the North American rail system.[1] The United States recognizes that Canada will also benefit from this new transport corridor. Consequently, the U.S. authorization of funds is contingent on the Canadian government also authorizing funds to support the same study. This requirement for joint funding is not surprising in that the eventual success of the project will require close cooperation between public and private sectors on both sides of the border.

Charles River Associates recently completed a review of potential benefits of constructing and operating the Alaska-Canada rail link. The study identified and discussed a number of sources of potential traffic volumes. CRA also reviewed a series of public benefits that might accrue from such a project. The paper concluded that there was a preponderance of evidence supporting the funding of a comprehensive, detailed feasibility study.

Exhibit 1. CRA's analytical framework for the Alaska-Canada Rail Link study



[1] 2002 Roads to Resources Bill.

DEMAND FOR THE ALASKA-CANADA RAIL LINK WOULD BE SUFFICIENTLY STRONG TO JUSTIFY ITS CONSTRUCTION.

Preliminary estimates suggest that the Alaska-Canada Rail Link would enjoy a diverse traffic mix made up of a variety of commodities being shipped between a number of different origin-destination pairs. This portfolio of traffic would support an operation of between six and thirteen mainline trains per day. The projected traffic is largely long-haul, bulk commodity, unit train business and intermodal, the core businesses of every major North American railroad. While further detailed analyses are warranted, it does appear that a sufficient volume of profitable traffic could generate enough profits to justify building the Alaska-Canada Rail Link.

Exhibit 2. Summary of freight flows on the Alaska-Canada Rail Link

Freight Flow	Carloads per Year[1] Low - High		Trains per Day[2] Low - High	
Diversion of existing highway and coastal maritime intermodal	24,607	41,476	1	1
Minerals and Semi-Processed Metals	138,133	276,267	4	9
Coal	37,850	75,700	1	2
Other (Mining Materials and Supplies, Defence, Pipeline Construction, Mine Development)	825	1,808	0	1
Total	**201,415**	**395,251**	**6**	**13**

1 "Carloads per Year " for pipeline construction flows assumes constant demand over five year life; Minerals and Semi-Processed Metals estimated flows assume constant demand from Crest iron ore over 150 year life and from other mines over 50 year life; Coal estimated flows assume constant demand over 50 year life.

2 "Trains per Day" assumes 100 carload trains operating six days per week.

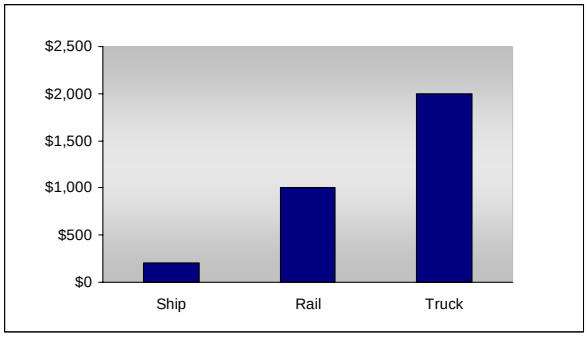
This first approximation of freight volumes indicates that the line would be comparable to a typical medium density North American rail corridor. These projected volumes represent a long-term, steady-state level of flows. Additional analyses are required to detail each specific flow, predict the timing of that flow, and bound the assumptions and probabilities associated with each. As the project unfolds, various development efforts in mining, energy, pipelines, and defence will be developed at different rates. It is likely that existing freight flows between Alaska and the lower 48 will immediately divert to the new, all-rail route, assuming significant cost savings can be achieved. It is likely that new pipeline construction will also account for much of the initial traffic on the new rail link with volumes decreasing as the pipelines near completion. Mine development and outbound mineral resources will have relatively longer lead times and will be dependant on global prices, the chosen route alternative, and the availability of supporting energy sources and supporting local economies.

THE ALASKA-CANADA RAIL LINK WILL EQUIP CANADA TO COMPETE IN THE NEW GLOBAL ECONOMY.

The proposed Alaska-Canada Rail Link will increase access and mobility. Creating a corridor linking Alaska and northern Canada to the world's largest and most efficient freight rail network will facilitate mobility between the United States and Canada and strengthen Yukon and Alaska's connections with the rest of the world. Increased freight access will place the region's vast natural resources in closer reach of the fastest growing global markets. With the creation of the rail link, the Yukon and Alaska will become more involved in a global economy characterized by the following broad trends: reduction in trade barriers, privatisation and liberalisation, Asian economic growth, and security and interdependence.

The proposed rail link will enhance the region's participation in global commerce. International shipping is growing rapidly. Consumers now enjoy a global variety of goods and products, and expect to obtain these at low costs. The costs of high-volume transportation between any two ports in the world are very low. For manufactured goods, transportation costs are approximately $0.01 per tonne-kilometre. For comparison, a 1000-kilometre movement of a container costs about ten times this by truck and about five times this on the best rail intermodal service.

Exhibit 3. Approximate cost of a 1,000-kilometre container move



Source: CRA estimates.

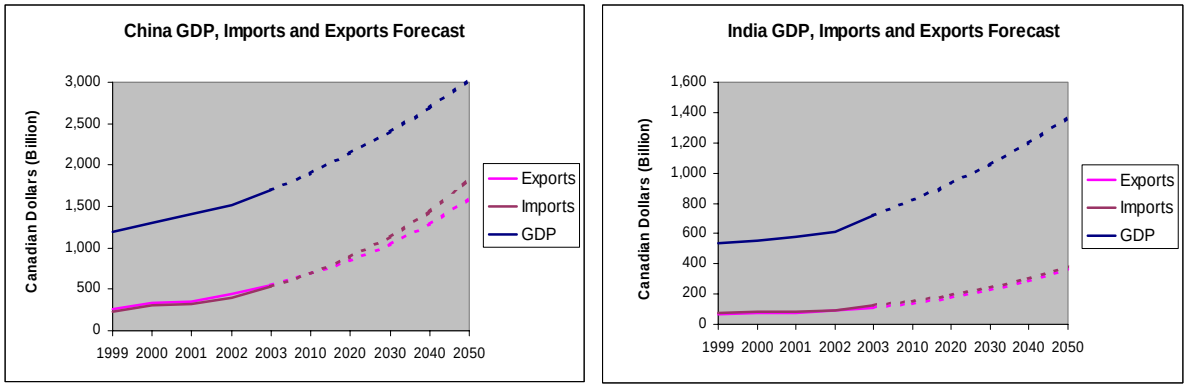
Consider what it means to the consumer for companies to be able to ship a container halfway around the world for, say, $3,600. A container can hold about 20 tonnes of merchandise, so the cost per tonne would be on the order of $180 and the cost per kilogram would be less than $0.18. Compare these two figures to the cost of, say, a $48 book marketed in North America by a European publisher or a $240 electronic device manufactured in Japan. The value of other manufactured goods can be higher, about $24,000/tonne for automobiles, much more for computers and consumer electronics. Shipping products like these internationally adds less than one percent to their cost.

