# GRAVITY MODEL AND ECONOMIC ANALYSIS FOR REGIONAL RAIL IN THE EDMONTON – CALGARY CORRIDOR

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# INDEX

**APPENDIX**

# 1. EXECUTIVE SUMMARY

## 1.1 PURPOSE

The purpose of this analysis is to provide to the reader an understanding of the potential ridership of a regional rail system in the Calgary – Edmonton corridor, utilizing the existing Canadian Pacific Railway Right of Way.

## 1.2 ASSUMPTIONS

This analysis uses data provided in the 2021 Alberta Census, and using Gravity Model equations to calculate what a Regional Rail System market level could reach.

According to transport economic theory, the traffic between two cities is proportional to the populations of these two cities and inversely proportional to the square of the Generalized Cost considered as the sum of the cost and value of time to travel the distance separating them.

Using the theoretical assumptions, we will obtain the percentage for Regional Rail System market share on each relation.

## 1.3 CONCLUSION

Using the Gravity Model calculations, we estimate regional rail ridership to be in the region of 5.2 million passengers per year.

Due to the nature of Calgary being the financial and business hub, Edmonton being the Government centre with the Provincial Legislature, and the corridor being an established Industrial Corridor, the overall ridership can be estimated to be significantly larger than what is calculated through this Gravity Model. Therefore the economics of regional and express rail services would improve, creating an IRR greater than the calculated 9.51%.

A Public Private Partnership venture could be engaged in, that would further improve the economics of regional and express passenger rail services in the corridor, creating an IRR greater than 20% depending upon the value of Federal and Provincial grants and funds, or amount of subsidy approved.

More studies need to be done in order to explore all the solutions. Relations & Connections with Railways will be required in order to have access to the Right of Way and stations.

## 2. INTRODUCTION & DATA

This analysis uses data provided by Alberta Regional Rail, Texas Triangle Railroad Holding Company and Rail Concept. Data are elaborated from **Alberta Census Data 2021.**

### Calgary – Edmonton Corridor

- Edmonton Legislature
- Strathcona
- South Edmonton
- Nisku (YEG)
- Leduc
- Millet
- Wetaskiwin
- Maskwacis
- Ponoka
- Morningside
- Lacombe
- Blackfalds
- Red Deer
- Penhold
- Innisfail
- Bowden
- Olds
- Didsbury
- Carstairs
- Crossfield
- Airdrie
- Country Hills Boulevard (YYC)
- Calgary Tower

| | Distances Between km | Calmative Distance km | | Populations | |
|---|---|---|---|---|---|
| | | | | 2016 | 2021 |
| Calgary | 0 | 0 | | 1239220 | 1306784 |
| Airdrie | 36.4 | 36.4 | | 61842 | 74100 |
| Crossfield | 13.8 | 50.2 | | 2983 | 3599 |
| Carstairs | 16 | 66.2 | | 4077 | 4898 |
| Didsbury | 13.3 | 79.5 | | 5268 | 5070 |
| Olds | 20 | 99.5 | | 9184 | 9209 |
| Bowden | 18.5 | 118 | | 1240 | 1280 |
| Innisfail | 13.5 | 131.5 | | 7847 | 7985 |
| Penhold | 14.5 | 146 | | 3277 | 3484 |
| Red Deer | 14.1 | 160.1 | | 100418 | 100844 |
| Blackfalds | 18.2 | 178.3 | | 9328 | 10470 |
| Lacombe | 11.7 | 190 | | 13057 | 10283 |
| Morningside | 14.9 | 204.9 | | 97 | 120 |
| Ponoka | 12.3 | 217.2 | | 7229 | 9998 |
| Maskwacis | 20.7 | 237.9 | | 20869 | 20569 |
| Wetaskiwin | 17.5 | 255.4 | | 12655 | 12594 |
| Millet | 16.5 | 271.9 | | 1945 | 1890 |
| Leduc | 21.3 | 293.2 | | 55678 | 48510 |
| Nisku | 8.7 | 301.9 | | 30 | 30 |
| Edmonton | 22 | 323.9 | | 932546 | 1010899 |
| | 323.9 | | | 2488790 | 2642616 |

Fig 1: Extract of Official Demographic Data 2016 & 2021

The purpose of this analysis is to provide to the reader an understanding of what Regional Rail infrastructure market level could reach. This is done using mathematical models tuned to the North American environment.

## 3. DISTANCES between main center Zones

Using Google Maps as a provider, we prepared a matrix of distances between all the towns and cities in the corridor. The larger population centres could also be the possible location of future higher speed express stations. The table can be found in the Appendix, all distances are in kilometers.

## 4. GRAVITATIONAL MODEL & GENERALISED COSTS

According to transport economic theory, the traffic between two cities is proportional to the populations of these two cities and inversely proportional to the square of the **Generalized Cost** considered as the sum of the cost and value of time to travel the distance separating them. By analogy with the universal law of gravity, this traffic model is called a gravity model:

$$Traffic_{ij} = k \frac{Pop_i * Pop_j^{\alpha}}{Gc_{ij}^2}$$

where: Pop is the number of inhabitants and

Gc is the generalized travel cost, including the corresponding running time.

Elasticity of Generalized Cost is 2 in most of traffic models.

Cross Product of Populations of two zones is in direct relation with a kind of force of attraction between these two zones. We name it **Potential Attraction** between city pair.

Generalized cost is defined as the **Potential Repulsion** between city pair. It is the sum of a kind of difficulty to go from one city to the other. Basically, it is the sum of the cost (the fare) we have to pay and the value of the time we have to spend to travel. In order to add time and money, introduced is the notion of value of time. **Value of Time** is defined, to simplify this economic notion, how much we are ready to spend to save one hour of travel.

Then, dividing Potential Attraction by Potential Repulsion, we estimate the traffic. An **endogen variable k** is estimated to tune the real situation on the corridor.

## 4.1 Potential Attraction between cities

Potential attraction between two cities is defined as the Product of the Population of these Cities and established as an Index. The table can be found in the Appendix.

