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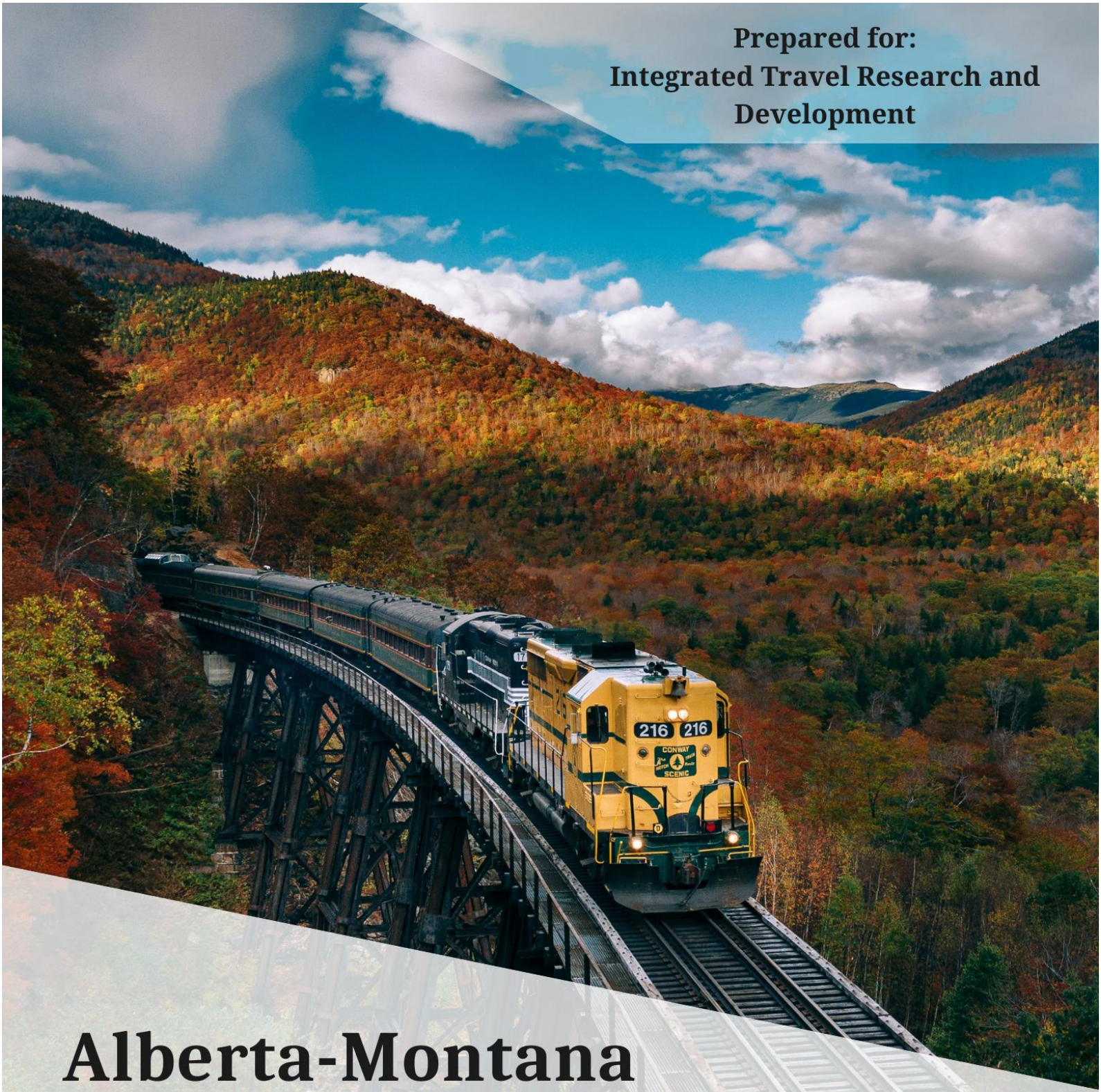

Alberta-Montana Passenger Rail Feasibility Report

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Land Acknowledgement

We acknowledge that this project takes place on the traditional and ancestral territory of the Blackfoot Confederacy: Kainai, Piikani and Siksika of Alberta, Canada and the Blackfeet Tribe (Amsskapipiikunniwa) of Montana, United States, as well as the Tsuut'ina Nation and Stoney Nakoda First Nation, and all people who make their homes in the regions of Southern Alberta and Northern Montana. We acknowledge the many First Nations, Métis and Inuit who have lived in and cared for these lands for generations. We are grateful for the traditional Knowledge Keepers and Elders who are still with us today and those who have gone before us. We make this acknowledgement as an act of reconciliation and gratitude to those whose territory we reside on or are visiting.

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Executive Summary

The Alberta-Montana Passenger Rail Feasibility Report provides a literature review, analysis, and recommendations aimed at establishing a preliminary understanding of a passenger rail route between Calgary, Alberta and Livingston, Montana, with nine stations in between. The proposed Calgary-Livingston route utilizes existing freight railroads, operated by CPKC and BNSF, to be converted to mixed-use railroads that support both freight and passenger. This report serves as a foundational step for further project development and represents an important piece to addressing the pressing transportation needs of the regions. As an effort to enhance regional connectivity and accommodate a growing population and economy, this project holds substantial promise for economic development, environmental sustainability, and social equity.

This report begins with a brief background of the history of railroads in Alberta and Montana and the rationale behind establishing a passenger rail service between Calgary, AB and Livingston, MT. The report analysis details a market assessment to demonstrate demand and potential ridership revenue, identifies possible funding partners and opportunities, and outlines federal, state, and provincial legislation related to the rail initiative. To conclude, this report recommends a framework for the future of the Alberta-Montana Passenger Rail project to build support and continue its development.

1.0 Introduction

1.1 Purpose and Objectives

The purpose of the Alberta-Montana Passenger Rail Report is to offer a preliminary feasibility study for a cross-border passenger railway to be established between Calgary, Alberta and Livingston, Montana. Establishing a passenger rail between Alberta and Montana along the Calgary-Livingston corridor would enhance regional interconnectivity, while simultaneously improving economic and tourism development, generating employment opportunities, and offering a sustainable travel option.

The report presents findings derived from a literature review of academic publications and grey literature, which includes policy literature and government documents. It begins with a background of the passenger rail history in Alberta and Montana, along with the rationale for converting the freight railway to accommodate passenger service. The report then details the proposed route, conducts a market analysis to demonstrate demand, identifies potential funding partnerships and opportunities, and outlines regulatory and compliance considerations. A framework for the future is then recommended as a look at the next steps of the Alberta-Montana Passenger Rail project.

1.2 Background

The history of rail in North America serves as a testament to its foundational role in shaping the continent's growth, development, and prosperity. However, despite its historical significance, due to decades of underfunding, closures, and the prioritization of highway expansions, North America has been left with limited passenger rail service and a lack of cross-border rail interconnectivity. This presents a pressing challenge to the future of the continent's economic development, growth, and prosperity – particularly in regions experiencing rapid population growth, such as Alberta.

Currently, Alberta is experiencing the highest population growth rate of all the provinces and territories in Canada with the province growing at 4% in 2022/2023.[1] Although a significant amount of this growth came from international migration, Alberta is also experiencing significant net gains in interprovincial migration with a total of 56,245 more people moving to the province than out of it – the highest annual net gain for any province ever recorded for a single province or territory since 1971/1972.[1] As the province continues to grow and develop, it is necessary

that there are adequate, sustainable, and efficient methods of transportation to accommodate the growing population and facilitate regional connectivity.

Moreover, Alberta and Montana are home to some of North America's most stunning and important natural attractions, including Banff National Park in Alberta and Yellowstone and Glacier National Parks in Montana. These iconic destinations draw in a combined total of 11.5 million visitors from across both countries and the world, significantly contributing to the region's tourism industries and local economies. Additionally, year-over-year these national parks continue to see a steady increase in tourists; however, the accessibility of these natural wonders is hindered by limited transportation infrastructure which highlights the importance of improving connectivity to support sustainability in the ever-growing tourism sector and spurring further economic opportunities in the region.

Presently, the region is heavily car dependent with road travel being the main form of transportation since there is a lack of adequate alternatives. Additionally, airplane travel is another option but is not as economical or environmentally friendly – especially for short-haul flights. The introduction of a passenger rail represents a transformative solution to address this gap in regional transportation by offering a reliable, safe, and environmentally friendly mode of transportation that can significantly enhance mobility, stimulate economic development, and promote long-term prosperity.

1.3 Rationale for the Proposed Route

1.3.1 Economic Development

The proposed passenger rail project connecting Alberta and Montana holds significant promise for stimulating economic growth, fostering business development, and creating job opportunities across the region. By enhancing regional and rural connectivity, the rail line is positioned to unlock a range of economic benefits that extend beyond immediate transportation improvements.

One of the significant drivers of this passenger rail project is the anticipated support and increase in the tourism sector. With improved connectivity between Alberta and Montana's key destinations, such as Calgary, Banff National Park, Yellowstone National Park, and Glacier National Park, the rail line can be expected to attract a higher volume of domestic and international tourists. This increase in tourist activity not only translates to increased revenue for local businesses, hotels, restaurants, and attractions but also creates new employment and

business opportunities in the tourism and hospitality sectors. Moreover, the rail line's accessibility is likely to spur continued investment in tourism-related infrastructure and services, further stimulating economic growth and expanding the taxbase in the region.

As with most major public infrastructure projects, this project's short-term and long-term expenditures can be expected to produce significant economic spillover effects across Alberta and Montana. According to Amtrak's North Coast Hiawatha Study, investments in passenger rail infrastructure are associated with job creation, particularly in the retail and tourism sectors, in addition to increased local, state/provincial, and federal revenues from new jobs and heightened economic activity.[2] The multiplier effect of rail-related spending can also stimulate broader economic development by supporting small businesses, suppliers, and service providers throughout the region. Additionally, the ongoing operation and maintenance of the rail line will create ongoing employment opportunities within these mostly rural communities, contributing to sustainable economic growth and diversification over the long term.

This passenger rail project also holds the potential to support the local population by bridging economic disparities between smaller communities and larger population centres. By providing affordable and convenient transportation options, residents of rural and underserved areas gain access to employment opportunities, educational institutions, healthcare providers, and cultural amenities located in urban hubs or other communities. This increased connectivity facilitates labour mobility, talent retention, and business expansion, thereby promoting a more inclusive, interconnected, and resilient regional economy. Furthermore, enhanced access to transportation networks can attract investment and entrepreneurship in rural communities which further drives local economic development, diversification, and vitality.

1.3.2 Increased Mobility

Automobile travel is the most dangerous form of transportation with a staggering passenger death rate 17 times higher than passenger rail.[3] The need for safer transportation options becomes especially apparent during the harsh winter months in the region characterized by heavy snowfall and low temperatures. During these weather conditions, passenger rail becomes an invaluable lifeline by offering a significantly safer alternative to treacherous highway conditions. This enhanced safety factor is beneficial to communities as a whole but is particularly beneficial for vulnerable populations, such as the elderly or individuals with mobility challenges, who may face heightened risks while driving in inclement weather.

Beyond individual mobility, the introduction of passenger rail service would reduce the number of cars on the road which alleviates congestion while enhancing overall transportation efficiency. By providing a fast, reliable, and sustainable alternative to automobile travel, passenger rail service encourages a modal shift, leading to fewer vehicles clogging highways, national parks, and urban streets. This reduction in traffic congestion not only improves the flow of passengers but also reduces greenhouse gas emissions and air pollution, contributing to cleaner and healthier communities for residents to live in and enjoy.

Increased mobility through passenger rail also promotes social inclusion and economic opportunity by connecting residents to essential services, educational institutions, employment centres, and recreational amenities. By expanding access to transportation networks, the rail service enables residents in rural and underserved areas to overcome geographic barriers and participate more fully in economic and social life. Furthermore, it promotes equity and inclusivity by ensuring that all residents, regardless of ability or socioeconomic status, have access to reliable transportation options. This commitment to equity enhances social cohesion, reduces transportation-related barriers to opportunities, and cultivates a more inclusive and resilient community fabric.