[2] World Bank, 2004 World Development Indicators.

POPULATION AND INCOME GROWTH ARE INCREASING THE DEMAND FOR RAW MATERIALS.

The combined effects of booming world population and rising consumption per capita increases are creating unparalleled demand for scarce natural resources. Shrinking resource supplies cause increased commodity prices. The U.S. Census Bureau projects the world population will grow by about 46 percent from 2004 to 2050.[3] With this growth, the prices of mineral commodities can be expected to increase substantially. Mineral properties that were once overlooked due to cost impediments will likely become sought after locations. As demand increases, deposits once considered too costly to develop are quickly becoming economically viable.

Exhibit 4. China and India are poised for exponential economic growth.



Source: *World Development Indicators (WDI)* database, Aug. 2004.

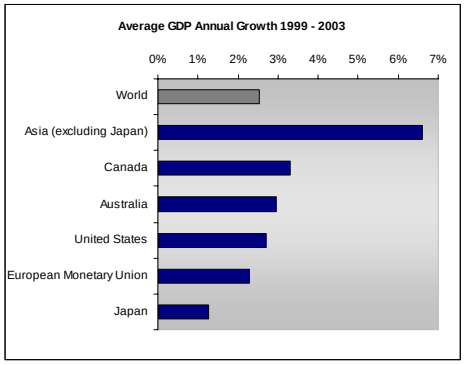
Notes: 1. GDP forecast of China based on growth rate of 4.7 percent, as used in a Goldman senior economist's model (Forecast sees China topping global economy by 2050, Daily Times, Dec. 13th, 2004).
2. Export and import forecasts for China based on growth rates of 11 percent and 13 percent, respectively.
3. GDP, export, and import forecasts for India are based on growth rates of 6.6 percent, 13 percent, and 12 percent, respectively.

[3] U.S. Bureau of the Census, International Data Base. Total Midyear Population for the World: 1950-2050.

WORLD ECONOMIC GROWTH IS BEING FUELLED BY ASIA.

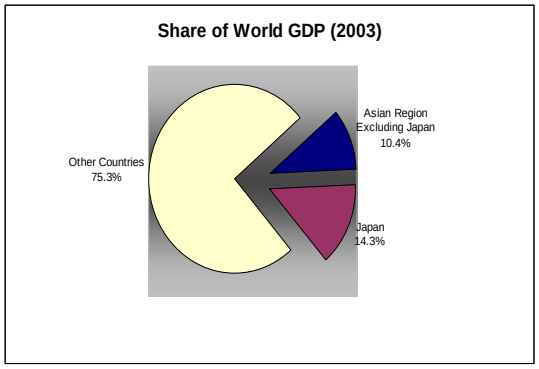
Since 2002, the world economy has been steadily recovering from a global recession. The economic growth rate in 2004 was 5.0 percent; in 2005, world GDP is expected to grow at 4.3 percent. The growth rates of emerging markets and developing countries are much higher than those of advanced economies. Similarly, the import/export volume is higher in emerging markets and developing countries. For example, while the world GDP growth rate was 2.7 percent from 1990 to 2002, the GDP growth rates for East Asia and Pacific and South Asia were 7.3 percent and 5.4 percent, respectively. China and India's economies grew at 9.7 percent and 5.8 percent, respectively, for that same time period.[4]

Exhibit 5. Asia is the growth engine of the world economy.



Source: *World Development Indicators (WDI)* database, Aug. 2004.

Exhibit 6. Asia comprises a quarter of the world economy.



Source: Japanese Statistical Bureau and Asian Development Bank

[4] World Bank, 2004 World Development Indicators.

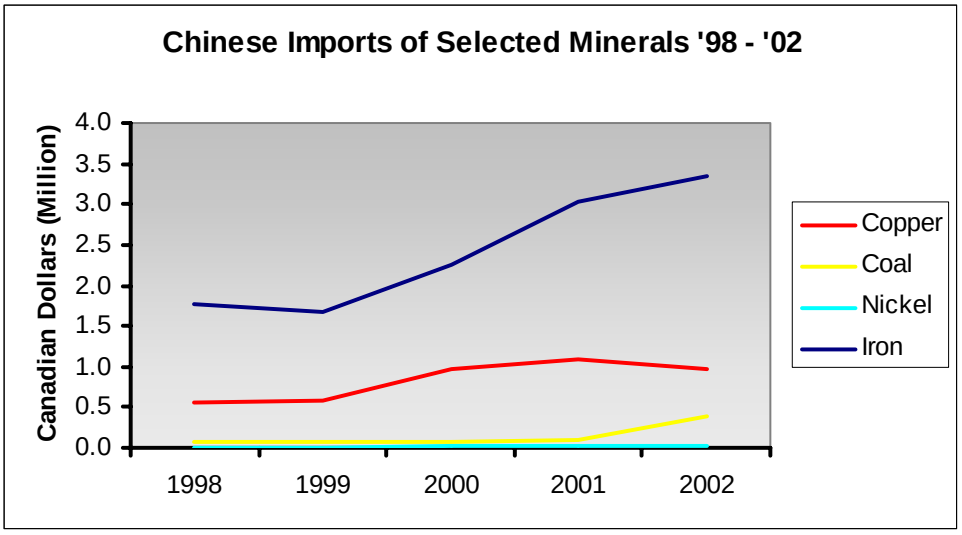
YUKON AND ALASKA CAN INCREASE EXPORTS TO THE GLOBAL MARKET.

Globally there is a documented growing demand for commodities, creating opportunities for the Yukon and Alaska's commodity industries. The geographical proximity of Yukon and Alaska to fast growing demand centers in Asia must also be considered when drawing implications for Yukon and Alaska trade development.