The following matrix presents the crossed product of the populations for each city pair. We detect that the first city with the main Potential Attraction is Calgary followed by Edmonton and Red Deer. The smallest towns and cities have the lowest Potential Attraction.
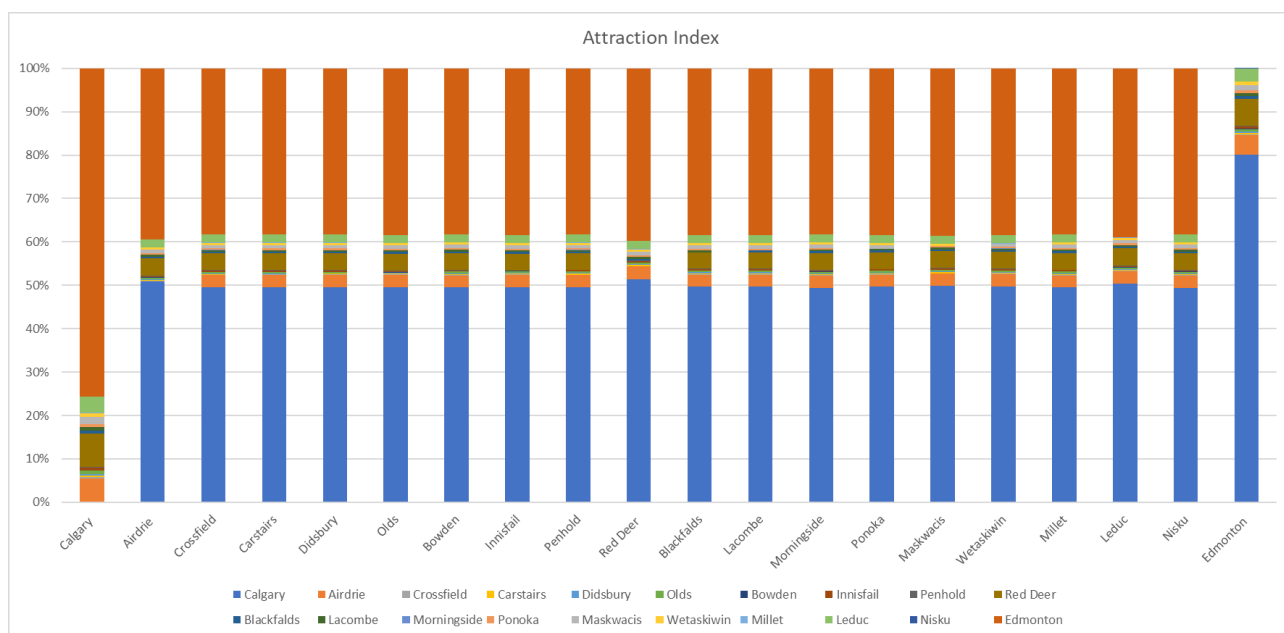
## 4.2 Potential Repulsion between cities

The following matrix presents as an index the Generalized cost between city pair. Generalized cost is defined as above. The table can be found in the Appendix.

We detect that the city with the minimum consistent Potential Repulsion across all towns and cities is Red Deer. Edmonton and Calgary have a repulsion factor that is proportional to their distance to reach the city.
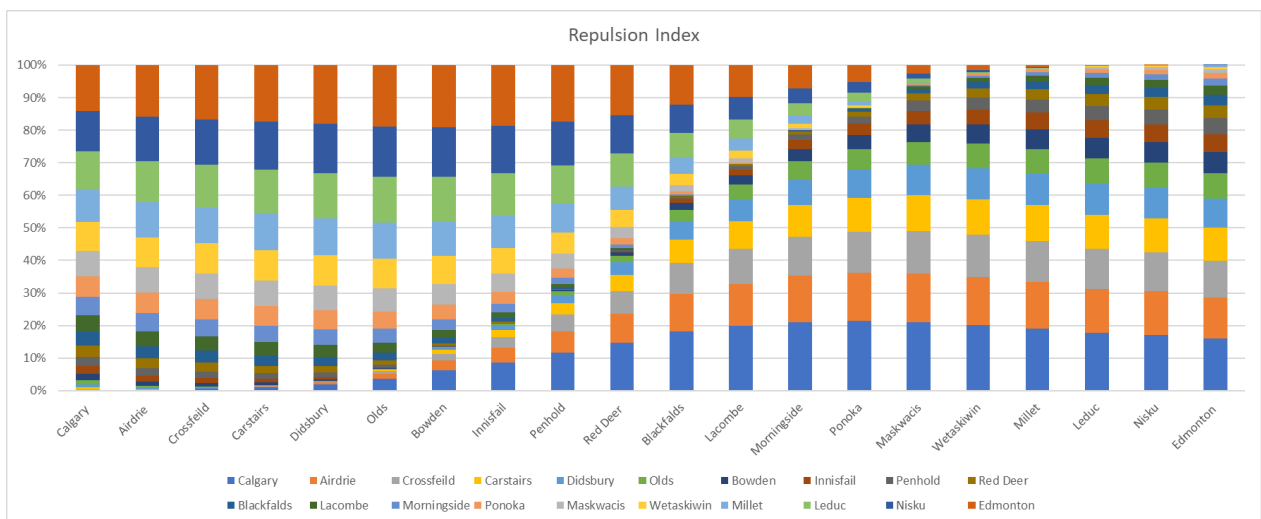
## 4.3 Gravity Model: Geographical Distribution of the Population