1.3.3 Tourism Growth

A railway linking Calgary to Livingston encourages tourism by offering enhanced connectivity and accessibility to regional attractions. Passenger rail connectivity has been proven to increase tourist arrivals to destinations along the railway, which suggests that the stations between Calgary and Livingston would enhance tourism in smaller communities, providing travelers with opportunities to explore lesser-known attractions, support local businesses, and engage with the unique culture and heritage of each town.[4] By providing convenient access to tourist destinations and regional hubs, the rail line is expected to attract a steady flow of visitors, bringing revenue and employment opportunities for local businesses, hospitality establishments, and attractions along the route. As of January 2024, Alberta has a workforce of 226,400 individuals employed in various sectors of the tourism industry.[5] Meanwhile, in 2021, Montana's travel, tourism, and hospitality sector employed 68,630 people.[6] These employment figures demonstrate the importance of tourism as an economic driver for both regions, highlighting the potential for the Alberta-Montana Passenger Rail project to stimulate job security and growth.

For Alberta, the railway would provide easier access to popular tourist destinations around the Rocky Mountains, especially Canmore and Banff. Currently, a study for a high-speed passenger rail connection from Calgary to Canmore and Banff is underway. This proposed rail link would greatly benefit the Alberta-Montana Passenger Rail, intersecting in Calgary to further increase accessibility to popular tourist destinations around Alberta. Within tourism hotspots and for metropolitan areas like Calgary, population and tourism growth leads to traffic congestion, posing significant challenges to urban mobility and transportation infrastructure. As the population and tourism sector grow faster than the infrastructure can accommodate, alternate methods of transportation would be an effective travel demand management tool in reducing the traffic congestion around the city and in national parks.[7] The Alberta-Montana Passenger Rail offers an alternative to cars that would significantly mitigate peak tourist activity, such as the Calgary Stampede, when traffic congestion is the most impactful.

For Montana, the proposed Alberta-Montana Passenger Rail would also improve outdoor recreational tourism by providing easier access to Yellowstone National Park and Glacier National Park. If provided with a more convenient transportation option, Canadians would be more inclined to travel to Montana for recreational purposes. Presently, direct flight routes from Southern Alberta to Bozeman or Great Falls International Airports are non-existent, leaving road travel as the only choice. The railway would offer an alternative for travelers without access to vehicles or those who prefer not to bus or drive. Additionally, with the Alberta-Montana Passenger Rail intersecting with the Empire Builder, a major passenger rail route spanning from Chicago to Seattle or Portland, tourists will have expanded travel possibilities. This strategic junction in Shelby, MT opens up a variety of connecting train options, facilitating railroad transport options between various destinations across the United States.

With railroad transport being one of the most environmentally sustainable methods of transportation, the implementation of the Alberta-Montana Passenger Rail aligns with global efforts towards sustainable tourism practices, reducing carbon emissions and conserving natural resources. Using the United Nations Sustainable Development Goals (SDGs) as a driving force, the Tourism Industry Association of Canada, the US Travel Association, and many other tourism organizations are defining strategies towards sustainable tourism in North America. An interconnected railway network would work towards this goal by removing cars from the road, thereby reducing emissions and the environmental impact of tourism.

1.3.4 Environmental Sustainability

With the transportation sector making up roughly 22% of global greenhouse gas (GHG) emissions, the rationale for decarbonization in transportation is more prevalent than ever.[8] Fortunately, rail transport is known to be the most environmentally friendly method of transportation when considering greenhouse gas emissions.[8] Rail transport presents as a more energy-efficient option than vehicles as it is capable of transporting a large number of passengers with significantly lower energy consumption per person. In a short-term flight similar to the length of Calgary to Livingston, the average passenger generates 151-246 grams of carbon dioxide-equivalents per passenger kilometer.[9] For car travel, the average petrol or diesel car would generate 170 g and 171 g, respectively.[9] Comparatively, a train passenger could reduce their emissions by 76.8% - 85.8%, since the average train passenger would only produce roughly 35g.[9] For each passenger that chooses to travel with the Alberta-Montana Passenger Rail instead of a vehicle, they would be reducing their travel emissions by approximately 75%.

Aside from GHG emissions, another pressing concern for the transportation sector is contamination and pollution. Road vehicles contribute polluted runoff to the surrounding habitats and waterways from highways, including heavy metals and microplastics from car tires, oils, and other toxic substances.[10] Additionally, road salt can cause eutrophication and nutrient imbalance within ecosystems. A life cycle analysis of both railways and highways shows that railway infrastructure and operation has a lower overall impact than highways, and requires less ongoing maintenance.[10] A passenger rail would remove car traffic from roadways, reducing the overall environmental impacts from vehicles traveling between Alberta and Montana. While railways are still a source of contamination, they contribute less heavy metals to the surrounding ecosystem per passenger than vehicles.[10] When choosing to travel with the Alberta-Montana Passenger Rail over private vehicles, travelers can make a real impact in reducing environmental degradation caused by transportation and help to mitigate climate change.

1.3.5 Enhanced Safety

Railway travel is widely recognized as one of the safest methods of transportation. Commuter rail travel has a fatality rate per billion passenger miles of 0.43, which includes both deaths from derailments and violent acts between passengers.[11] This is 16.93 times lower than cars, which have a fatality rate per billion passenger miles of 7.28.[11] The enhanced safety of rail transit can be attributed to comprehensive safety standards and employee training, layers of

high-tech safety features, and resilience to severe weather conditions. When comparing railway travel to road travel, railway tracks create a controlled environment that minimizes the risk of collisions with other vehicles and pedestrians, while cars are subject to human error and variable road conditions. This is especially true for Alberta and Montana, which are areas that experience heavy snowfall in the winter. During the winter season, the Alberta-Montana Passenger Rail service would offer continued passenger travel despite unsafe road conditions caused by snow and ice.

2.0 Calgary-Livingston Corridor Route Analysis

2.1 The Route

The proposed route begins in Downtown Calgary, Alberta, consists of twelve stations/platforms, and ends in Livingston, Montana. The proposed route travels through 57 settlements and travels across the border between Canada and the United States. The stations would be located in Calgary, AB; Okotoks, AB; Vulcan, AB; Lethbridge, AB; Stirling, AB; Coutts, AB; Sweet Grass, MT; Shelby, MT; Great Falls, MT; Helena, MT; Bozeman, MT; and Livingston, MT. An interactive map of the proposed route is found here: Alberta-Montana Proposed Passenger Rail (Or access through the URL: https://www.google.com/maps/d/edit?mid=1y4wW9BWcBp1d8lrbvC21n_HOEBfhZGs&usp=sharing)

The initial Alberta-Montana Passenger Rail study is intended to determine the feasibility of a cross-border passenger service connecting Alberta and Montana. As the project progresses, there is opportunity for the route to also extend northward to Edmonton, AB, and further eastward to Billings, MT to connect the most populated cities within the regions.

Figure 1. *Map of the Proposed Alberta-Montana Passenger Rail route. The train images indicate station/platform locations. Red indicates CPKC railway, and orange indicates BNSF railway.*

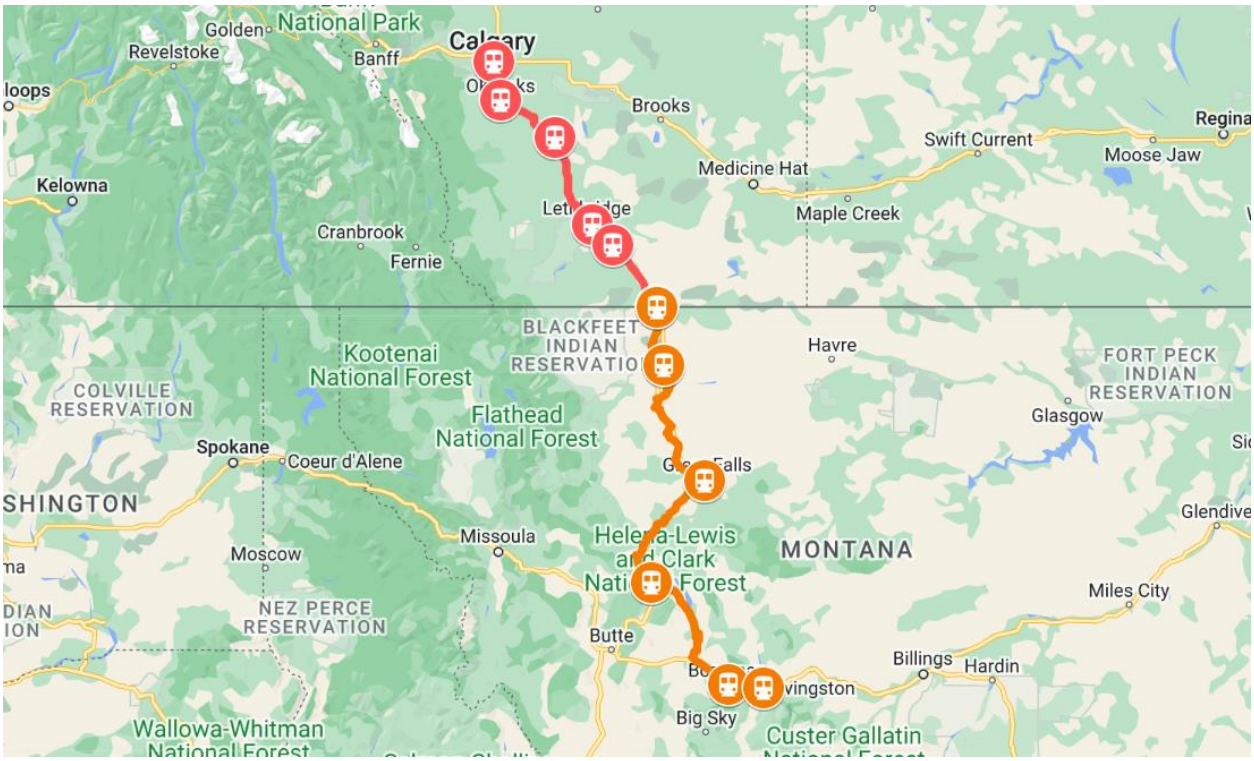


Table 1. *Proposed Alberta-Montana Passenger Rail Route Breakdown.*

Settlements along route	Significant Infrastructure	Owner and Operator of existing railway	Cumulative Distance	Distance Between Stations
Calgary, AB	Station	CPKC	0 km / 0 mi	0 km / 0 mi
Dewinton, AB	-	CPKC	29.8 km / 18.5 mi	-
Okotoks, AB	Station	CPKC	44.4 km / 27.6 mi	44.4 km / 27.6 mi
Aldersyde, AB	-	CPKC	53.4 km / 33.2 mi	-
Mazeppa, AB	-	CPKC	65.0 km / 40.4 mi	-
Blackie, AB	-	CPKC	74.3 km / 46.2 mi	-

Brant, AB	-	CPKC	88.7 km / 55.1 mi	-
Ensign, AB	-	CPKC	95.9 km / 59.6 mi	-
Vulcan, AB	Station	CPKC	111.3 km / 69.2 mi	66.9 km / 41.6 mi
Kirkcaldy, AB	-	CPKC	119.7 km / 74.4 mi	-
Champion, AB	-	CPKC	132.1 km / 82.1 mi	-
Carmangay, AB	-	CPKC	145.8 km / 90.6 mi	-
Peacock, AB	-	CPKC	152.1 km / 94.5 mi	-
Barons, AB	-	CPKC	160.9 km / 100.0 mi	-
Nobleford, AB	-	CPKC	174.1 km / 108.2 mi	-
Whitney, AB	-	CPKC	183.3 km / 113.9 mi	-
Kipp Yard, AB	Rail Yard	CPKC	191.5 km / 119.0 mi	-