Rapid growth of the world's manufacturing industry is creating a robust market for the region's unearthed commodities. Alaska and the Yukon's most potentially significant commodities are iron ore, platinum, palladium, tungsten, barite, zinc, lead, gold, coal, copper, nickel, and molybdenum. The consumption of all of these minerals rose substantially in a ten-year analysis (1991-2000 for most minerals)—most with large double-digit ten-year growth rates.[5]

Of the Yukon commodities, China could potentially be a large buyer of iron ore, copper, platinum, and gold. In 2002, China spent $3.3 billion, $1 billion, and $400 million Canadian dollars on iron ore, copper, and coal, respectively. Petroleum was the only commodity on which China spent more money. As China's economy and manufacturing sector grow, the demand for these inputs will increase substantially—an opportunity from which the Yukon can profit.

Exhibit 7. Chinese import demand has risen for future Yukon mineral exports.



Source: *International Trade Statistics,* International Trade Center

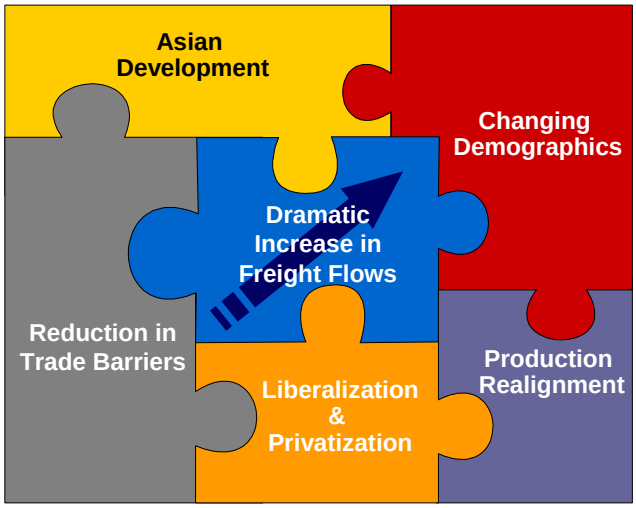
[5] Data on minerals production was collected from *Metal Statistics 2001*. Pinkham, Myra (ed.) The Bennett Group. International Energy Annual 2002, Energy Information Administration. See Full Report, "Proposed Alaska-Canada Rail Link: A Review of Potential Benefits" for more detail on this matter.

TRANSPORTATION CAPACITY IS LIMITED AND CONGESTION IS GROWING.

The predominant modes of freight transportation are railways, highways, waterways, and pipelines, each of which is experiencing trends that contribute to capacity shortages. This situation presents an opportunity for Canada to develop alternative transportation capacity that will serve all of North America and help address the impending crisis in the United States.

As congestion worsens and the demand for the limited supply of transportation capacity increases, the cost of shipping natural resources from regions that are experiencing congestion will increase. Not only will the unit costs of shipping increase, the cost of doing business in those regions will increase. Congestion slows the flow of goods, creating more in-process inventory and higher carrying costs to businesses. Congestion erodes consistency and reliability in the transport system, causing businesses to have to increase safety stock or experience stock-outs more often.

Exhibit 8. Multiple factors have combined to increase the global freight flows.



As the cost of sourcing raw materials from other parts of the world increases, the relative attractiveness of developing access to the Yukon region also increases. The Yukon is especially well positioned to take advantage of other regions' congestion problems given the nature of the commodities that would likely use the Alaska-Canada Rail Link. Transportation costs are a much smaller component of total costs for high valued, manufactured goods than bulk minerals. Consequently, in congested regions, producers and consumers of expensive goods will be more willing to absorb the increase costs of congestion and squeeze out the shippers of relatively low valued bulk commodities.

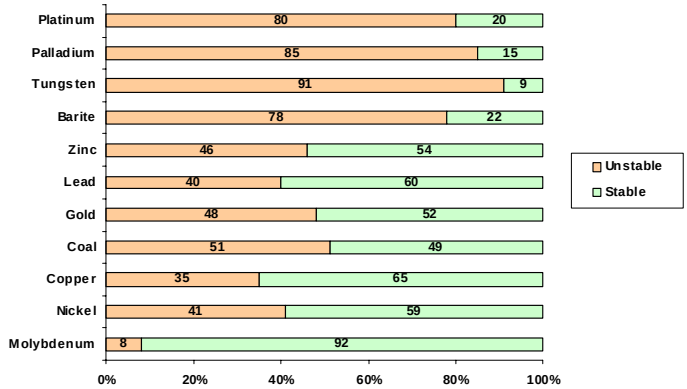
ECONOMIC INTERDEPENDENCE UNDERSCORES THE VALUE OF YUKON STABILITY.

Globalization has brought a never-before-known level of interdependence to the world. As countries become more dependent upon one another economically, national economies are more at risk to disruptive events and crises around the world. Periodic disruptions in supply chains can cripple a manufacturing plant and create ripples throughout an entire economy. For example, many chemical processing plants require a constant supply of raw materials to feed a continuous manufacturing process. In the absence of even one input, the plant must shut down. Large fluctuations in supply and demand, devaluations in currencies, and other macro-economic crises in one part of the world can register almost instantly across the globe. The impact can range from a dampening of the stock market to the eradication of an economic base.

Secure trade routes help ensure stable financial markets. The potential value and importance of the Yukon as an international exporter of minerals and other natural resources is reinforced by its position of security and stability vis-à-vis many of its would-be competitors. As a result of these kinds of geopolitical risks, companies often hesitate to invest in unstable countries and are most interested in securing natural resources from stable markets.

As investors place a premium on secure trading partners, Yukon and Alaskan commodities will look like especially good bets. Many of the commodities that the Yukon can potentially export are in high demand and are currently supplied in large part by less stable countries. The significant Yukon/Alaskan minerals (platinum, palladium, tungsten, barite, zinc, lead, gold, coal, copper, nickel, molybdenum) are produced largely in 28 major countries. 18 of those countries, including Russia, North Korea, Kazakhstan, China, and Zimbabwe, can be classified as potentially unstable and/or in danger of economic collapse.

Exhibit 9. A large portion of the global minerals supply comes from risky sources.