The following map is a theoretical representation of the distribution of the population along the West Canadian Corridor. The distance between cities is in Kilometers and the surface of each city is proportional to the population of each city. This is why this model is named a Gravity Model. The major populated cities behave like the big stars, and produce a better potential for the traffic. The distance and the cost to travel in relation with the distance between them reduce this potential like in the Sky.
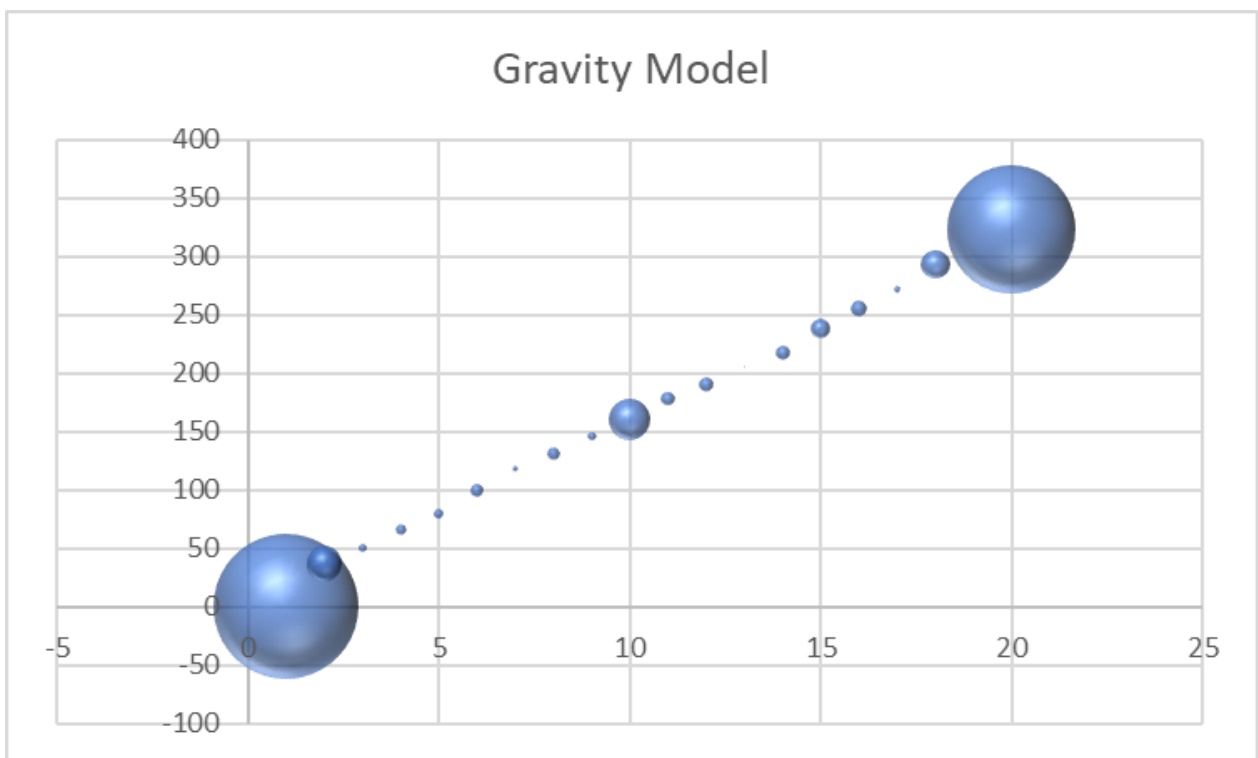
## 5. Traffic Pattern along the Corridor

### 5.1 Gravity Model applied in West Canada

The following matrix presents the results of the estimation of the potential traffic (all modes of transport) between the city pairs. As explained previously, Traffic is the result of:

*Traffic =k \* Potential Attraction / Potential Repulsion*

*k is* **endogen variable as** *an INDEX*

As an example, estimation of Potential traffic between Calgary & Edmonton:

1. Attraction:   **1 321 027**
2. Repulsion:   420
3. Traffic   :   **Attraction / Repulsion =  3 148**
4. The Potential Traffic (INDEX = 1) **All modes of Transport** are in direct relation with the **Geo Demographical** distribution of the population along the Corridor.

The table of the Potential Traffic Index can be found in the Appendix. Calgary obtains a 27% share of the potential traffic, with Edmonton taking a 21% share. It is interesting to note that Airdrie also takes a 21% share, and Leduc takes a 14% share, with Red Deer only taking a 5% share.

Calgary and Edmonton are the main cities to emit and receive travelers. Both cities are well balanced regarding all modes of traffic. Airdrie is smaller than Calgary, but close enough to Calgary to enjoy an attractive situation. A similar situation exists between Leduc and Edmonton, and also the towns and cities close to Red Deer.

**Intensity of traffic flow for all modes in the Corridor: Economic ranking**

It is possible to estimate the distribution of the intensity of the traffic flows and therefore **the expenses to produce this amount of travel between the cities along the corridor.** This will reveal where money is spent and where the production of traffic activity is necessary. This estimation must be considered as an INDEX. The next matrix presents the result as a traffic flow multiply by the distance travelled, similar to PAX in the air industry.

It is interesting to see that Calgary is the first city followed by Edmonton and Red Deer.

Potential Traffic Index
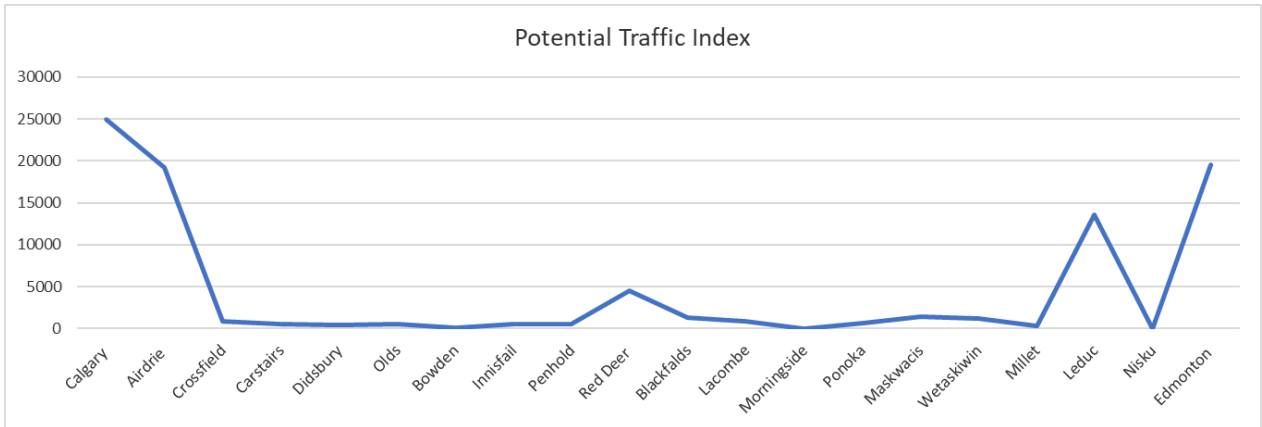
The Average Annual Daily Traffic data from the QE2 highway follows a similar pattern to the Potential Traffic Index.