Coalhurst, AB	-	CPKC	193.4 km / 120.2 mi	-
Lethbridge Yard, AB	Rail Yard	CPKC	207.7 km / 129.1 mi	-
Lethbridge, AB	Station	CPKC	211.1 km / 131.2 mi	99.8 km / 62.0 mi
Stewart, AB	-	CPKC	219.8 km / 136.6 mi	-
Wilson, AB	-	CPKC	226.2 km / 140.6 mi	-
Stirling, AB	Station	CPKC	239.3 km / 148.7 mi	28.2 km / 17.5 mi
Craddock, AB	-	CPKC	246.8 km / 153.4 mi	-
New Dayton, AB	-	CPKC	257.3 km / 159.9 mi	-
McNab, AB	-	CPKC	265.6 km / 165.1 mi	-
Warner, AB	-	CPKC	276.3 km / 171.7 mi	-
Milk River, AB	-	CPKC	294.4 km / 183.0	-

			mi	
Coutts, AB	Platform	CPKC	314.9 km / 195.7 mi	75.6 km / 47.0 mi
Sweet Grass, MT	Platform	BNSF	314.9 km / 195.7 mi	Directly across border
Sunburst, MT	-	BNSF	328.2 km / 204 mi	-
Kevin, MT	-	BNSF	345.1 km / 214.5 mi	-
Shelby, MT	Station	BNSF	377.6 km / 234.7 mi	62.7 km / 39.0 mi
Naismith, MT	-	BNSF	392.3 km / 243.8 mi	-
Fowler, MT	-	BNSF	403.1 km / 250.5 mi	-
Ledger, MT	-	BNSF	410.5 km / 255.1 mi	-
Conrad, MT	-	BNSF	428.0 km / 266 mi	-
Brady, MT	-	BNSF	449.6 km / 279.4 mi	-
Collins, MT	-	BNSF	465.5 km / 289.3 mi	-

Dutton, MT	-	BNSF	478.4 km / 297.3 mi	-
Power, MT	-	BNSF	496.9 km / 308.8 mi	-
Vaughn, MT	-	BNSF	518.6 km / 322.3 mi	-
Great Falls Yard, MT	Rail Yard	BNSF	518.6 km / 322.3 mi	-
Great Falls, MT	Station	BNSF	537.7 km / 334.2 mi	160.1 km / 99.5 mi
Cascade, MT	-	BNSF	583.6 km / 362.7 mi	-
Craig, MT	-	BNSF	620.4 km / 385.6 mi	-
Wolf Creek, MT	-	BNSF	633.1 km / 393.5 mi	-
Sieben, MT	-	BNSF	648.1 km / 402.8 mi	-
Silver City, MT	-	BNSF	667.6 km / 414.9 mi	-
Helena, MT	Station	BNSF	690.7 km / 429.3	153.0 km / 95.1 mi

			mi	
Winston, MT	-	BNSF	-	-
Townsend, MT	-	BNSF	-	-
Toston, MT	-	BNSF	-	-
Logan, MT	-	BNSF	-	-
Manhattan, MT	-	BNSF	-	-
Belgrade, MT	-	BNSF	-	-
Bozeman, MT	Station	BNSF	848.7 km / 527.5 mi	158.0 km / 98.2 mi
Livingston, MT	Station	BNSF	888.9 km / 552.5 mi	40.2km / 25.0 mi

2.2 Assessment of Infrastructure Needs

The Alberta-Montana proposed route would require the conversion of existing freight railroads to mixed-use railroads to support both freight and passenger. The freight operators of these tracks are the CPKC and BNSF.

2.2.1 Freight Operators

Canadian Pacific Kansas City (CPKC), formerly Canadian Pacific Railway and Kansas City Southern, is a Class 1 rail carrier that operates from the East to West Coast of Canada, and along the Eastern side of the United States into Mexico.[12] CPKC owns and operates 314.9 km of railroad along the proposed route that travels between Calgary, AB and Coutts, AB on the Canadian side. A map of the Alberta Rail Network is found in Appendix A.

BNSF Railway Company is a Class 1 rail carrier that travels the Western two-thirds of the United States.[13] BNSF owns and operates 574.0 km of railroad along the proposed route

that travels between Sweet Grass, MT and Livingston, MT. A map of the Montana Rail Network is found in Appendix B. Additionally, it appears that BNSF Railway supports passenger rail service on their tracks as they have issued a letter of support for the restoration of the North Coast Hiawatha route.[14]

2.2.2 Freight to Mixed-Use Considerations

When converting a freight-only railroad to mixed-use freight and passenger, there are a variety of improvement opportunities to be made to the existing railroad infrastructure. The proposed Alberta-Montana Passenger Rail would bring funding, and a case can be made that the upgrades provided by the implementation of a passenger rail service will yield benefits for both freight and passenger operations.

Transitioning from a freight-exclusive to a combined freight and passenger rail system would require infrastructure improvements such as track and signal upgrades along with stations/platforms for passengers. Changes to the track and signal infrastructure might include signal system upgrades that comply with passenger rail safety standards, new sidings to allow for higher train frequency, and passenger train rolling stock (locomotive and passenger cars). The passenger rail service provider may also have infrastructure changes to improve ride quality. In this case, track upgrades might be required.

Stations and passenger platforms would also be added to the designated towns with scheduled stops. To accommodate passenger needs, the platforms and stations would require shelters, ticketing facilities, and accessibility features. There is also potential for the use of temporary structures, such as repurposed portable classrooms as warming structures, while constructing permanent stations/platforms gradually.

3.0 Market Analysis

3.1 Market Demographics

In order to estimate potential ridership and demand for the Alberta-Montana Passenger Rail service, population size and distribution in both regions are summarized. By analyzing population data, key demographic trends can be identified, including population growth rates

and age distribution. This data can be used to inform ridership estimates of residents who could utilize the service for intercity travel.

Tables 2 and 3 present population data within Alberta and Montana over the past 10 years. The data illustrates that Alberta's population is approximately four times the size of Montana's, with both regions demonstrating steady growth rates. The annual growth rate is calculated using the formula (N_t/N_t-1), where N represents population size, and t indicates time. It involves dividing the total population of the current year by the total population of the previous year.

Table 2. *Alberta Population Trends, estimates from Statistics Canada.*[15]

Date (t)	**Population Size (N)**	**Adult Population Size (15-64)**	**Child Population Size (0-14)**	**Senior Population Size (65+)**	**Annual Population Growth Rate (N_t/N_{t-1})**
Jan 1, 2014	4,027,497	2,862,944	756,678	464,026	1.028
Jan 1, 2015	4,113,697	2,888,055	774,547	481,889	1.021
Jan 1, 2016	4,171,847	2,902,444	791,384	502,233	1.014
Jan 1, 2017	4,215,506	2,914,193	801,611	525,296	1.010
Jan 1, 2018	4,263,957	2,937,356	809,975	550,944	1.011
Jan 1, 2019	4,324,254	2,964,361	816,941	580,392	1.014
Jan 1, 2020	4,392,958	2,987,626	823,276	610,974	1.016
Jan 1, 2021	4,418,338	-	-	-	1.006
Jan 1, 2022	4,465,537	-	-	-	1.011
Jan 1, 2023	4,598,444	-	-	-	1.030

Table 3. *Montana Population Trends, estimates from Census Bureau's American Community Survey.*[16]

Year (t)	Population Size (N)	Adult Population Size (19-64)	Child Population Size (0-18)	Senior Population Size (65+)	Annual Population Growth Rate (N_t/N_{t-1})
2014	993,700	597,800	229,800	166,100	-
2015	1,005,900	601,600	230,300	174,000	1.012
2016	1,015,100	598,800	235,300	181,000	1.009
2017	1,022,600	607,700	230,300	184,600	1.007
2018	1,034,000	603,200	232,800	198,000	1.011
2019	1,039,400	600,700	234,600	204,100	1.005
2020	-	-	-	-	-
2021	1,073,800	622,100	238,600	213,100	-
2022	1,093,400	629,800	243,300	220,300	1.018
2023	1,104,000	-	-	-	1.010

3.2 Travel Patterns

The Alberta-Montana Passenger Rail would serve as an alternative to several current methods of transportation. The most used methods along this route are road or air transport, including private vehicles, public bus services, and airplane travel. Within these methods of transport, there are various forms of passenger travel. The first is external travel, which encompasses travel that either starts, stops, or passes through the identified area.[17] Opposite external travel is internal travel, which includes local travel and intercity travel. Local travel is categorized as short-distance travel, typically under 80km, potentially to the local store or

commuting to a nearby workplace.[17] Intercity travel is categorized as long-distance travel, typically over 80km, potentially for recreation, business trips, or other.[17] The type of travel that the proposed Alberta-Montana Passenger Rail route will serve is intercity or long-distance travel.

3.2.1 Road Travel

Traffic Volume Data

Road travel is the most popular method of travelling between Alberta and Montana, since there are limited options for air and rail transport. Traffic volume data extracted from points along adjacent highways to the proposed railway offers insights into the utilization of existing transportation infrastructure and potential demand for the Alberta-Montana Passenger Rail. Transitioning from car traffic to passenger rail presents several advantages, including environmental benefits, decreased road maintenance costs due to reduced usage, and increased passenger safety.

The main car transportation routes from Calgary, AB to Coutts, AB follow Highway 2, Highway 23, and Highway 4. Table 4 shows the average annual daily traffic (AADT) from 2017-2022 from various locations along the roads adjacent to the proposed railway. The values are examples to demonstrate the traffic along the route, and full AADT datasets can be sourced from the Alberta Government webpage.

Table 4. *Traffic volume on roads adjacent to the proposed railway.*[18]

Highway	**Location Description**	**AADT 2017**	**AADT 2018**	**AADT 2019**	**AADT 2020**	**AADT 2021**	**AADT 2022**
HWY 2	S of Calgary near Aldersyde	55010	54680	54390	47360	50050	48960
HWY 2	S of 520 in Claresholm	8900	8620	9100	7640	8460	8240
HWY 23	S of 534 SE of Vulcan	2300	2080	2100	1900	2010	1940
HWY 23	S of 520 N of Barons	2360	2100	2140	1860	2000	1960

HWY 4	S of 508 SE of Lethbridge	6480	6360	6330	5480	5630	5600
HWY 4	W of 500 NW of Coutts	2000	1980	1980	1340	1420	1380

The main car transportation routes from Livingston, MT to Sweet Grass, MT follow Interstate 15, Route 287, and Interstate 90. Table 5 shows the AADT from 2017-2022 in various locations along the roads adjacent to the proposed railway. The values are examples to demonstrate the traffic along the route, and full AADT datasets can be sourced from the Montana Department of Transportation AADT Data.[19]

Table 5. *Traffic volume on roads adjacent to the proposed railway.*[19]

Highway	**Location Description**	**AADT 2017**	**AADT 2018**	**AADT 2019**	**AADT 2020**	**AADT 2021**	**AADT 2022**
I-15	Sweet Grass, near Canadian Border	2224	2197	2348	2151	2027	1970
I-15	1 mile N of Shelby	3186	3148	2470	2263	2086	2028
I-15	1 mile NW of Vaughn	4547	4492	4505	3340	3921	3999
I-15	2 miles SW of Cascade	4132	4082	4352	4013	4711	4378
I-90	Between Manhattan and Belgrade, W of Bozeman	15872	16064	17917	16519	19300	19202

Border Crossing Data

The proposed passenger rail service travels internationally across the Coutts, AB and Sweet Grass, MT border, which prompted an exploration of border crossing data to gain insights into cross-border travel patterns of personal vehicles. The border entry data offers an understanding of the volume of personal vehicles crossing the Alberta-Montana border, as well as limited data for the number of passengers within these vehicles. By tracking these metrics over time, trends can be recognized such as seasonal fluctuations, peak travel periods, and potential trends influencing cross-border mobility. This allows for the potential to gauge the market share that the Alberta-Montana Passenger Rail service could capture.