Sources: *Metal Statistics 2001,* Pinkham, Myra (Ed), The Bennett Group; *Index Mundi*, *International Energy Annual 2002*, Energy Information Administration.
Note: CRA stability estimates based on bond ratings, and country risk premiums, and Transparency International's Corruption Perceptions Index (CPI).

THE RAIL LINK WOULD CATALYZE THE YUKON'S IMMENSE MINERAL DEVELOPMENT POTENTIAL.

For more than a decade, the Yukon has been experiencing a significant decline in mineral production. In 1990, mining revenue exceeded $500 million; by 2004 mining revenue had dropped by 94 percent to $30 million. In spite of this, however, there has been a flurry of development and exploration activity in recent years that may be the catalyst for potential development in the near future. For example, mining companies, including Yukon Zinc Corporation, have applied for licenses and are currently pursuing opportunities to develop properties in the Finlayson District in southeastern Yukon, an area of fairly intensive activity over the last few years both for smaller Canadian companies and major world mineral companies.

Exhibit 10. Many of the most valuable Yukon mineral reserves remain untouched.

		In Development		Prospect	
	Mineral Name	No. of Deposits	Total Resources (Million CD)	No. of Deposits	Total Resources (Million CD)
1	Gold	2	471	1	716
2	Zinc/Lead/Silver	1	1,062	9	4,324
3	Coal	–	–	3	16,057
4	Copper/Gold*	2	462	5	3,728
5	Molybdenum	–	–	1	420
6	Nickel/PGM's	–	–	1	1,470
7	Iron Ore	–	–	1	39,530
8	Tungsten	–	–	2	185

Source: George Rainville, Associate Principal, CRA.

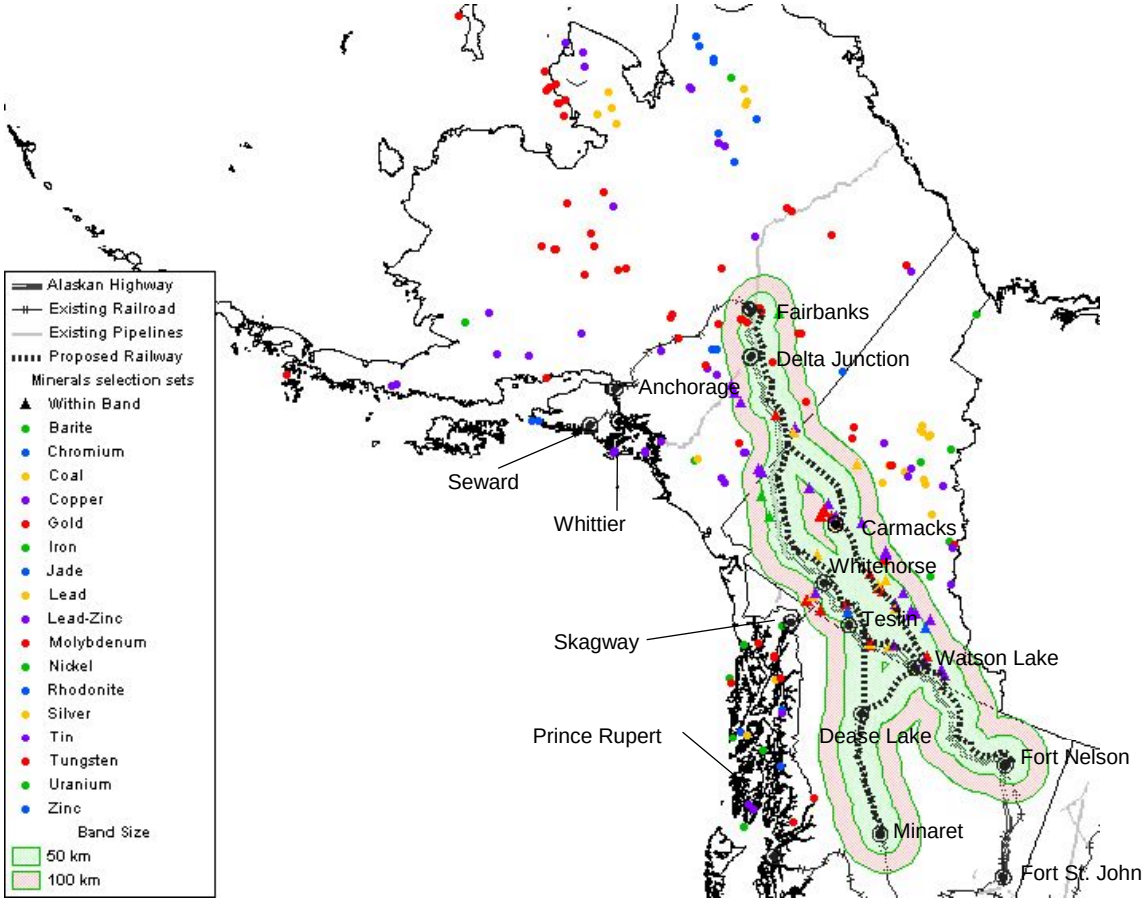
It is always difficult to evaluate underdeveloped resources; however, the process is made somewhat easier in the Yukon because of its history of mining and extensive mineral potential. CRA has reviewed more than 80 deposit areas representative of the likely known significant projects that could come into existence over the next several decades. We concluded that 34 of these deposits should be considered as having significant potential for future development.

We estimated the total mineral resource value in the Yukon to be $57 billion. This estimate was calculated utilizing the total value of reserves and resources likely to be recovered from the 34 deposits over the project's life. Certainly this value could be enhanced by expansion of reserves bases at the 34 deposit areas that are currently valued, by development of other known resources, by further downstream processing of concentrates, or by new mineral discoveries that occur with improved infrastructure.

THE YUKON HAS MINERAL PRODUCTION POTENTIAL OF $2.5 BILLION PER YEAR.

CRA assigned an operational life to the reserve and resource base for each of the deposits corresponding to its size and likely level of exploitation. The annual value of a deposit is based on yearly production of metal value in concentrate for base metals as determined by likely buy schedules and by the free on board, or already loaded, value of mineral products. On this basis, over $ 2.5 billion per year could be produced in the Yukon if all 34 prospects were operating—although these projects will be phased in at different times.

Exhibit 11. The proposed railway would access multiple mineral deposits.