AADT
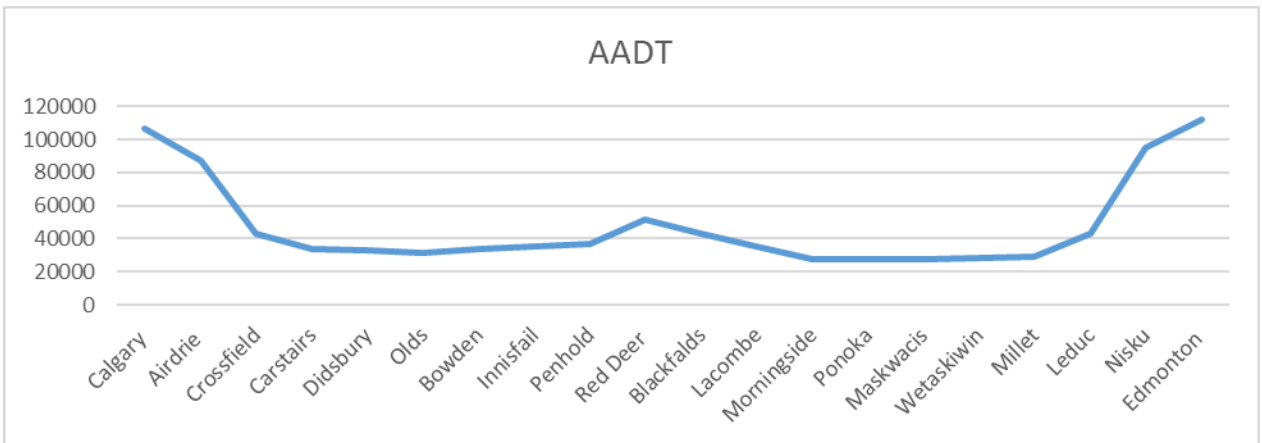
**MODAL SHARE of TRAFFIC along the Corridor**

The following chart presents the theoretical generally observed distribution of the global traffic to the different modes of transportation, automobile, bus, air, and regional (or high speed) rail. For each mode, we use a calibrated statistical model putting in correlation the market share for the distance travelled between a city pair. A better new model will be necessary in the future to take in account the specificity of West Canada calibrated with surveys.

# MARKET SHARE BY MODES of TRANSPORT



Market Share

$y = 0,0007x + 0,0289$
$R^2 = 0,9754$

$y = 7E-05x + 0,0691$
$R^2 = 0,9087$



Mode Share vs Distance (Japan)
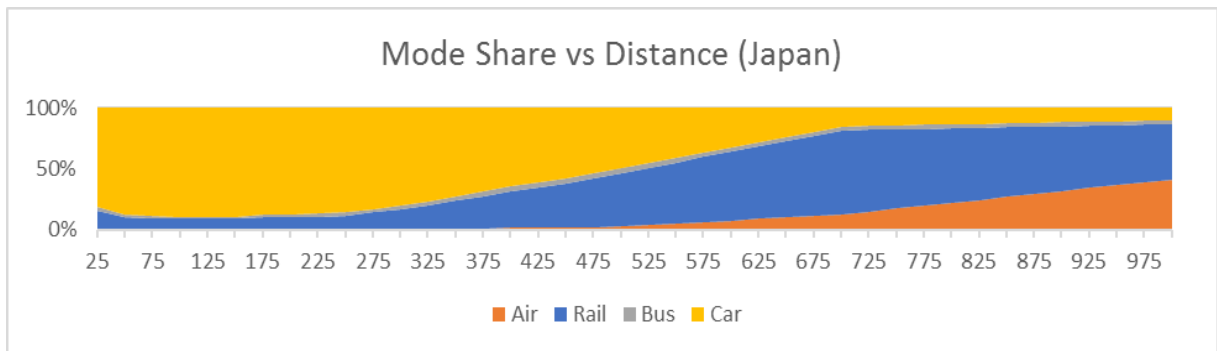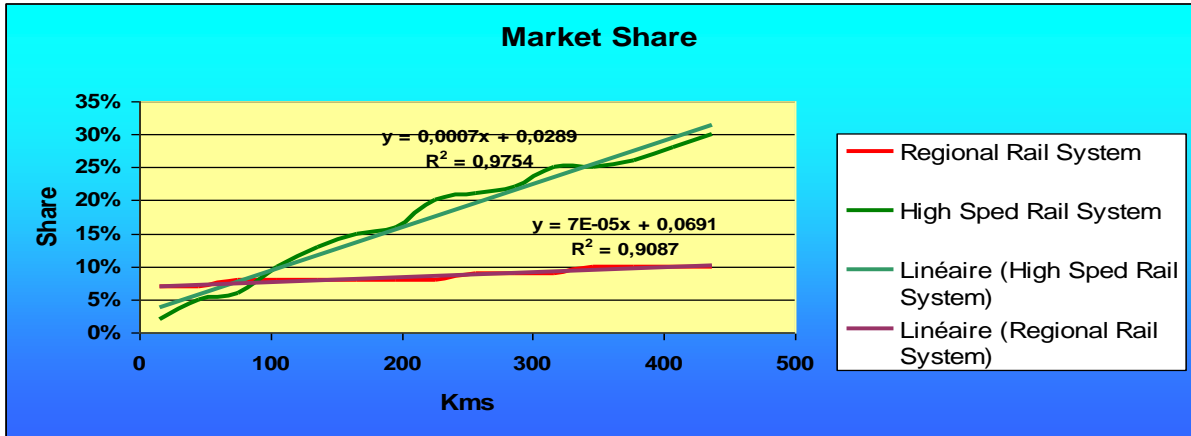
## 6. Regional Rail System Ridership

In this paragraph we will describe an option to implement an improved rail system in Alberta. This option will be seen as a Regional Rail System, this option will be an offer with a speed of 160 kph and CFR compliant freight compatible rolling stock.