Table 6. *Personal vehicle counts and passenger counts at the Coutts, Alberta and Sweet Grass on a month-by-month basis. Sourced from the US Department of Transportation, Bureau of Transportation Statistics and Canada Border Services Agency.*[20,21]

	Entering Sweet Grass, MT		**Entering Coutts, AB**
Month, Year	**Personal Vehicles**	**Personal Vehicle Passengers**	**Non-Commercial Traffic**
Jan 2024	10442	20798	-
Dec 2023	12568	28488	-
Nov 2023	12111	24325	-
Oct 2023	17921	35179	25190
Sep 2023	15517	30748	28027
Aug 2023	19077	42342	42698
Jul 2023	19656	46941	48478
Jun 2023	14136	30918	34921
May 2023	12056	24731	31544

Apr 2023	10792	22333	44404
Mar 2023	10729	22417	29184
Feb 2023	9386	19344	19570
Jan 2023	-	-	19612
Dec 2022	-	-	20124
Nov 2022	-	-	18273
Oct 2022	-	-	23507

3.2.2 Air Travel

Montana's International Airport locations along the proposed route are found in Great Falls and Bozeman, while Alberta's International Airport along the route is in Calgary. Alberta also has a domestic airport in Lethbridge whose commercial flight service exclusively flies to Calgary. Despite the lack of direct flights between the international airports of Montana and Alberta, connecting flight options with layovers are available for passengers preferring air travel. The Alberta-Montana Passenger Rail service would provide a direct option for travelers between these destinations, and reduce the travel time of flying. In terms of emissions, short-distance flights are significantly more impactful on the environment than long distance flights, and so it would serve as a method of reducing GHG emissions if short-distance air travel was replaced by passenger rail. Overall, the introduction of a passenger rail system between Montana and Alberta is a promising solution to optimize travel between the regions by eliminating the need for short-distance or connecting flights.

3.2.3 Tourism Analysis

The Alberta-Montana Passenger Rail service would have a positive impact on tourism and economic development, offering enhanced connectivity and accessibility to regional attractions. For Alberta, destinations like Calgary, Edmonton, Canmore, and Banff would be more accessible through the Alberta-Montana Passenger Rail route, and would attract more

tourists from the US. With current proposals of railways travelling the Calgary-Banff and Calgary-Edmonton corridors, a railway would help to decrease traffic congestion caused by tourism. For Montana, the proposed railway would provide easier access to Yellowstone National Park and Glacier National Park, as well as the municipalities along the railroad. This improved connectivity is also expected to attract an influx of Canadian tourists to Montana. Additionally, the strategic alignment of the Alberta-Montana Passenger Rail and the Empire Builder in Shelby, MT would present an opportunity to encourage and promote further tourism. The passenger rail would create an incentive for travelers of the Empire Builder and tourists arriving from the three International Airports to explore attractions along the Alberta-Montana Passenger Rail route.

Alberta has a very profitable tourism sector, with a total of 34.6 million total tourists and CAD$10.1 billion in tourism expenditures in 2019.[22] In the same year, Calgary had 7.6 million tourist visits, bringing in CAD$2,585,013,317 in tourism revenue for the city, with average spendings per person of CAD$210.[23,24] Total domestic tourist spending was equal to CAD$2,269,672, of which CAD$613,253 was spent on public transport and CAD$495,903 on private vehicles.[23] Below Calgary, Southern Alberta had 3.92 million domestic tourist visits, with the average spending per person of CAD$147.[25] Total domestic tourist spending was equal to CAD$660,564, of which CAD$212,471 was spent on private vehicles.[25] This data provides context into transportation spending to gauge the demand and ridership revenue for a passenger rail service between Calgary and Livingston.

There is an opportunity for collaboration with Canadian tourism stakeholders who may be willing to support the development and promotion of tourism along the proposed rail route.

- **Tourism Calgary:** The Destination Management Organization for Calgary.
- **Tourism Lethbridge:** The Destination Management Organization of Lethbridge.
- **Travel Alberta:** The Destination Management Organization of the Government of Alberta.
- **The Tourism Industry Association of Alberta:** A not-for-profit, tourism association that advocates on behalf of all segments of Alberta’s tourism economy for a competitive and sustainable business environment that generates substantial economic value for the province.

- **SouthGrow Regional Economic Development:** A member-driven, non-profit regional economic development alliance in south-central Alberta.

In 2022, Montana had 12.5 million visitors, bringing US$5.82 billion in tourism revenue, of which US$1.9 billion was spent on transportation.[26] The market segment breakdown of tourism spending in Montana shows that 16% of total spending is on fuel, and 3% is on vehicle rentals.[27] This data provides context into transportation spending to gauge the demand and ridership revenue for a passenger rail service between Calgary and Livingston.

There is potential for collaboration with US tourism stakeholders who may be willing to support the development and promotion of tourism along the proposed rail route.

- **Tourism Matters to Montana:** A group of 23 regional and community destination organizations across Montana with the purpose of promoting tourism and managing visitors.
- **Tourism Regions:** Montana is separated into 6 Tourism Regions. The relevant Tourism Regions are Central Montana, Glacier Country Tourism, and Yellowstone Country.
- **Destination Management Organizations (DMOs):** Montana has a total of 20 DMOs, with relevant organizations in Helena, Belgrade, Big Sky, Bozeman, and Great Falls.
- **Montana Travel Association:** The statewide non-profit organization representing the many people, businesses and components that make up Montana's travel industry.
- **Montana Office of Tourism and Business Development:** Team within the Montana Department of Commerce that focuses on tourism promotion, marketing, and management.

3.3 Current Passenger Rail Projects, Proposals, and Routes in the Region

The proposed Alberta-Montana Passenger Rail would connect various existing and proposed passenger rail projects to create an interconnected transportation system. Currently, there are three relevant well-studied passenger rail projects proposed in Alberta and Montana, and one existing passenger rail service. The four passenger rail initiatives include:

- The Edmonton-Calgary Rail (proposed)

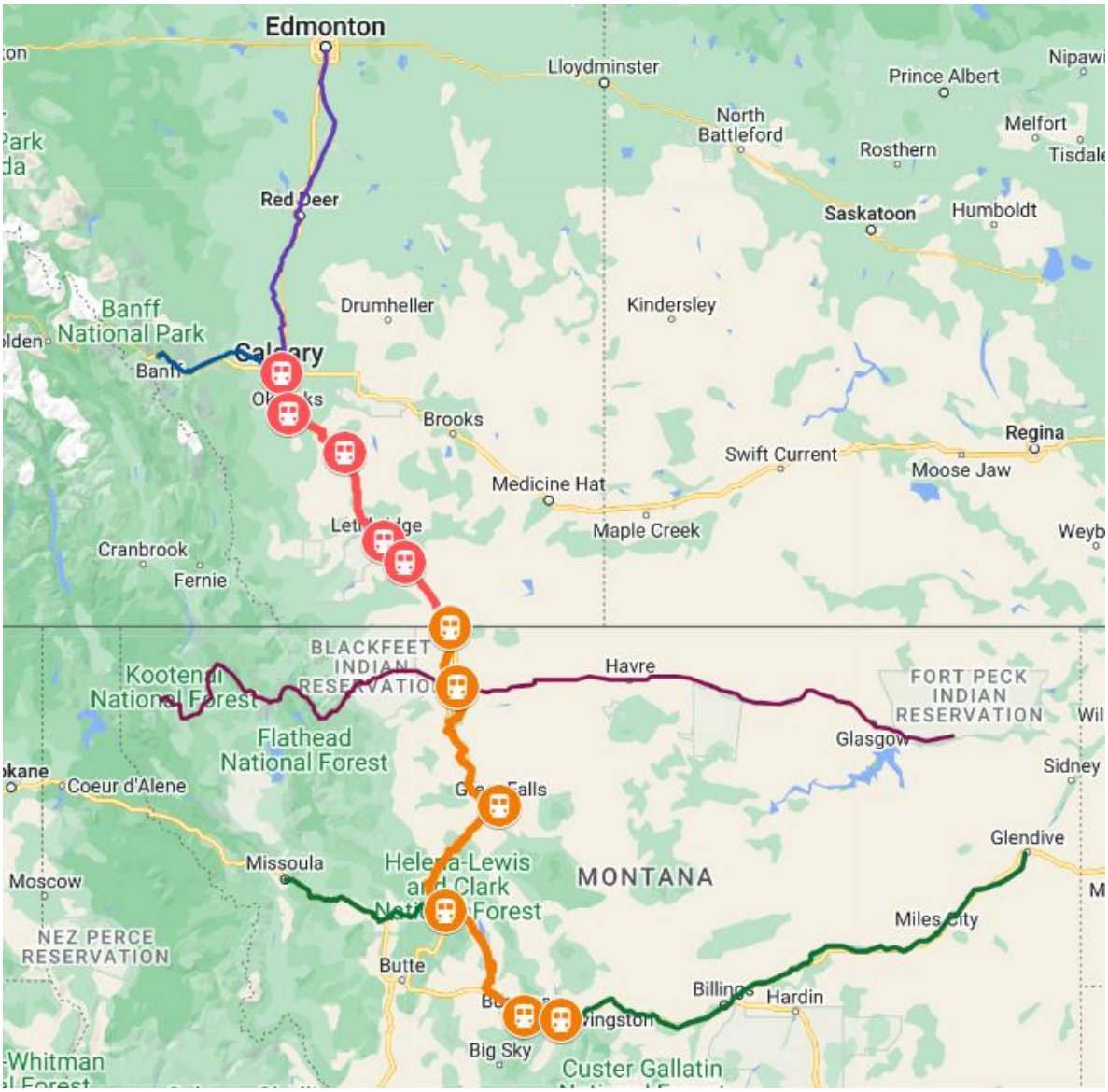
- The Calgary-Airport Banff Rail (proposed)
- The Empire Builder (operating)
- The North Coast Hiawatha (proposed)

Descriptions of each of these railways are presented in this section. Each passenger rail initiative highlights the benefits that an interconnected rail system would provide economically, environmentally, and socially. The railway initiatives also demonstrate the public interest and support, and economic viability that a passenger rail network through Alberta and Montana would provide.

In conjunction with the Alberta-Montana Passenger Rail project, these existing routes and proposals would interconnect to build a regional passenger rail network. In Canada, the Alberta-Montana Passenger Rail corridor intersects with the proposed Calgary-Edmonton High-Speed Rail Line and the Calgary Airport-Banff Rail, making Calgary a regional transportation gateway for the province. In the United States, the proposed route connects with the Empire Builder operated by Amtrak, enhancing connectivity for travelers and facilitating the flow of passengers between eastern and western destinations beyond Montana. Furthermore, the project complements the proposed restoration of the North Coast Hiawatha route, creating opportunities for greater mobility and tourism in Montana by bringing passengers southward from Alberta. By establishing greater connectivity in the region, the Alberta-Montana corridor lays the foundation for a comprehensive regional passenger rail network that spans across Alberta, Montana, and beyond.

Figure 2. *Map of the Proposed Alberta-Montana Passenger Rail route in red and orange connecting with the surrounding proposed and existing passenger routes. The train images indicate station/platform locations. Red indicates CPKC railway, and orange indicates BNSF railway. Dark purple represents the Edmonton-Calgary Route. Dark blue represents the Calgary Airport Banff Route. Dark red represents the Empire Builder Route through Montana. Dark*

green represents the North Coast Hiawatha route.



3.3.1 Edmonton-Calgary Rail

Since 1985, there have been multiple studies proposing a high-speed passenger rail traveling between Calgary and Edmonton to connect the two large populations efficiently.[28] The well studied proposals generally concluded that the high-speed rail would yield significant economic benefits including employment opportunities, increased tourism revenue, and additional tax revenues for Alberta and the federal government.[29] A past passenger rail service along this corridor ceased operation in 1985 due to underfunding.