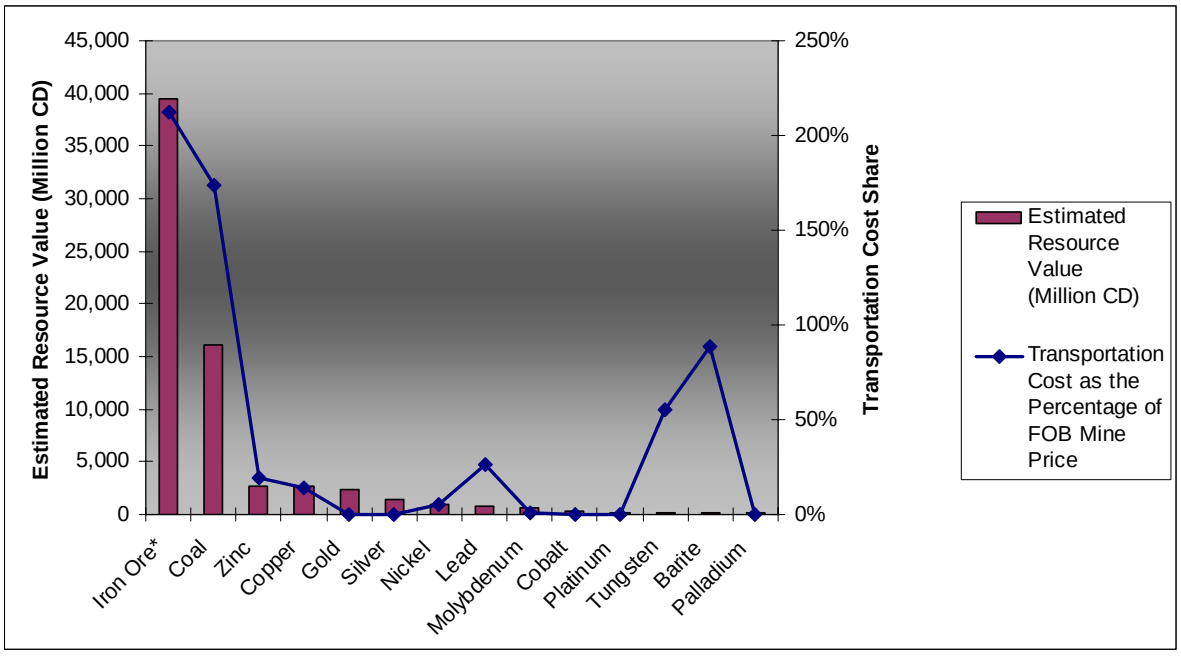


Sources: 1. Report on Survey Trans-Canadian Alaska Railway Location, 1942 U.S. Army Corps of Engineers.
2. The Alaska – Canada Railroad Corridor Feasibility Study, Canadian Arctic Railway Company.
3. Overview, 2003. Yukon Geological Survey. Yukon Mining, Development and Exploration.
4. Alaska Mineral Locations Database, Interagency Minerals Coordinating Group.

TRANSPORTATION IS CRUCIAL TO MINERAL EXPLORATION, DEVELOPMENT, AND PRODUCTION.

Needless to say, mining is a transportation intensive business, especially in areas as geographically remote as many of the Yukon's mineral deposits. Large amounts of equipment and materials need to be transported to a site just to begin operations. The on-going mining process requires additional inbound materials and supplies. Mined minerals need to be moved from the mine to processing plants, and from there to the ultimate consumers of the products. Transportation is of even greater concern for the Yukon due to the immense distances between potential mineral resource developments and shipping access routes. The proposed Alaska-Canada Rail Link will facilitate natural resource development by lowering the cost of transportation in several key arenas.

Exhibit 12. Yukon's most valuable mineral resources are costly to transport.



*Concentrate

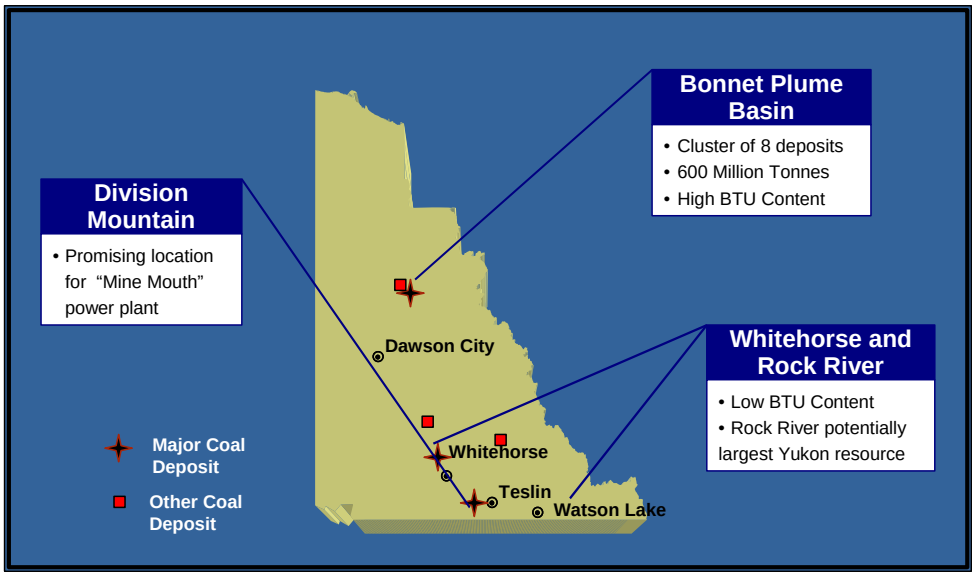
THE NEW RAILROAD WILL FACILITATE THE DEVELOPMENT OF NEW ENERGY PRODUCTION AND TRANSMISSION CAPACITY.

The Yukon depends on imported fossil fuels for three quarters of its energy needs. Yukon residents and officials are conscious of the outflow of Canadian dollars required to purchase and transport energy. Yukon residents pay on average 41.8 percent more for energy while consuming 19.2 percent less energy than those living elsewhere in Canada.[6]

LACK OF RAIL INFRASTRUCTURE HAS LIMITED YUKON COAL MINING.