No new tracks will be built and RRS trains will be operated on enhanced Canadian Pacific tracks, that includes additional passing points to accommodate the increased number of trains, upgraded grade crossings to enable whistle cessation of trains passing through, and where possible construction of road over rail bridges to improve the safety and speed of the railway.

An access fee will be required to operate RRS trains and paid to Canadian Pacific Railway.

## 6.1 Regional Rail System assumptions

In order to better understand assumptions used in this particular situation, we have to explain a specificity of Gravity Model.

As it is explained previously:

$$Traffic_{ij} = k \frac{Pop_i * Pop_j^{\alpha}}{Gc_{ij}^2}$$

where: Pop is the number of inhabitants and

**Gc is the generalized travel cost**, including the corresponding running time.

Then **Gc = f + h * t** where **f** is how much you pay to travel (Fare) and **t** the time spend to travel and **h** the value of your time. Basically, this value is described as how much you are ready to spend to save an hour of your time. We will not enter in the economical description of the Log Normal mathematical function distribution of the value of time in the population of Alberta.

A Regional Rail System would have an operating speed of 160 kph, greater than the legal speed limit on the QE2 highway. The faster the speed, and therefore the lower running time between destinations, the greater the market share of the mode of transport.

Elasticity of Generalized Cost is 2 in most of traffic models.

## 6.2 Application to Regional Rail System Edmonton – Calgary

Using the theoretical assumptions as outlined, market share for Regional Rail System RRS we will obtain the percentage of market share for a Regional Rail System in the corridor, with ridership between all towns and cities on each relation. The table can be found in the Appendix.

Using the calculations, we can estimate the ridership forecast for a Regional Rail System in the Calgary – Edmonton corridor, between all towns and cities, to be 5.2 million passengers per year.

## 6.3 Distribution of Regional Rail System Market along the Corridor

Although there is a total of 16,200 passengers per day likely to use a Regional Rail System, not everybody is going to travel the entire length of the corridor from Edmonton to Calgary and back, with only 713 potential passengers between Calgary and Edmonton. The highest potential ridership route is between Airdrie and Calgary with 3,131 potential passengers, and the second is between Leduc and Edmonton with 2,215 potential passengers.

Passenger Distribution



Passenger Destination Distribution
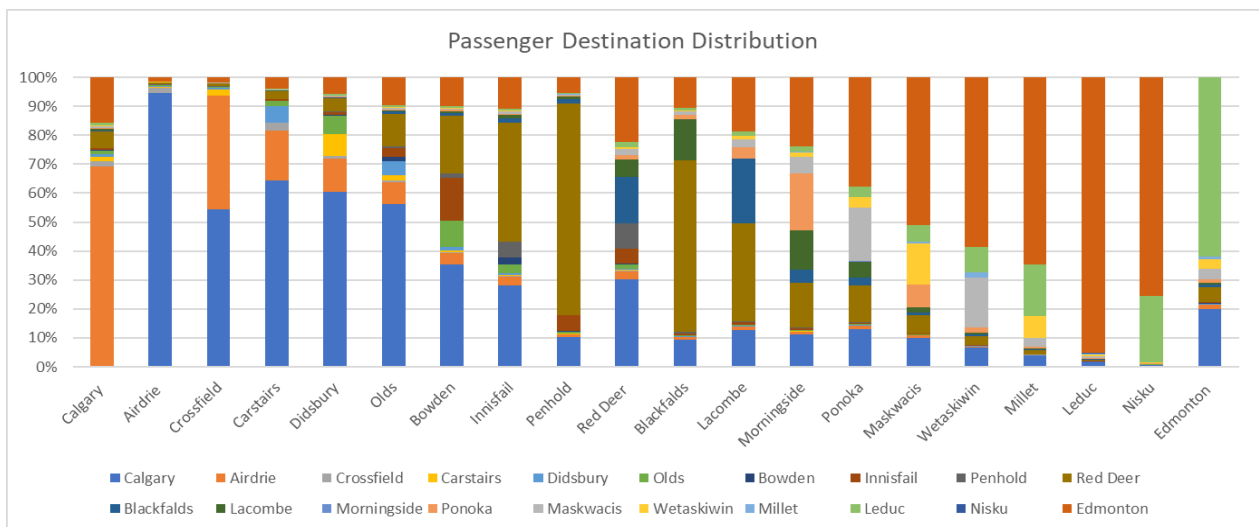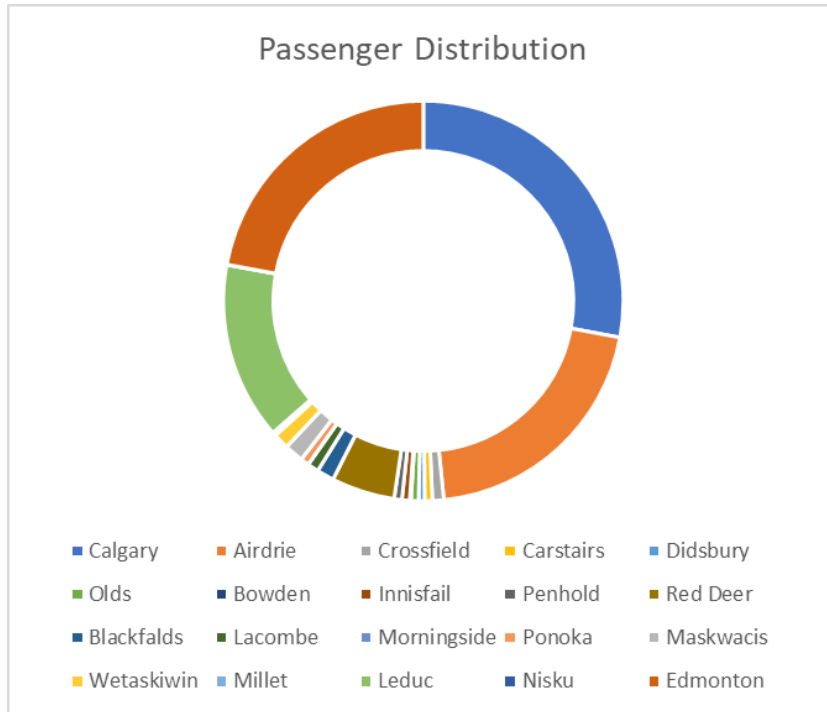
Although Nisku has a minor market share of passengers, it is the location of the Edmonton International Airport, and also the location of the Premium Outlet Collection shopping mall. Both of which would be easily accessible from a regional rail station in Nisku, resulting in the attraction of a significant number of passengers not accounted for by using this gravity model.