The Prairie Link Rail is one proposal of a high-speed rail link between Edmonton and Calgary, which was proposed in 2021 and being studied by EllisDon and AECOM.[30] The railway would allow passengers to travel between the cities up to 400 km/h.[30]

A similar project has been proposed by Alberta Regional Rail for a commuter train to connect Calgary, Edmonton, and the surrounding cities (see Appendix C).[31] Alberta Regional Rail proposes offering services that link settlements to each other, and feed residents and visitors into the major urban transit authorities within the corridor using diesel locomotives retrofitted to hydrogen or battery electric power. This project is also considering development of transit-oriented development stations and platforms to serve smaller communities, including Maskwacis and Vulcan. Regional rail services are less likely to be profitable for smaller communities than express intercity services (Lethbridge to Calgary) and may require government funding; however these regional rail services often act as feeders for more profitable intercity lines which provide a socio-economic return to smaller communities and makes these communities more attractive.

A well-utilized Edmonton-Calgary route could incentivize the expansion of regional rail networks, potentially generating interest and investment in international services such as the Calgary-Livingston passenger route. Once operating, the Edmonton-Calgary Rail would be beneficial to the Alberta-Montana Passenger Rail by enhancing accessibility and convenience for travelers through offering connections to further destinations without the need for alternative transportation methods such as flights, buses, or cars.

3.3.2 Calgary-Airport Banff Rail (CABR)

The CABR is a new dedicated passenger rail system currently proposed that will run within CPKC's freight corridor, connecting seven stations: Calgary Downtown, Calgary Airport, Calgary Keith, Cochrane, Morley (Stoney Nakoda), Canmore, and Banff.[32] Notably, this project's inclusion of the Calgary Downtown to Calgary Airport link offers the potential of convenient express service every 15 minutes, addressing the transportation needs of the city by serving both commuters and tourists alike.[32] With an estimated ticket cost of just CAD$20 for Albertans travelling to Banff, the CABR aims to provide affordable, high-frequency service which will in turn reduce congestion on highways, support Alberta's tourism industry, and contribute to environmental sustainability.[32] Additionally, the CABR has widespread support across Alberta and Canada with polling numbers showing that 84% of Albertans and 90% of Canadians are in support.[32]

Moreover, the CABR project offers significant benefits beyond just transportation infrastructure. By diversifying Alberta's economy and attracting more tourists, it has the potential to generate more than CAD$1.2 billion in additional tourism spending annually.[32] Additionally, this project is expected to produce an economic output of CAD$5.1 billion for Canada (of which 84% is expected to occur within Alberta) and 20,000 new full time jobs, generating another CAD$1.17 billion in salaries and wages.[32]

The project also presents a significant opportunity to address environmental concerns in transportation and tourism. By providing a fast, convenient, and reliable alternative to highway travel, the CABR has the opportunity to reduce GHG emissions, alleviate traffic congestion, and minimize the overall environmental footprint of transportation. Hydrogen-powered rolling stock has been proposed for this project and is an option currently being explored which would make this project the first permanent hydrogen-powered passenger train in North America and be a catalyst for Alberta's hydrogen strategy and leadership in energy transition.[32] In alignment with Banff National Park's Net Zero 2035 initiative, the CABR further supports efforts to preserve Canada's natural heritage by facilitating a more sustainable tourism industry and reducing the reliance on polluting passenger vehicles within the park.

Finally, this project has not just piqued the interest of governments and the population, but also funding partners Liricon Capital Ltd. and Plenary Americas (a subsidiary of the CDPQ) which have submitted an Enhanced Unsolicited Proposal to the Government of Alberta's Ministry of Transportation, the Invest Alberta Corporation, and the Canada Infrastructure Bank to move the project forward.[33]

The CABR proposal exemplifies the economic and social benefits of increased tourism and mobility that passenger rail service provides. In addition, it shows the positive return on investment and effective engagement of P3s. In conjunction with the CABR, Calgary Airport, and Calgary-Edmonton route, the Alberta-Montana Passenger Rail would further solidify Calgary as a regional transportation hub and a major player in Canada's transportation strategy and innovation.

3.3.3 Empire Builder

The Empire Builder operated by Amtrak is a long-distance passenger train route spanning from Chicago to Seattle or Portland, with a junction in Spokane (see Appendix D). The proposed Alberta-Montana Passenger Rail strategically intersects with the Empire Builder in

Shelby, MT, offering travelers convenient access to a wide array of destinations in both the eastern and western regions. This connection enhances the travel experience by providing an alternative mode of transportation, allowing passengers to explore multiple destinations across the US.

Despite the 2020/2021 anomaly due to the pandemic, the Empire Builder regularly transports 300,000 - 500,000 passengers per year and generates >US$50,000,000 annually.[34] The connection of the Empire Builder and Alberta-Montana Passenger Rail in Shelby, MT offers long-distance travelers an alternative transportation mode to flying and increases the flow of tourism originating from along the Empire Builder into the Calgary-Livingston route. This integration not only enriches the travel landscape but also fosters economic growth and tourism development in the region.

3.3.4 Amtrak North Coast Hiawatha

South of the border, there is a proposal to restore the North Coast Hiawatha passenger rail route to connect Chicago to Seattle, passing through the northern American States. This route is generally regarded as a “restoration” rather than a new project since it was first introduced in 1971, but had a short lifespan and was discontinued by 1979. In regards to Montana specifically, this proposed route is positioned to connect Glendive, Miles City, Forsyth, Billings, Livingston, Bozeman, Helena, Missoula, and Paradise.[35] The restoration of this route would produce mobility for residents who do not have access to a personal vehicle and where there are not alternatives such as air or bus travel.[35] Additionally, this project will help to support the state’s tourism industry by providing a convenient travel option for Yellowstone National Park’s over 4 million annual visitors.[36] According to Amtrack’s 2008 North Coast Hiawatha study, it is estimated that restoring service would require capital investment of USD$619.8 million and incur an annual loss of USD$31.3 million, which exceeds the 2008 farebox recovery on 12 of Amtrak’s 15 long-distance routes.[2]

Although this project comes with sizable upfront costs, it is expected that a daily Amtrak service along this route would generate a total of US$270.5 million annually, with US$70.5 of that amount benefiting the specific counties in which the stations are located and US$200.2 million benefiting the rest of the state.[37] With increased connectivity in the region, the new rail service is expected to produce an additional 11% increase in induced new travelers who would not have travelled due to the current lack of service.[37]

Additionally, by providing another transportation option other than automobile travel, the seven states that this route connects can expect an estimated 45.9 million vehicle-miles travelled (VMTs) removed from highways and secondary roads, thereby creating a conservative total benefit of at least US$16.9 per year for municipalities and states from reduced road construction and maintenance costs.[37] Beyond just direct financial benefits, reducing VMTs by diverting automobile travel to trains also provides benefits to the communities by reducing pollution and emissions, while also lowering the number of deaths and injuries caused by motor-vehicle accidents.[37] This proposal also has widespread support from municipalities, counties, state Departments of Transportation, Senators, BNSF, and regional coalitions who have all written letters of support.[14]

With a connection to the Alberta-Montana Passenger Rail route in Bozeman and Helena, this would create a north-south corridor connecting to this proposed east-west corridor, giving travelers another way to move east to west in addition to the Empire Builder. The comprehensive studies conducted on the North Coast Hiawatha route also show the significant economic benefits and tourism growth that passenger rail provides, along with the benefits to local communities and residents. It also highlights the support from politicians and communities through their letters of support for building this rural regional rail network.

4.0 Funding Models and Potential Partners

4.1 Government Funding

Government funding is a traditional approach to financing a large-scale public infrastructure project such as the Alberta-Montana Passenger Rail. In this model, the government allocates public funds to cover the project's costs, including planning, construction, and operation. Additionally, government funding can be sourced from various levels of government including federal, provincial/state, and municipal authorities. This model of funding would allocate taxpayer dollars sourced from government budgets, infrastructure investment programs, and dedicated transportation funds to cover the initial capital expenditures, ongoing operating costs, and maintenance expenses of this project. As this model solely uses public funds, the project would be owned and controlled by public entities such as transportation departments, crown corporations, or transportation authorities.

The government funding model ensures that the project remains accountable to the public and in the public's interest since elected officials oversee the allocation and management of public funds. This transparency also helps build trust and confidence among stakeholders and within communities. Additionally, governments often have access to low-cost funding options through grants, bonds, and government-backed loans, which can reduce borrowing costs for the project and lower the overall financing expenses.

However, this model of funding also poses its own set of drawbacks and challenges. Government funding for large infrastructure projects is subject to budgetary constraints and competing priorities, which may limit the availability of dedicated funds and delay project timelines. Political considerations also pose another challenge since government-funded projects are susceptible to political influences and changes in government priority, which can result in funding uncertainty and project delays. These political factors may also impact decision-making and project outcomes.

4.2 Public-Private Partnerships (P3s)

A P3 model is a newer financing model for infrastructure projects where public and private entities collaborate to finance, construct, operate, and maintain the project. Under this model, private sector partners contribute capital, expertise, and resources alongside government funding to deliver the project.

This model of funding enables access to private sector capital, expertise, and innovation, which can help accelerate project delivery while mitigating financial risks for the government. It also allows for the sharing of risks associated with the project such as construction delays, cost overruns, and revenue fluctuations from solely the public sector which reduces the financial burden to taxpayers and incentivises private partners to effectively manage risks. Private sector involvement also fosters innovation and efficiency in the project's design, construction, and operation since private partners are incentivized by market forces to remain cost-effective while increasing performance and value.

Although this funding model provides its own set of benefits, it also comes with drawbacks. P3 arrangements require careful planning, negotiation, and administration which can lead to an added layer of complexities through managing diverse stakeholder interests and navigating contractual obligations. They also introduce a profit motive for infrastructure projects intended for public benefit, which may lead to the prioritization of private financial returns over

broader societal objectives. Deals with the private sector may limit public sector control over project decision-making, operation, and ownership which can raise concerns about a project's transparency, public accountability, and democratic oversight; therefore, balancing private sector innovation and public sector interests in a P3 partnership requires comprehensive governance structures and stakeholder engagement.

4.3 Potential Private Partners and Funding Grants

4.3.1 The Caisse de dépot et placement du Québec and its subsidiaries

The Caisse de dépot et placement du Québec (Quebec Deposit and Investment Fund) (CDPQ) serves as the manager of Quebec's public pension fund, alongside managing parapublic pensions and insurance programs within the province. With total net assets reaching CAD$434.2 billion by the end of 2023, it is one of the largest institutional investors in Canada, boasting investments across Quebec, Canada, and the world.[38] Notably, infrastructure holds a significant position within its portfolio, constituting 14% of its assets and positioning the CDPQ as one of the world's largest institutional investors in this sector.[38] In the area of passenger rail, the CDPQ holds a 19.31% ownership stake in the Eurostar company serving Western Europe, further solidifying its expertise and presence in the infrastructure sector.[38]

Under the umbrella of the CDPQ is CDPQ Infra, a wholly-owned subsidiary dedicated to spearheading sustainable major public infrastructure projects. Beyond providing financial backing, CDPQ Infra assumes a comprehensive role encompassing project planning, financing, execution, and operation.[39] A prime example of its innovative approach is the Réseau express métropolitain (Metropolitan Express Network) (REM) – an electrified light rail network spanning 67 kilometers in Montreal, which showcases CDPQ Infra's capabilities in delivering world-class infrastructure solutions.[39]

Additionally, Plenary Americas, another subsidiary of the CDPQ, specializes in long-term investment, development, and management of infrastructure, particularly in P3s. This subsidiary has already expressed its interest in passenger rail projects within Alberta, as evidenced by its submission of an Enhanced Unsolicited Proposal to the Government of Alberta's Ministry of Transportation, the Invest Alberta Corporation, and the Canada Infrastructure Bank to advance the CABR project forward.[33]

Ultimately, the CDPQ and its relevant subsidiaries bring unparalleled expertise and financial backing which would pave the way for the creation of an innovative, sustainable, and

efficient passenger rail system linking Alberta and Montana. Additionally, such involvement ensures that this project remains in the hands of the public good, aligning with broader objectives of regional development and prosperity.