Oil, natural gas, and hydroelectric generation are currently Yukon's most important sources of energy. However, coal may be a large component of future energy growth in the Yukon as is already the case in Alaska, which produces 1.5 million tonnes of coal per year from the Usibelli mine alone. Alaska exports half of its coal to Asia and consumes the balance in four power facilities. The Yukon has 800 million tonnes of identified coal deposits. The most valuable of these are the Bonnet Plume Basin (660 million tonnes), Rock River (60 million tonnes), Whitehorse (26 million tonnes), and Division Mountain (45 million tonnes). Bonnet Plume Basin's low sulphur content, thick seam, and power factor of 9,700 BTU/lb make this mine the most attractive coal prospect in the Yukon. The Division Mountain, with its close proximity to the Alaskan highway, may be an ideal site for a "mine-mouth" coal plant with production potential of 200 megawatts per day.

Exhibit 13. The Yukon has promising coal resources.



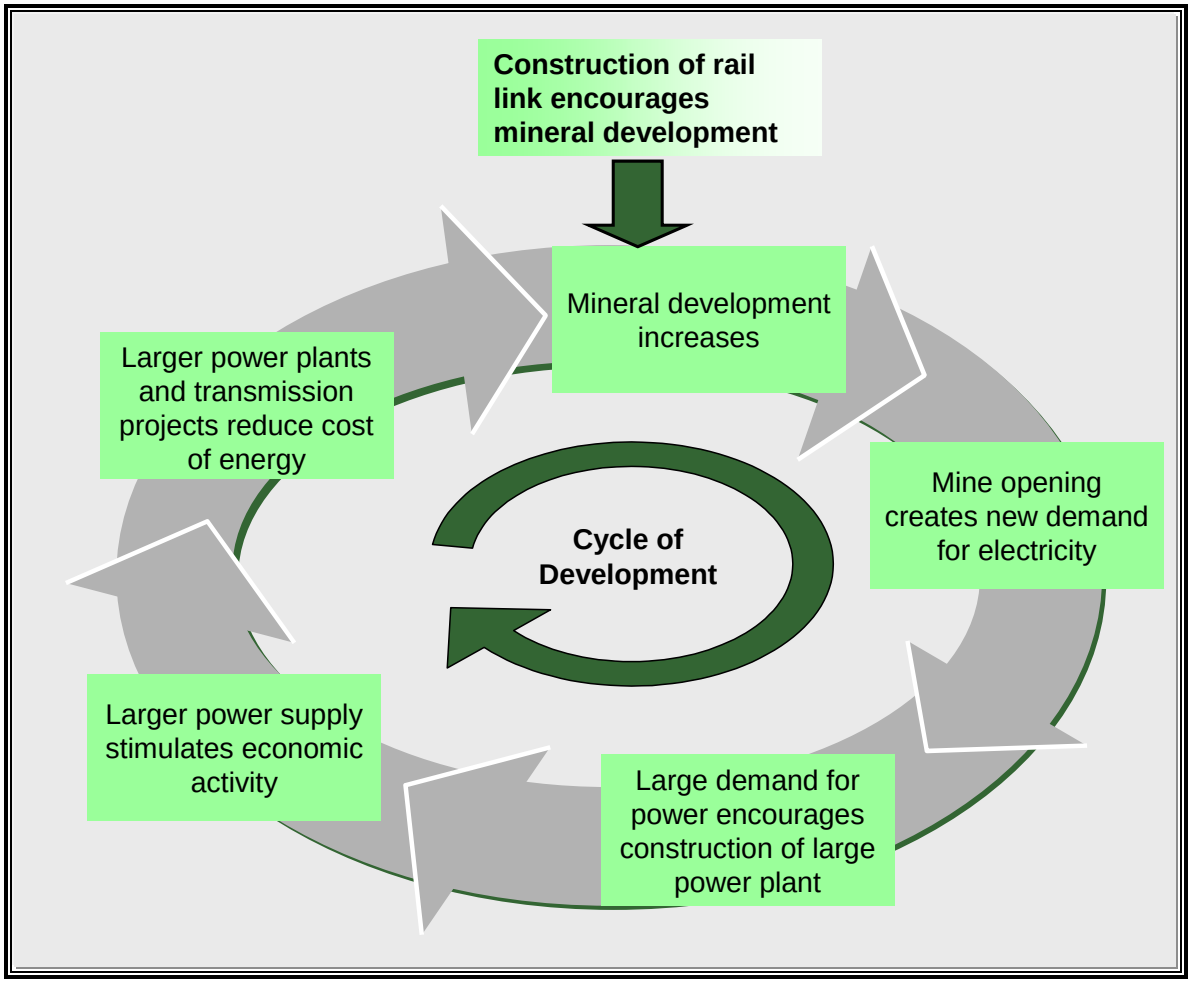
Source: *Yukon Mineral Deposits,* Jan. 2004, Yukon Geological Survey.

[6] Based on 1999 data, Statistics Canada catalogue no 57-202.

THE PROPOSED RAILROAD, MINES, AND ENERGY INFRASTRUCTURES COULD BE DEVELOPED SIMULTANEOUSLY.

Developing mines to access the Yukon's rich resources will require power to crush and grind ore. Underground mines will consume energy in hoisting and ventilation. Mining operations require two to thirty megawatts per year depending on size, depth, extraction method, and ore density. Inefficient and relatively costly diesel generators typically power remote mining operations, as other sources of energy are unavailable. The Yukon's current transmission system can only support limited mineral development. Large mining operations in the Tintina Trench region will likely require the upgrading of both the 69 KV transmission line from Mayo to Dawson as well as the Whitehorse grid system. Once completed, the railroad will encourage development of new mines putting a strain on existing power infrastructure and encouraging new investment.

Exhibit 14. Construction of the rail link will catalyze mineral and energy development.



Economic benefits will result from coordinating the development of new infrastructure through the Yukon, including mines, pipelines, highways, railways, electricity grids, and supporting infrastructure. Power production and transmission in sparsely populated regions typically develops in a slow gradual process. The rail link will likely expedite grid evolution by boosting both energy supply and demand. The rail right of way will be a natural corridor for potential shared use by both pipelines and electrical transmission lines. Improved infrastructure will encourage development of the Yukon's petroleum and coal energy resources. Construction of the rail link will draw workers and machinery into the Yukon creating economies of scale and a stable source of inputs required for a wide variety of construction and development projects. For example, the railroad will facilitate the movement of the vast amounts of machinery and materials required to construct the proposed North Slope to Chicago pipeline.