Most of North America is in a grid, so urban-urban trips are generated in all directions between all centres. In Alberta due to our relative isolation from other centres, our relative prosperity for a long time, and the development of specialization over time we have much stronger links.
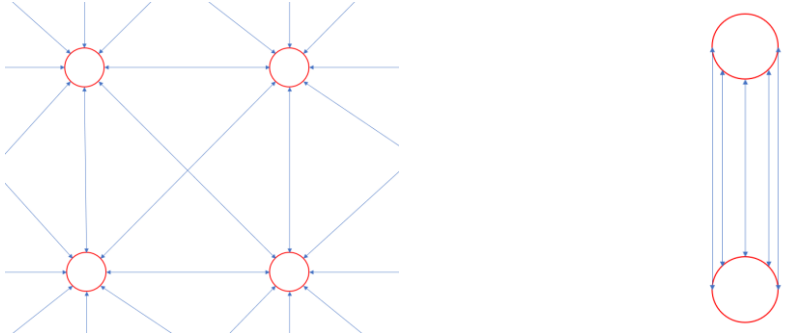


Calgary and Edmonton are complementary cities. We have corporate offices located in Calgary, regulators located in Edmonton, and an established Industrial Corridor between. The corridor itself has the highest trip generation in North American city pairs, about three to four times the equivalent Toronto-Montreal trip generation rate.

Although the population of the Calgary-Edmonton corridor is around 2 and a half million, travel in the corridor is equivalent to a population of 8 million to 10 million people. Aviation is the preferred mode for distances greater than 500 kilometres, and driving is the preferred mode for distances under 200 kilometres. The distance between Calgary and Edmonton is over 300 kilometres, making it ideal for passenger rail services.

An option would be to introduce an express service that only stops at principal stations, further reducing the journey time between destinations, which would increase the share of ridership on a Regional Rail System compared to private vehicles and air.


## 7. Regional Rail System Economic Analysis

With daily ridership at 16,200 passengers per day, and North American bi-level rolling stock with a seated capacity of 142 passengers per car, 10 services per day would be required. From Table 5 in the Appendix, peak passengers are between Airdrie and Calgary, and Leduc and Edmonton.

Although the Corona Virus Pandemic has altered the way we live and work, people will still travel. A lot of companies have adopted a hybrid or flexible work schedule, with workers coming in for meetings and coming into the office most days of the week, there can still be expected to be peak hour services with limited off-peak services, and late evening trains.

Calgary - Edmonton Train Timetable

| Station | | A | B | C | A | C | A | B | C | A | B | C | A | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Calgary Tower | Dep | | | 5:40 | 7:15 | 9:15 | 11:15 | 12:30 | 13:45 | 15:45 | 16:45 | 17:45 | 19:45 | 21:30 |
| Contry Hills Blvd | Dep | | | 5:52 | 7:27 | 9:27 | 11:27 | 12:42 | 13:57 | 15:57 | 16:57 | 17:57 | 19:57 | 21:42 |
| Airdrie | Dep | | | 6:00 | 7:35 | 9:35 | 11:35 | 12:50 | 14:05 | 16:05 | 17:05 | 18:05 | 20:05 | 21:50 |
| Crossfield | Dep | | | 6:09 | 7:44 | 9:44 | 11:44 | 12:59 | 14:14 | 16:14 | 17:14 | 18:14 | 20:14 | 21:59 |
| Carstairs | Dep | | | 6:18 | 7:53 | 9:53 | 11:53 | 13:08 | 14:23 | 16:23 | 17:23 | 18:23 | 20:23 | 22:08 |
| Didsbury | Dep | | | 6:25 | 8:00 | 10:00 | 12:00 | 13:15 | 14:30 | 16:30 | 17:30 | 18:30 | 20:30 | 22:15 |
| Olds | Dep | | | 6:34 | 8:09 | 10:09 | 12:09 | 13:24 | 14:39 | 16:39 | 17:39 | 18:39 | 20:39 | 22:24 |
| Bowden | Dep | | | 6:42 | 8:17 | 10:17 | 12:17 | 13:32 | 14:47 | 16:47 | 17:47 | 18:47 | 20:47 | 22:32 |
| Innisfail | Dep | | | 6:50 | 8:25 | 10:25 | 12:25 | 13:40 | 14:55 | 16:55 | 17:55 | 18:55 | 20:55 | 22:40 |
| Penhold | Dep | | | 6:59 | 8:34 | 10:34 | 12:34 | 13:49 | 15:04 | 17:04 | 18:04 | 19:04 | 21:04 | 22:49 |
| Red Deer | Arr | | | 7:08 | 8:43 | 10:43 | 12:43 | 13:58 | 15:13 | 17:13 | 18:13 | 19:13 | 21:13 | 22:58 |
| Red Deer | Dep | 5:10 | 6:10 | 7:10 | 9:15 | 10:45 | 12:45 | 14:00 | 15:15 | 17:45 | | 19:15 | | 23:00 |
| Blackfalds | Dep | 5:21 | 6:21 | 7:21 | 9:26 | 10:56 | 12:56 | 14:11 | 15:26 | 17:56 | | 19:26 | | 23:11 |
| Lacombe | Dep | 5:28 | 6:28 | 7:28 | 9:33 | 11:03 | 13:03 | 14:18 | 15:33 | 18:03 | | 19:33 | | 23:18 |
| Morningside | Dep | 5:36 | 6:36 | 7:36 | 9:41 | 11:11 | 13:11 | 14:26 | 15:41 | 18:11 | | 19:41 | | 23:26 |
| Ponoka | Dep | 5:44 | 6:44 | 7:44 | 9:49 | 11:19 | 13:19 | 14:34 | 15:49 | 18:19 | | 19:49 | | 23:34 |
| Maskwacis | Dep | 5:55 | 6:55 | 7:55 | 10:00 | 11:30 | 13:30 | 14:45 | 16:00 | 18:30 | | 20:00 | | 23:45 |
| Wetaskiwin | Dep | 6:04 | 7:04 | 8:04 | 10:09 | 11:39 | 13:39 | 14:54 | 16:09 | 18:39 | | 20:09 | | 23:54 |
| Millet | Dep | 6:14 | 7:14 | 8:14 | 10:19 | 11:49 | 13:49 | 15:04 | 16:19 | 18:49 | | 20:19 | | 0:04 |
| Leduc | Dep | 6:24 | 7:24 | 8:24 | 10:29 | 11:59 | 13:59 | 15:14 | 16:29 | 18:59 | | 20:29 | | 0:14 |
| Nisku | Dep | 6:28 | 7:28 | 8:28 | 10:33 | 12:03 | 14:03 | 15:18 | 16:33 | 19:03 | | 20:33 | | 0:18 |
| South Edmonton | Dep | 6:37 | 7:37 | 8:37 | 10:42 | 12:12 | 14:12 | 15:27 | 16:42 | 19:12 | | 20:42 | | 0:27 |
| Strathcona | Dep | 6:42 | 7:42 | 8:42 | 10:47 | 12:17 | 14:17 | 15:32 | 16:47 | 19:17 | | 20:47 | | 0:32 |
| Edmonton GC | Arr | 6:44 | 7:44 | 8:44 | 10:49 | 12:19 | 14:19 | 15:34 | 16:49 | 19:19 | | 20:49 | | 0:34 |
| | | A | B | C | A | C | A | B | C | A | B | C | A | C |