4.3.2 Canada Infrastructure Bank (CIB)

The CIB is a federal crown corporation established in 2017 with a mandate to invest in and attract private capital to infrastructure projects that contribute to economic growth, job creation, and sustainability across Canada. Operating independently from the government, the CIB collaborates with governments, indigenous partners, private sector entities, and institutional investors to address infrastructure gaps and promote innovation in project financing and delivery.

The CIB's suitability as a funding partner for a passenger rail project between Alberta and Montana stems from its expertise in infrastructure investment and its commitment to supporting transformative projects that benefit communities and the economy. It also provides support not just for large investments, like it's CAD$1.28 billion investment in Montreal's REM system,[40] but also in the earlier stages such as with its involvement in the High Frequency Rail (HFR) project in Ontario and Quebec and the proposed CABR in Alberta. With the HFR project, the CIB has committed CAD$55 million in funds to support the project in the planning and pre-procurement stage to move the project forward,[41] and in the case of the CABR, it has signed a memorandum of understanding to conduct a feasibility study.[42] As a partner for the Alberta-Montana Passenger Rail, the CIB would provide invaluable support through the different stages of this project.

In addition to providing financial support, the CIB offers strategic advice, project development expertise, and access to its network of domestic and international partners. Through this collaboration, Alberta-Montana Passenger Rail can benefit from industry-leading insights in structuring, procurement, and risk management to ensure efficient and effective project delivery. Moreover, the CIB's involvement can help attract private sector investment, thereby reducing costs and optimizing risk allocation which enhances the project's overall feasibility and sustainability.

4.3.3 Grant Opportunities

The following list consists of possible government grant opportunities for the Alberta-Montana Passenger Rail that could offer funding, especially if this proposal becomes formalized and taken on by states and/or local communities.

Federal Railroad Administration Corridor Identification and Development Program[43]

The Corridor Identification and Development Program is a planning program administered by the FRA to provide grants for identifying potential intercity passenger rail projects in the United States. For each selected Corridor, the FRA awards the grantee US$500,000 for eligible activities related to the initiation of a grantee's Corridor development effort, including the development of a scope, schedule, and cost estimate for preparing a service development plan for a Corridor. Eligible applicants for this grant include Amtrak, states, groups of states, entities implementing interstate compacts, regional passenger rail authorities, regional planning organizations, political subdivisions of a state, and federally recognized Indian tribes. Although this is an American program intended to identify routes benefiting the USA, there are numerous Corridors approved for funding by the FRA that include Canada such as the Cascadia High-Speed Ground Transportation (connecting Vancouver, BC to Portland, OR via Seattle, WA), the Vermonter Corridor (improving the existing Corridor and the viability of extending service north to Montreal, QC, along with creating a new US Customs Preclearance facility at Montreal's Central Station), the Wolverine Corridor (connecting Chicago, IL to Detroit, MI, with an extension to Windsor, ON), and the Adirondak Corridor (improving the existing Corridor between New York, NY and Montreal, QC by upgrading infrastructure, adding a second daily round trip, and completing a US Customs Preclearance facility in Montreal).

Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program[44]

This American program offers over a total of US$1.4 billion in funds to improve the safety, efficiency, and reliability of intercity passenger and freight rail. It offers a wide variety of eligible projects with the most relevant options relating to this project being the deployment of rail safety technology; capital projects for intercity passenger rail; regional rail and corridor service development plans and environmental analyses; any research that the Secretary finds necessary; and research, development, and testing to advance and facilitate innovative rail projects.

Railroad Crossing Elimination Grant Program[45]

This American program provides funding for highway-rail or pathway-rail grade crossing improvement projects that aim to improve the safety and mobility of people and goods. It provides a total of over US$573 million for projects including track relocation; grade separation or closure; improvement or installation of protective devices, signals, or signs; the planning, environmental review, and design of an eligible project; and other means of improving safety in relation to this program.

Railroad Rehabilitation & Improvement Financing (RRIF)[46]

This American program provides a total of up to US$35 billion in direct loans and loan guarantees to finance the development of railroad infrastructure. These loans offer a low interest rate that does not accrue until funds are drawn and provides up to a 35 year repayment period with no prepayment penalty. These funds may be used to acquire, improve, or rehabilitate intermodal or rail equipment or facilities; develop or establish new intermodal or railroad facilities; reimburse planning and design expenses relating to activities previously listed; refinance outstanding debt incurred for the purposes previously listed; and finance transit-oriented development. Eligible borrowers include railroads, state and local governments, and government-sponsored authorities and corporations, limited option freight shippers that intend to construct a new rail connection, and joint ventures that include at least one of the preceding.

Section 130 Railway-Highway Crossings Program[47]

The Railway-Highway Crossings Program (Section 130) provides more than US$230 million in federal funds to improve safety at railway-highway crossings. The program is run by the US Department of Transportation and allocates funding to states annually to install new active warning devices, upgrade existing devices and improve grade crossing surfaces. This program has successfully reduced fatalities at the improved crossings by 32%.

5.0 Regulatory and Permitting Requirements

The proposed Alberta-Montana Passenger Rail crosses the Canada-United States border, and therefore necessitates compliance with Federal Regulations in both countries. This

section lays the groundwork by outlining the regulatory framework of key safety and environmental requirements governing the proposed passenger rail.

5.1 Safety Requirements

5.1.1 Transport Canada's Railway Safety Act

The Railway Safety Act is Canadian legislation that enhances the safety of railway operations. Transport Canada regularly conducts audits and safety inspections to ensure railway companies comply with the Railway Safety Act as part of Transport Canada's Rail Safety Program.[48] When creating a pilot project plan for the Alberta-Montana Passenger Rail route, elements of the Railway Safety Act should be considered and their relevance to the project are summarized below.

Railway Operating Certificates

There are two operating certificates required. A Railway Operating Certificate is an official document issued by Transport Canada to authorize a railway company to operate in Canada and is currently issued for both Canadian Pacific Railway and BNSF Railway Company.[49] A Certificate of Fitness can be applied for when the insurance requirements for passenger rail services are met.[50]

Railway Safety Management System (SMS) Regulations

The Railway Safety Act requires federal railway companies to meet the minimum requirements of a Safety Management System, which is a comprehensive framework for identifying, assessing, and managing safety risks associated with railway operations.[51]

Grade Crossings Regulations

The Railway Safety Act addresses safety considerations at railway crossings through requirements surrounding warning signs, signals, gates, and crossing improvements to reduce the risk of collisions.[52]

Locomotive Safety Rules

The Railway Locomotive Inspection and Safety Rules outlines requirements and guidelines for locomotive design, inspection, and filing requirements.[53] Locomotive design refers to general design, safety control equipment, audible signalling, etc.[53] Locomotive inspection

refers to the ongoing inspection of wheels, axels, brakes, windows, etc to identify risks to safety.[53] Locomotive filing refers to record keeping that can be presented to the Department upon request.[53]

Accessible Transportation for Persons with Disabilities Regulations (ATPDR)

The ATPDR is a set of rules and regulations related to accessibility on passenger rails, as well as security and border screening.[54] The requirements are enforceable by monetary penalties. The Canadian Transportation Agency offers guides and resources for implementing accessibility measures on passenger rail.[54]

5.1.2 US Federal Railroad Safety Act

The Federal Railroad Safety Act grants the Federal Railroad Administration authority to regulate railroad safety in the US, covering track maintenance, equipment standards, operating practices, and employee safety. The official bill summary for the Railway Safety Act from March 1/2023 is “Specifically, the Department of Transportation (DOT) must issue safety regulations for trains carrying hazardous materials to require that rail carriers or shippers (1) provide state emergency response commissioners with advanced notice and information about the hazardous materials; (2) reduce blocked rail crossings; and (3) comply with certain requirements regarding train length and weight specifications, track standards, speed restrictions, and response plans.”[55] When completing a pilot project for the Alberta-Montana Passenger Rail, regulations provided in the Railroad Safety Act and from the Department of Transportation should be analyzed.

5.2 Environmental Requirements

5.2.1 Environmental Regulations

Major projects in Canada and the United States are subject to environmental regulations to ensure that the least amount of environmental degradation occurs. Tables 7 and 8 provide a list of Federal and Provincial/State Legislation that could influence the Alberta-Montana Passenger Rail initiative.

Table 7. *Relevant Environmental Legislation (Canada).*

Legislation	**Description / Relevance to the Project**

Federal	
Species at Risk Act (2002)	The Species at Risk Act protects Canadian indigenous wildlife from becoming extirpated or extinct.[56] The Alberta-Montana Passenger Rail will be required to accommodate species at risk near the project site when establishing train stations, platforms, or potential modifications to the track.
Migratory Birds Convention Act (1994)	The Migratory Birds Convention Act protects migratory birds, along with their nests and eggs in Canada.[57] The Alberta-Montana Passenger Rail will be required to accommodate migratory bird species' nesting sites in accordance with this Act.
Canadian Environmental Protection Act (1999)	The Canadian Environmental Protection Act contributes to sustainable development through pollution prevention to protect both the environment and human health. The Alberta-Montana Passenger Rail may be influenced by this Act.
Canadian Environmental Assessment Act (2012)	The Canadian Environmental Assessment Act requires environmental assessments for designated projects that may have significant environmental effects.[58] The Alberta-Montana Passenger Rail may be required to complete Environmental Assessments in accordance with this Act.
Provincial	
Alberta Environmental Protection and Enhancement Act	The Environmental Protection and Enhancement Act requires projects to obtain approval for certain land, water and air projects.[59] The Alberta-Montana Passenger Rail may need to obtain approval and registrations by completing an EPEA application.
Alberta Land Stewardship Act	The Alberta Land Stewardship Act allows the government to provide direction and leadership in identifying current and future land-use objectives of the Province.[60] The Alberta-MontanaPassenger Rail may be influenced by this Act.

Table 8. *Relevant Environmental Legislation (US).*[61]

Legislation	**Description / Relevance to the Project**
Federal	
The Clean Air Act (1990)	The Clean Air Act is a comprehensive federal law that regulates air emissions. This law authorizes EPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and public welfare and to regulate emissions of hazardous air pollutants.[62]

	The Alberta-Montana Passenger Rail would have to regulate locomotive emissions in accordance with the Act. Find more on emission reduction in Section 5.2.2.
The Endangered Species Act (1988)	The Endangered Species Act protects fish, wildlife, and plants that are listed as threatened or endangered.[63] The Alberta-Montana Passenger Rail will be required to accommodate species at risk near the project site when establishing train stations, platforms, or potential modifications to the track.
The Wild and Scenic Rivers Act (1968)	The Wild and Scenic Rivers Act protects the natural, cultural, and recreational value of rivers by conserving their visual and cultural appeal. The Alberta-Montana Passenger Rail may be influenced by the Act.
The Clean Water Act (1972)	The Clean Water Act regulates pollution and contaminants to protect water quality of waterways. The Alberta-Montana Passenger Rail may have an impact on the water quality of surrounding areas and would have to operate in accordance with the Act. Find more on pollution and contaminants in Section 5.2.2.
The Safe Drinking Water Act (1996)	The Safe Drinking Water Act has set health-based standards for drinking water, and all levels of government are responsible for ensuring these standards are met. The Alberta-Montana Passenger Rail may be influenced by the Act.
US National Environmental Policy Act	The National Environmental Policy Act requires environmental accountability from agencies like the FRA, who must provide environmental impact considerations for every major project prior to making decisions.[64] The three classes of environmental considerations are Categorical Exclusions, Environmental Assessments, and Environmental Impact Statements. **Categorical Exclusions (CE):** Categorical Exclusions are types of projects that the FRA has determined normally do not have a significant effect on the human environment, based on past projects. Therefore, they generally do not require an Environmental Impact Statement (EIS) or an Environmental Assessment (EA).[64] **Environmental Assessments (EA):** Environmental Assessments are required when the impacts of a project are unknown. If the results show the project to have no significant impacts on the environment, a Finding of No Significant Impact (FONSI) must be produced. If the EA determines there to be significant impacts, then an Environmental Impact Statement is required. **Environmental Impact Statements (EIS):** An Environmental Impact Statement is created when a project will cause significant impact to the environment. An EIS is a comprehensive document that must detail the extent of the environmental impact and include alternative approaches. The Alberta-Montana Passenger Rail may be required to complete environmental considerations in accordance with this Act.