Exhibit 15. Heavy infrastructure and equipment would be required to build the North Slope to Chicago pipeline.

Requirements for Alaskan Highway Gas Pipeline	
New Infrastructure	
Gravel roads	496 km
Airstrips	5 Upgrades
Pipe Storage yards	32
Camp Sites	31
Equipment	
Loaders	134
Automatic welders	275
Sidebooms	665
Trenchers	18
Backhoes	250
Large Dozers	236
Stringing Tractors	125
Pickup Trucks	1,300
Buses	230
Pipeline	
No. of Compressor Stations	12
Total installed horsepower	600,000 hp
Alaska to Alberta (miles)	2,141
Alberta to market (miles)	1,469
Pipe diameter (inches)	52
Million Tons of steel	5.7

Source: CRA calculations

THE ALASKA-CANADA RAIL LINK WILL GENERATE OTHER ECONOMIC AND NON-ECONOMIC BENEFITS AND SUPPORT PUBLIC POLICY OBJECTIVES.

Regional Economic Development, Economic Integration, and Sovereignty

Developing the corridor has the potential to bring enhanced economic activity, employment growth, and population growth to regions in the Yukon, Alaska, and northern British Columbia. However, private markets place no inherent value on economic development taking place in one region rather than another. From the perspective of the citizens of these regions and the citizens of Canada and the United States, developing these regions may produce substantial benefits not captured in market prices and returns. Among these benefits are the value resulting from better integration of the Yukon's economy with the rest of Canada's, the potential of bringing economic benefits and greater economic integration to First Nations' communities, and the value for Canada of spurring economic development in northern Canada as a means of increasing the region's population and strengthening the nation's claim to sovereignty of its Arctic regions. For Alaska and the United States as well, there may be benefits to further integrating Alaska's economy with those of Canada and the lower 48 States.

From a local and regional perspective, corridor development will produce direct economic benefits for affected communities in the form of new economic activity and associated employment in construction, maintenance, and operation of the railroad and other corridor infrastructure. From the perspective of the national economies of Canada and the United States, some of these regional economic benefits may be offset by costs elsewhere in their economies.

Assessing and documenting the development effects of corridor development at local, regional, and national levels will not occur without government involvement. It is clearly the role of the relevant governments to make decisions about what weight to place on the various economic and non-economic benefits and costs that corridor development may bring.

Defence and National Security

U.S. forces in Alaska play an important part in safeguarding international security. Alaska is home to a wide range of U.S. air, ground, coast guard, and missile defence forces. However, the lack of a suitable land link to the more populous areas of North America constrains the speed with which forces—particularly ground forces—based in Alaska can react to international crises and cooperate with forces further south. In this context, the proposed rail link would bring three important military benefits.

First, the Alaska-Canada Rail Link would enable better opportunities for joint training at CF Bases in the west. Second, the proposed rail link would bring better mobility for U.S. Army troops stationed in Alaska. Third, linking Alaska to the lower 48 will also enhance security in Northeast Asia. By opening another transport link to Alaska, the proposed railroad would enhance its role in ensuring the security of northeast Asia and North America.

In times of emergency, a country's national security can hinge on its ability to access the equipment, goods, and other materials it needs to respond appropriately. To facilitate the efficient transport of supplies, it is important to have multiple access routes both to increase the speed and capacity at which the supplies travel, as well as to serve as a back up route should one route or the other become unavailable. In the case of Alaska and the Yukon, the existing Alaska Highway is insufficient for securely moving goods during times of war and/or disaster. The addition of a second, multiuse corridor, such as the proposed railway, could prove to be of critical importance in ensuring Canada and the United States' national security.

Passenger Tourism Development Opportunities

The proposed Alaska-Canada Rail Link may stimulate growth in the important economic sector of passenger tourism. Worldwide, tourism is one of the major economic sectors, contributing as much as 10.2 percent of the gross global domestic product (GDP), and it is a leading component of international trade.[7] In 2002, the number of international tourists topped 700 million. The tourism industry is an important and growing sector for both Alaska and the Yukon. In Alaska, tourism is the fourth largest employer in Alaska, supplying 25,996 jobs in 2002. Residents and non-residents spent a total of $2.9 billion, of which Alaska retained $1.8 billion.[8]

The region is clearly amenable to rail tourism; the White Pass & Yukon operates solely as a tourist railway, and the Alaska Railroad operates profitable daily passenger service during the summer months. These tourist routes, however, are readily accessible to and extensively utilized by cruise ship passengers, an advantage that a rail link through the interior regions of the Yukon and Alaska would not enjoy. Nonetheless, a Yukon rail link might prove attractive to tour operators seeking to offer specialized scenic and wilderness tourism to currently little-travelled areas.

An analysis of the proposed rail link's effect on tourism must first determine where most ecotourists come from, by which mode of travel they arrive, what attracts them to a destination, and what their motivations and expectations are. It must then explore how the proposed rail link might enhance the tourist experience and draw new visitors.

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[7] WTO, 2003.

[8] Economic Performance Report 2003, pp. 28-29.

GOVERNMENT HAS AN IMPORTANT COORDINATING ROLE.

From a social perspective, there is clear role for government to play in developing the information that will assist private investors in making decisions about whether and where to invest in developing the Corridor. Preliminary work in assessing the economic feasibility of Corridor development falls into the category of basic research that is appropriately supported by government. The benefits that developing the Corridor may provide to private interests, while potentially substantial, are likely to be widespread, relatively diffuse, and subject to numerous individual uncertainties. For this reason, no single private party is likely to undertake the relatively far-ranging study that will be needed to assess the value of the widespread and diffuse benefits, and to assess all of the potentially relevant costs and uncertainties that could stand in the way of corridor development. Once all potentially interested parties have been presented with the results of such a study, it could serve as a spur for them to undertake further studies and investments needed to effectively develop the Corridor to help develop more fully developed business and policy cases for (or against) Corridor development. Absent the support of basic research like that proposed for joint funding by the U.S. and Canadian governments, however, the potentially worthwhile Corridor development could be the subject of unnecessary delays or even be foregone entirely.

Exhibit 16. Government should be involved in large and complex projects.