Edmonton - Calgary Train Timetable

| Station | | A | B | C | A | C | A | B | C | A | B | C | A | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Edmonton GC | Dep | | | 5:40 | 7:15 | 9:15 | 11:15 | 12:30 | 13:45 | 15:45 | 16:45 | 17:45 | 19:45 | 21:30 |
| Strathcona | Dep | | | 5:42 | 7:17 | 9:17 | 11:17 | 12:32 | 13:47 | 15:47 | 16:47 | 17:47 | 19:47 | 21:32 |
| South Edmonton | Dep | | | 5:47 | 7:22 | 9:22 | 11:22 | 12:37 | 13:52 | 15:52 | 16:52 | 17:52 | 19:52 | 21:37 |
| Nisku | Dep | | | 5:56 | 7:31 | 9:31 | 11:31 | 12:46 | 14:01 | 16:01 | 17:01 | 18:01 | 20:01 | 21:46 |
| Leduc | Dep | | | 6:00 | 7:35 | 9:35 | 11:35 | 12:50 | 14:05 | 16:05 | 17:05 | 18:05 | 20:05 | 21:50 |
| Millet | Dep | | | 6:10 | 7:45 | 9:45 | 11:45 | 13:00 | 14:15 | 16:15 | 17:15 | 18:15 | 20:15 | 22:00 |
| Wetaskiwin | Dep | | | 6:20 | 7:55 | 9:55 | 11:55 | 13:10 | 14:25 | 16:25 | 17:25 | 18:25 | 20:25 | 22:10 |
| Maskwacis | Dep | | | 6:29 | 8:04 | 10:04 | 12:04 | 13:19 | 14:34 | 16:34 | 17:34 | 18:34 | 20:34 | 22:19 |
| Ponoka | Dep | | | 6:40 | 8:15 | 10:15 | 12:15 | 13:30 | 14:45 | 16:45 | 17:45 | 18:45 | 20:45 | 22:30 |
| Morningside | Dep | | | 6:48 | 8:23 | 10:23 | 12:23 | 13:38 | 14:53 | 16:53 | 17:53 | 18:53 | 20:53 | 22:38 |
| Lacombe | Dep | | | 6:56 | 8:31 | 10:31 | 12:31 | 13:46 | 15:01 | 17:01 | 18:01 | 19:01 | 21:01 | 22:46 |
| Blackfalds | Dep | | | 7:03 | 8:38 | 10:38 | 12:38 | 13:53 | 15:08 | 17:08 | 18:08 | 19:08 | 21:08 | 22:53 |
| Red Deer | Arr | | | 7:14 | 8:49 | 10:49 | 12:49 | 14:04 | 15:19 | 17:19 | 18:19 | 19:19 | 21:19 | 23:04 |
| Red Deer | Dep | 5:16 | 6:16 | 7:16 | 9:16 | 10:51 | 12:51 | 14:06 | 15:21 | 17:46 | | 19:21 | | 23:06 |
| Penhold | Dep | 5:25 | 6:25 | 7:25 | 9:25 | 11:00 | 13:00 | 14:15 | 15:30 | 17:55 | | 19:30 | | 23:15 |
| Innisfail | Dep | 5:34 | 6:34 | 7:34 | 9:34 | 11:09 | 13:09 | 14:24 | 15:39 | 18:04 | | 19:39 | | 23:24 |
| Bowden | Dep | 5:42 | 6:42 | 7:42 | 9:42 | 11:17 | 13:17 | 14:32 | 15:47 | 18:12 | | 19:47 | | 23:32 |
| Olds | Dep | 5:50 | 6:50 | 7:50 | 9:50 | 11:25 | 13:25 | 14:40 | 15:55 | 18:20 | | 19:55 | | 23:40 |
| Didsbury | Dep | 5:59 | 6:59 | 7:59 | 9:59 | 11:34 | 13:34 | 14:49 | 16:04 | 18:29 | | 20:04 | | 23:49 |
| Carstairs | Dep | 6:06 | 7:06 | 8:06 | 10:06 | 11:41 | 13:41 | 14:56 | 16:11 | 18:36 | | 20:11 | | 23:56 |
| Crossfield | Dep | 6:15 | 7:15 | 8:15 | 10:15 | 11:50 | 13:50 | 15:05 | 16:20 | 18:45 | | 20:20 | | 0:05 |
| Airdrie | Dep | 6:24 | 7:24 | 8:24 | 10:24 | 11:59 | 13:59 | 15:14 | 16:29 | 18:54 | | 20:29 | | 0:14 |
| Country Hills Blvd | Dep | 6:32 | 7:32 | 8:32 | 10:32 | 12:07 | 14:07 | 15:22 | 16:37 | 19:02 | | 20:37 | | 0:22 |
| Calgary Tower | Arr | 6:44 | 7:44 | 8:44 | 10:44 | 12:19 | 14:19 | 15:34 | 16:49 | 19:14 | | 20:49 | | 0:34 |

## 7.1 Infrastructure Costs

Infrastructure costs are taken from the Calgary Bow Valley mass Transit Feasibility Study 2019, and updated with the Calgary Banff Rail Study 2021, and incorporated into Table 7 in the Appendix. The total cost to build the required infrastructure would be CAD 345 million.