State	
Montana Environmental Policy Act	The Montana Environmental Policy Act serves to protect the natural environment of Montana and requires public participation (in the form of public notice, public hearings, etc) in the environmental review process.[65] Similar to NEPA, the Act requires agencies to conduct Environmental Assessments when significant environmental impact is expected. The Alberta-Montana Passenger Rail may be influenced by the Act.
Montana Water Quality Act	The Montana Water Quality Act serves to protect water resources in Montana from pollution and contamination. The Alberta-Montana Passenger Rail might be influenced by this Act if rail activity affects water bodies.
Montana Natural Streambed and Land Preservation Act	The Montana Natural Streambed and Land Preservation Act protects streambeds, floodplains, and riparian areas from land use activities. The Alberta-Montana Passenger Rail might be influenced by this Act if rail activity affects areas surrounding water bodies.

5.2.2 Environmental Impact Considerations

When the Alberta-Montana Passenger Rail project moves forward, an in-depth Environmental Impact Assessment based on a pilot project would need to be performed to provide a more detailed analysis of potential environmental impacts of construction and operation. In this section, some preliminary environmental considerations, mitigation methods, and regulatory requirements are recommended to assist the planning process for the railway to improve environmental sustainability of the project.

Emissions

Importance: In the face of climate change, GHG emission reduction is an essential consideration for any transportation initiative. The transportation sector contributes 22% of global emissions, and roughly 2% originates from railroad transportation.[3] The integration of low-emission modes such as passenger rail is vital to transition towards a more sustainable future.

Regulations: Transport Canada's Railway Safety Act - Locomotive Emissions Regulations details the policy of emission allowance from locomotives.[66] In addition to setting limits for emissions, these regulations also require emissions testing, anti-idling compliance, and filing reports with Transport Canada.[66] The US Environmental Protection Agency's Regulations for Emissions from Locomotives (1990) also provides locomotive emission standards. Within the

Electronic Code of Federal Regulations (e-CFR) the relevant sections to emissions are Part 1033 - Control of emissions from Locomotives, Part 1065 - Engine Testing Procedures, Part 1068 - General Compliance Provisions for Highway, Stationary, and Non-Road Programs, and Part 1074 - Preemption of State Standards and Procedures for Waiver of Federal Preemption for Non-Road Engines and Non-Road Vehicles.[67]

Mitigation: While passenger rail is currently one of the cleanest forms of transportation, new technology offers enhanced methods of mitigating GHG emissions. Direct emissions are primarily produced by rolling stock through engine exhaust and energy consumption. The most prevalent method of reducing direct emissions would be switching fuel sources to a non-diesel locomotive option. A study compared several different fuel types for locomotives, determining that hydrogen and electric fuel options are preferred, and that the environmentally worst option is diesel powered.[8] Overall, the comparative analysis determines that battery-hydrogen hybrid locomotives are the best choice as a future locomotive technology.[8] Another method of decreasing direct emissions is to improve energy efficiency of the train, such as using lighter materials in trains, using braking systems that allow energy recovery, and improving aerodynamic properties of trains through design.[68]

Indirect emissions of rail transport arise through the development and maintenance of infrastructure and rolling stock. Roughly 28% of the total emissions associated with railway transportation arise from railroad infrastructure, including construction and maintenance.[68] Proper supply chain management can mitigate material transport impacts. Recycling and waste reduction initiatives of materials can also reduce the amount of construction materials that end up in landfills.

Pollution and Contaminants

Importance: Railway transport is a significant source of heavy metal contaminants in the environment. Heavy metals can result from the abrasion of railway tracks and wheels or from the corrosion of metal structures like bridges and tunnels which release lead, cadmium, and nickel.[10] Heavy metal accumulates in the soil and water, and could potentially pose a health risk. While technology is still advancing toward solutions for heavy metal contamination, railroads comparatively produce less contamination than highways. A passenger rail would effectively remove vehicles from the roads, thereby contributing to overall lower amounts of heavy metal contamination. Another source of contamination in railroads is the use of creosote to treat

railroad ties. Creosote is a wood preservative pesticide that can cause health issues to fish and invertebrates.[69]

Mitigation: There is potential to explore alternative materials to mitigate significant sources of contaminants. In the case of railroad ties, traditional creosote treated railroad ties can be replaced by concrete railway ties, composite ties, and even composite ties made entirely from recycled plastics.

Noise Pollution

Importance: Noise pollution is the unwanted sounds that arise from railway transport that cause mental, emotional, and physical health effects to humans and other species.[70] In humans, noise pollution can cause irritation, anxiety, hypertension, sleep problems, and hearing loss.[70] For wildlife, noise pollution can negatively influence behavioural characteristics. For example, species that rely on hearing for hunting, foraging, or listening for predators would be negatively impacted by frequent loud noises.

Regulations: In the Canada Transportation Act, Section 95.1 states the regulations for noise pollution from locomotives, determining that “a railway company shall cause only such noise and vibration as is reasonable, taking into account (1) its obligations under sections 113 and 114 of the Act, if applicable (2) its operational requirements; and (3) the area where the construction or operation is taking place.” [71] In the US, the FRA’s Office of Railroad Safety is responsible for Railroad Noise Emissions Compliance Regulation, which is found in the Code of Federal Regulations, Part 210 - Railroad Noise Emission Compliance Regulations. This details the limits of sound levels that can be produced from railroad equipment and horns.[72]

Mitigation: Noise pollution from vibrations emitted from rolling noise can be mitigated by noise dampening technologies, including rail fastenings, under sleeper pads, and rail dampers.[70] Additionally, various forms of noise barriers could be constructed based on location. For large expanses, noise barriers such as trenches or embankments would reduce noise by 25dB.[70] Noise reducing structures can be made from soil, wood, or concrete. Dense vegetation lining the railroad also offers a noise buffer.

It's important to note that highways are another significant source of noise pollution. Highway noise increases when there are heavier traffic volumes and higher vehicle speeds, which means that reducing the number of vehicles on the roads would reduce the overall noise pollution caused by highways. The introduction of a passenger rail service presents an

opportunity to effectively divert vehicles from the highways, thereby reducing the noise pollution from that source. This would have a positive effect on the health of the people who live nearby busy roadways.

Habitat Fragmentation and Wildlife Mobility

Importance: Transportation corridors cause habitat fragmentation, which is the separation of large habitat expansions resulting in isolated patches. Fragmentation affects wildlife mobility, which can negatively influence wildlife population dynamics. For example, species may be separated by the tracks causing allopatric speciation, or species may cross the tracks and risk collision and therefore decrease in population size.[8]

Regulations: The Canadian Species at Risk Act (2002) and the American Endangered Species Act (1988) both serve to protect wildlife that is threatened or endangered. Compliance with the legislation would be required during the construction and operation of the Alberta-Montana Passenger Rail to ensure that development and rail service do not interfere with wildlife migration.

Mitigation: To reduce habitat fragmentation and wildlife collisions, measures can be taken such as wildlife corridors, physical barriers, and warning signals.[73] Wildlife corridors can be over- or underpasses that allow for animal migration safely across the tracks. Some wildlife corridors can be as small as drainage culverts or tunnels that allow amphibians or small mammals to travel through, or larger structures such as ecoducts or green bridges for large mammals.[73] Physical barriers such as fencing can be used to direct wildlife to the crossings. Physical barriers can also be placed at high collision areas, but this is not recommended without wildlife corridors as it could result in even higher levels of fragmentation. Ultrasonic warning devices that produce a high-pitched frequency to alert animals on the track could also be utilized, and it is shown that trains equipped with warning signals collided with fewer moose than non-equipped trains.[73]

6.0 The Future Moving Forward

6.1 Garner Support Through Community and Stakeholder Engagement

Effective community and stakeholder engagement serves as the basis for generating interest and garnering crucial support for this project, especially considering that this is a new proposal that has not been studied prior to this report. Engaging with an array of stakeholders, including local residents, businesses, advocacy groups, indigenous communities, and governmental organizations ensures that their perspectives are incorporated and reflected in the project's development. By encouraging open dialogue and actively soliciting input from these stakeholders, this project can cultivate a collaborative environment where their voices are heard, valued, and integrated into the decision-making process.

To amplify awareness and understanding of the project's objectives and benefits, it is necessary to provide accessible resources and platforms for residents and stakeholders. Initiatives such as a dedicated website, educational materials, and targeted outreach campaigns can serve as effective tools for raising awareness about the project's benefits, addressing misconceptions, and mobilizing public participation and support. By leveraging these resources, stakeholders can be empowered to make informed decisions, engage meaningfully with the project, and contribute to its success.

Moreover, by actively listening to and addressing concerns, aspirations, and feedback, the project builds trust, cultivates a sense of ownership, and enhances its overall legitimacy and acceptance within the community, which is essential for moving this project forward. By demonstrating responsiveness and transparency in addressing stakeholder input, the project can cultivate a supportive environment conducive to collaboration and partnership. Ultimately, by building a coalition of support through a community-driven approach, it lays a solid foundation for this project's continued progress and success.

6.2 Build a Coalition of Support

Creating a broad coalition of support from the community and stakeholder engagement is essential for amplifying the project's influence and mobilizing the resources necessary for its realization. This coalition should encompass a broad spectrum of stakeholders, including

municipalities, indigenous communities, policymakers, industry leaders, labour unions, and community advocates, spanning both Alberta and Montana. By uniting stakeholders with diverse interests and perspectives under a common vision for the project, the coalition of support enhances its advocacy efforts, expands its political influence, and strengthens its capacity to navigate challenges.

One strategy for building this coalition involves gathering letters of support from municipal and indigenous governments. These letters serve as a tangible expression of endorsement and commitment from key stakeholders which lends credibility and legitimacy to the project's objectives. By securing support from local and indigenous authorities, the project demonstrates its alignment with regional priorities, values, and aspirations which creates a sense of ownership and investment in its success. Moreover, these letters of support carry weight in political decision-making processes which helps to sway opinion, garner political backing, and secure funding for the project.

In addition to gathering letters of support, the supporters of this project can come together through various engagement strategies to build relationships and facilitate collaboration among stakeholders. Hosting joint meetings, workshops, and roundtable discussions provides opportunities for stakeholders to exchange ideas, address concerns, and explore possibilities for teamwork. Furthermore, from these collaborative events and shared aspirations, formal partnerships and alliances can be established to form a coalition with key entities which enables coordinated action and strategic alignment across diverse sectors and interest groups. By developing a cohesive coalition of support, the project gains momentum, credibility, and resilience, thereby positioning it for success in advancing toward its goals.

6.3 Move From Informal to Formal Partnerships

As a multi-jurisdictional project spanning the international border between Alberta and Montana, this passenger rail initiative requires close coordination, cooperation, and collaboration among the various government entities and stakeholders on both sides of the border. Establishing formal partnerships and intergovernmental agreements between relevant state, provincial, and federal agencies is essential for addressing regulatory complexities, aligning policy objectives, and implementing the project.