	Purely Private	Significant Public Involvement	Purely Government
Attributes	Limited or no externalities Minimal coordination / transaction cost problems	Significant externalities Significant coordination issues	Extensive externalities Significant coordination / cost issues
Examples	Private Housing Retail Stores	Port Development Environmental Clean-Up Telecommunications (Standard Setting and Spectrum Allocation)	National Defence National Highway System

Governments can often help facilitate private investment by overcoming coordination and information problems that markets cannot easily overcome. A clear example of this is the coordination of right-of-way land acquisition. Government can play a key role in facilitating site selection for the corridor.

EXTERNAL COSTS AND BENEFITS REQUIRE GOVERNMENT INVOLVEMENT.

External costs, also referred to as "externalities," become economic costs when the actions of individuals, firms, or governments create spillover costs for other parties, the value of which is not priced in the marketplace. In the case of the Alaska-Canada Rail Link, there are numerous potential external costs and benefits that may not be properly priced by private markets and that will need to be taken into account as decisions are made as to whether, how, and when to develop the corridor. These include environmental impacts; the effect of the corridor on regional economic development, economic integration, and Canadian sovereignty; and the benefits the corridor may create for Canada and the United States' safety and security.

Environmental Costs and Benefits

Government clearly has a role in protecting the environment and ensuring appropriate measures are taken to minimize the environmental impacts of development. Building the Canada-Alaska Rail Link will likely entail a wide range of potential costs and benefits to the natural environment. On the cost side, corridor development could encroach on environmentally sensitive areas, requiring government involvement in route selection and in the creation of appropriate laws and oversight mechanisms. This would ensure that the railroad and other transportation entities sharing the corridor would be given the appropriate incentives to operate in an environmentally sensitive manner.

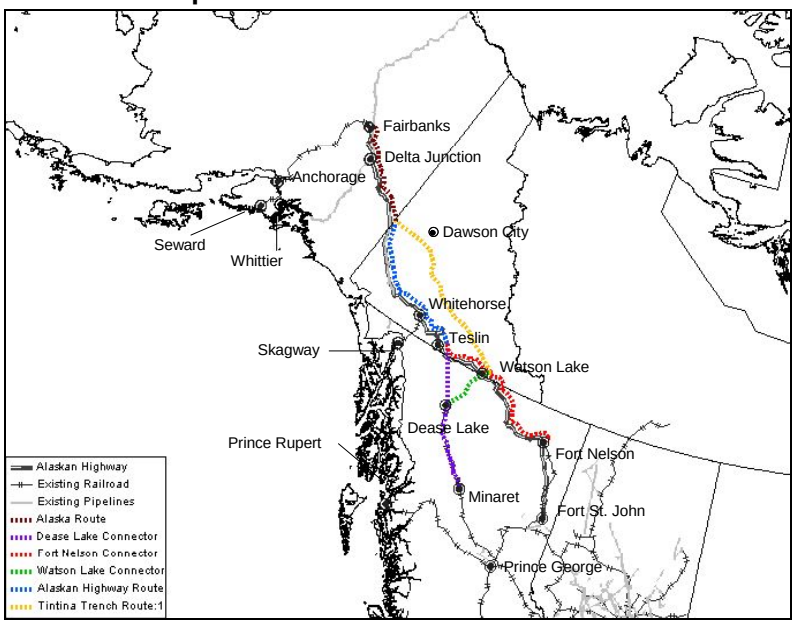
The creation of the corridor could also lead to substantial environmental benefits. It would be beneficial if the rail corridor were to divert freight that would otherwise be transported via the Alaska Highway since rail is a less energy-intensive mode of transport, and generally more environmentally friendly than road transportation.

ALTERNATIVE ROUTES THROUGH THE YUKON MUST BE EVALUATED.

The literature to date has identified two alternative routes for the Alaska-Canada Rail Link. The first suggested route parallels the Alaska Highway and would benefit north-south flows of traffic from Alaska and the Yukon to the Pacific Northwest region of the United States.

The second route, originally proposed the U.S. Army Corps of Engineers in 1942, takes a more northerly course down the Tintina Trench. It follows river grades and accesses many mineral deposits.

Exhibit 17. Proposed route alternatives for the Alaska-Canada Rail Link



Sources: *Report on Survey Trans-Canadian Alaska Railway Location*, 1942 U.S. Army Corps of Engineers, and *Alaska – Canada Railroad Corridor Feasibility Study*, Canadian Arctic Railway Company, 2004.

Additional route alternatives should be assessed.

Work to date regarding route selection for the proposed Canada-Alaska Rail Link has focused on the ease of construction and access to Alaskan markets. Canada and the Yukon would be well served by considering other route alternatives that also maximize access to Yukon mineral deposits thus motivating resource development. Accessing the Crest iron ore deposit, for example, would significantly increase the positive contribution and the economic viability of this project.

Clearly, a comprehensive route alternatives analysis and selection is warranted. Route selection must trade off length of haul, distance from mines to the trunk line, severity of route, and environmental impacts. Longer routes cost more to build and operate. Routes with many hills, curves, and bridges also cost a lot to build and maintain. Modern survey technology, engineering CAD systems, and GIS analyses can assess the many attributes of each route relatively easily and provide a framework for analyzing these tradeoffs. A feasibility study needs to consider all of the engineering, operation, commercial, economic, social, and environmental implications of each route alternative.

CONCLUSION

Effectively developing the Alaska-Canada Rail Link will require cooperation of both the U.S. and Canadian governments as well as the governments of Alaska, the Yukon, and British Columbia. Government involvement will address two essential functions related to this project's development. First, government will ensure that external costs and benefits not captured in market demands and prices are taken into account in developing the corridor. Second, government will reduce transaction costs that might hinder the private development of the corridor by disseminating information, removing bureaucratic barriers, and coordinating diverse interests.

It is reasonable for the Government to devote financial support to a detailed feasibility study that will shape this project's definition, detail the business case, and facilitate the efforts of the private sector. This study would be a valuable first step towards addressing coordination problems. It would allow interested parties to begin their planning processes based on a common base of well-founded analysis. By sponsoring such a study, governments will encourage private investors to take a hard look at this opportunity. Investors will more readily be able to make informed decisions regarding the true costs and benefits associated with the future development of the Alaska-Canada Rail Link. We believe the U.S. and Canadian governments will be able to jointly design a comprehensive feasibility study to meet those objectives.