By formalizing partnerships and intergovernmental agreements, the project gains the necessary structure and framework to effectively address regulatory requirements and secure

funding opportunities. Negotiating memoranda of understanding, joint agreements, and other legal instruments not only solidifies collaboration frameworks but also outlines clear project milestones, roles, responsibilities, and accountability mechanisms among stakeholders. This formalization process also brings credibility and legitimacy to the project which enhances its standing in the eyes of potential funding partners and regulatory authorities. Formalizing the project's structure and governance enhances its ability for various funding programs and grants, particularly those from governments and potential P3 partners. By demonstrating a formal commitment to collaboration and willingness to bring the project to fruition, the Alberta-Montana Passenger Rail project becomes more attractive to potential funding partners and investors which increases its chances of securing the necessary resources for implementation.

In addition to securing funding, formal partnerships and intergovernmental agreements facilitate cooperation and shared responsibility among project stakeholders. By aligning policy objectives, streamlining decision-making processes, and enhancing coordination mechanisms, these partnerships lay the groundwork for effective project implementation and long-term success. Ultimately, formalizing the project's structure and governance is essential for navigating the complexities of a cross-border initiative and advancing it towards successful realization.

7.0 Conclusion

The importance of the Alberta-Montana Passenger Rail project extends beyond just improving transportation infrastructure; it represents a strategic investment in regional economic development through unlocking new economic opportunities, promoting tourism, and improving accessibility for residents and visitors alike. Moreover, this project aligns with broader policy objectives of promoting sustainable transportation, enhancing rural equity, and building resilient communities. As North America navigates the challenges of population growth, climate change, and economic difficulties, initiatives such as the Alberta-Montana Passenger Rail project represent an example of forward-thinking infrastructure development. The initiative to create a passenger rail connection between Alberta and Montana holds significant promise to enhance regional interconnectivity, improve economic and tourism development, and offer a safe and sustainable travel option.

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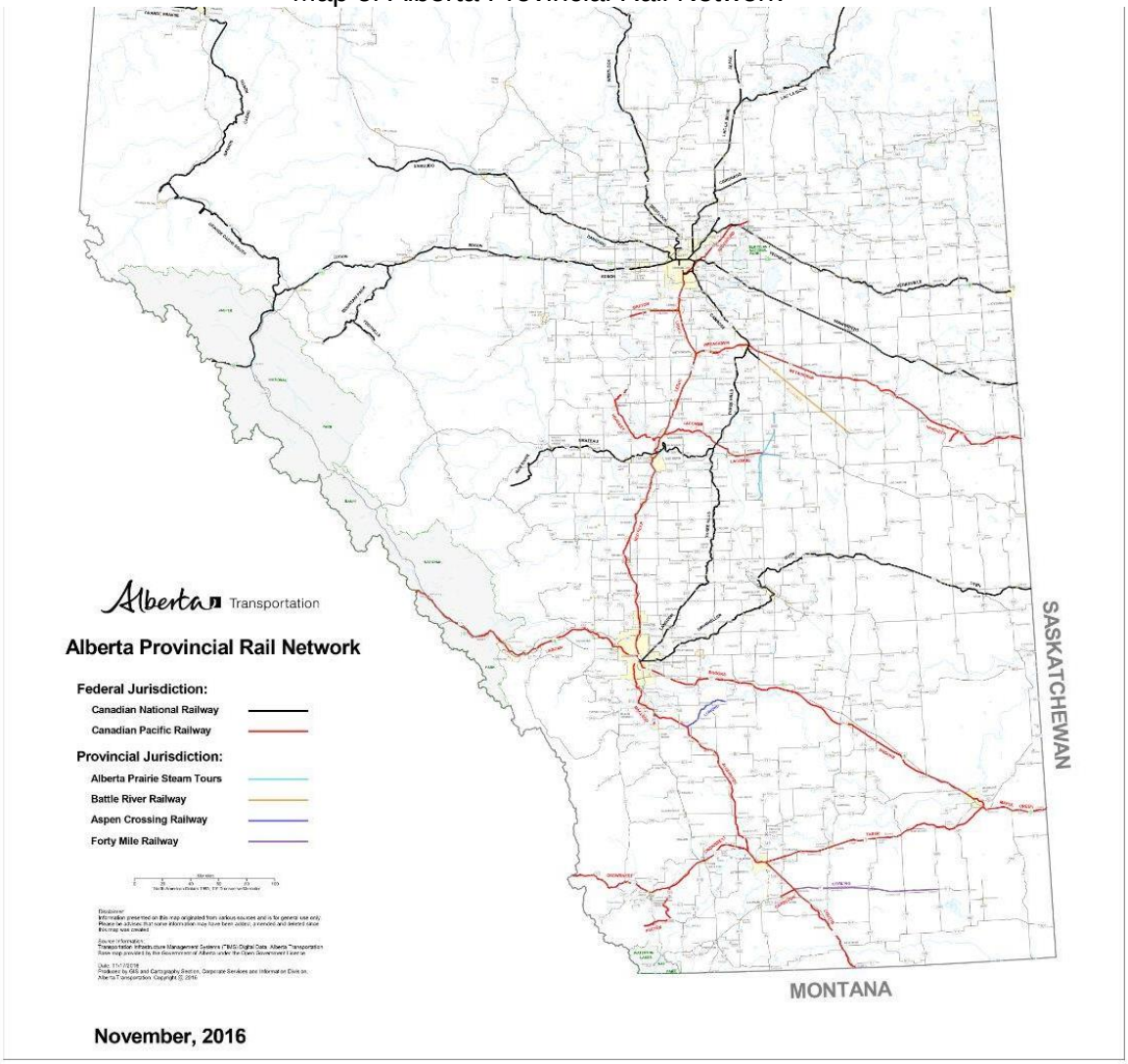
Appendix

Appendix A
Map of Alberta Provincial Rail Network



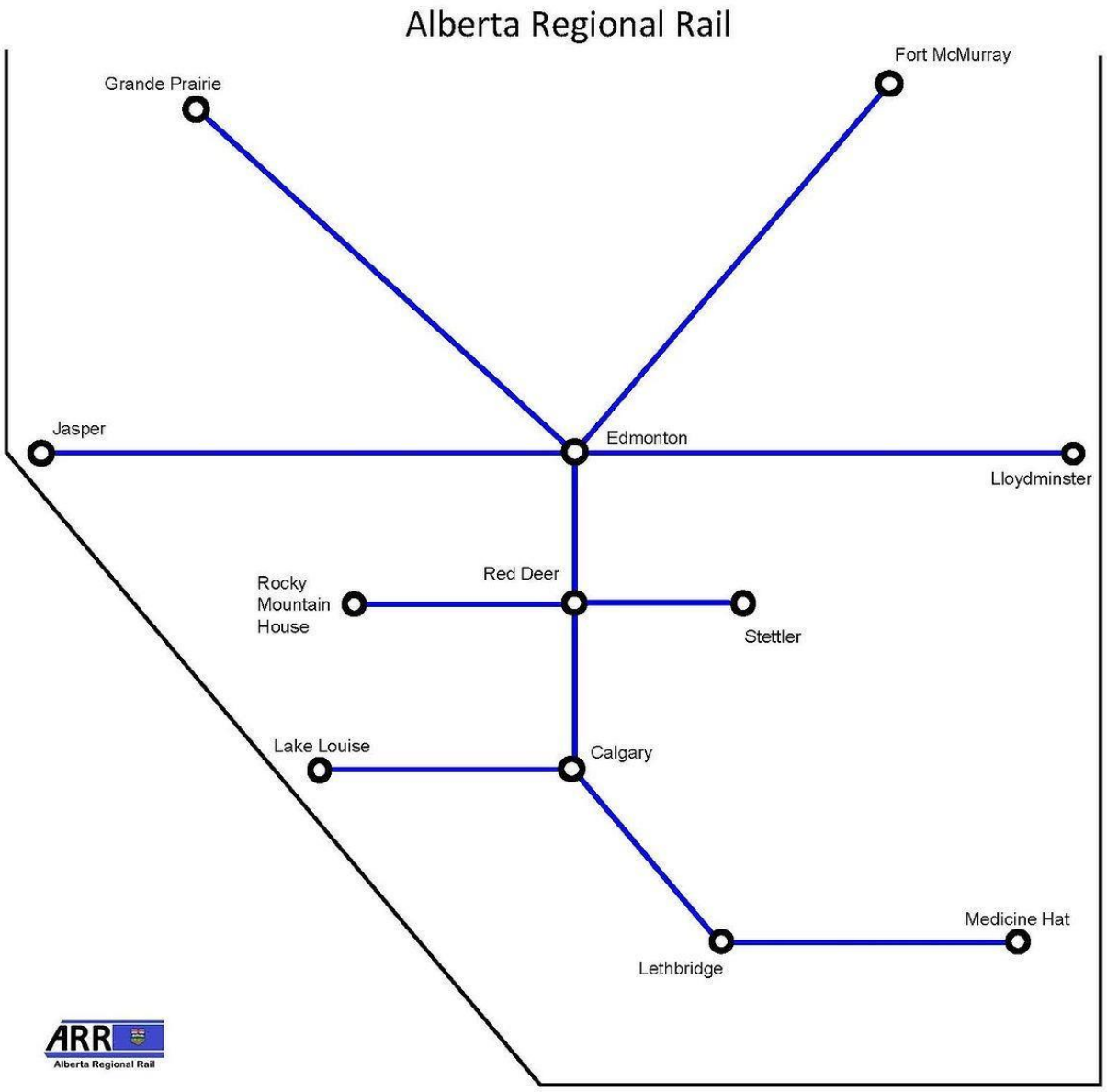
Sourced from: https://open.alberta.ca/publications/alberta-provincial-rail-network-map

Appendix B

BNSF Railway Network Map

Sourced from: https://www.bnsf.com/ship-with-bnsf/maps-and-shipping-locations/rail-network-maps.page

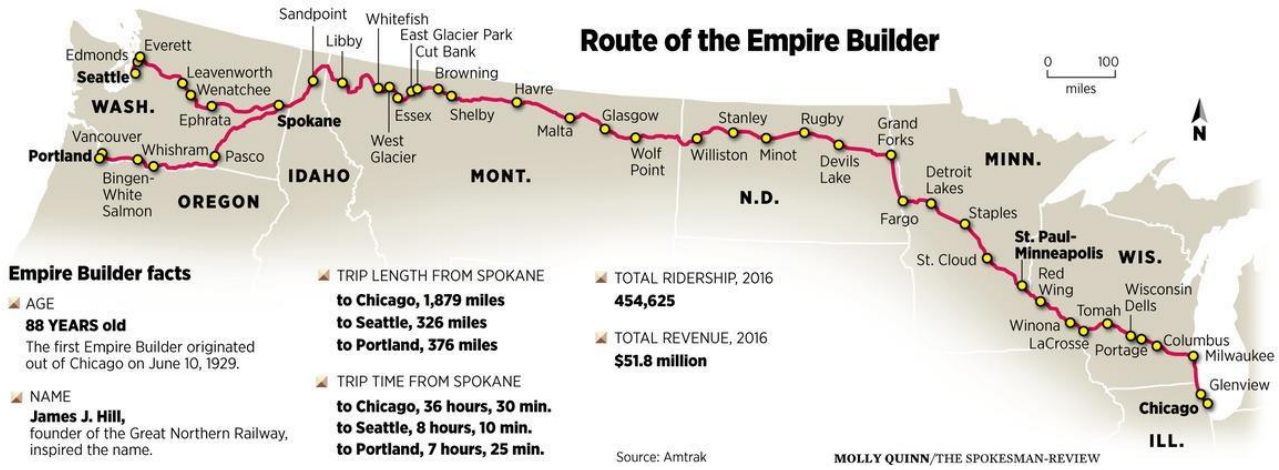
Appendix C
Alberta Regional Rail Route Proposal



Sourced from: https://www.albertaregionalrail.com/

Appendix D

The Empire Builder Route



Sourced from: https://www.spokesman.com/stories/2017/may/03/passengers-on-amtraks-empire-builder-have-a-messag/