## 7.2  Rolling Stock

As stated in the Calgary Bow Valley Mass Transit Feasibility Study 2019, any additional track and structures in the Canadian Pacific Right of Way should be built to Canadian Pacific Standards and Specifications, and be freight compatible. With a major point of congestion being in the downtown Calgary area, it can be expected that any rolling stock used would also need to be freight compatible and adhere to CFR crash worthiness standards.

Fortunately there are sufficient examples of CFR compliant freight compatible rolling stock in use in Canada, Siemens Charger locomotives and Alstom/Bombardier bi-level passenger cars.



| Siemens Charger SC-44 locomotive | $ | 9,250,000.00 |
|---|---|---|
| Bombardier Bilevel passenger coach | $ | 3,730,000.00 |
| Bombardier Bilevel passenger cab coach | $ | 4,130,000.00 |

Alstom/Bombardier bi-level passenger cars have a seated capacity of 142 passengers per car, which in a 5-car train is more than sufficient to cover the projected ridership. The Siemens and Alstom/Bombardier train-sets would have an operating speed of 160kph, and the capacity to operate at greater speeds of 180kph or more should the upgraded infrastructure allow. The cost of purchase for the required rolling stock would be CAD 142 million.

## 7.3  Operating Costs

Operating costs are taken from the Calgary Bow Valley Mass Transit Feasibility Study 2019, and the Calgary Banff Rail Study 2021, tabulated and applied to various service scenarios according to the time table above. See Table 9 in the Appendix. For a basic service, the annual operating cost would be at least CAD 75 million per year.

## 7.4  Internal Rate of Return

With the forecast revenue, infrastructure costs, rolling stock costs, and operating costs, we can calculate the Internal Rate of Return (IRR).

The fares are calculated by taking the existing fares charged for public transportation services within the corridor, and extrapolating them for the distance covered. Transit fares in Calgary and Edmonton are CAD3.60 and CAD3.50, the Airdrie ICE fare to downtown Calgary is CAD10.00, therefore a fare of CAD4.00 is used for proximal destinations, and with destinations along the corridor being equidistant a factor thereof can be used. See Table 10 in the Appendix.

Population growth in Airdrie has been occurring at an accelerated rate for the past decade, with 15 consecutive years of growth above 4.5% per year. The Calgary Metropolitan Region as a whole has experienced growth rates between 1.8% and 3.7% per year over the past decade, and is forecast to grow between 2.0% and 2.5% per year.

**Figure 3.17**
**Population, historic (1994 to 2018) and projected (2019 to 2043) according to selected scenarios, Alberta**
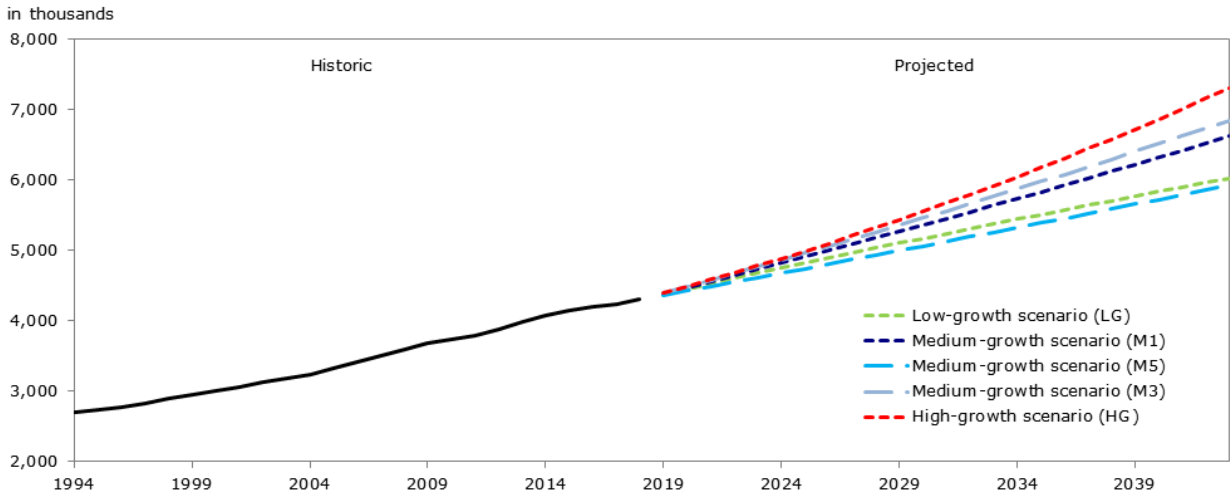


**Source**: Statistics Canada, Demography Division.

From the official census data 2016 & 2021 the population in the corridor has grown 6% in the past 5 years, which includes the coronavirus pandemic in 2020 & 2021 when national and international travel was severely restricted.

| | Base Regional Rail | | | | | IRR |
| --- | --- | --- | --- | --- | --- | --- |
| | | | | | | 8.88% |
| Year | Passenger Revenue | Operating costs | Rolling Stock | Infrastructure costs | Total Expenses | Balance |
| 0 | 54,112,845.58 | 52,506,156 | 84,900,000 | 290,849,400 | 428,255,556 | - 374,142,710 |
| 1 | 81,169,268.37 | 53,556,279 | | | 53,556,279 | 27,612,989 |
| 2 | 91,991,837.49 | 54,627,405 | | | 54,627,405 | 37,364,433 |
| 3 | 97,403,122.05 | 55,719,953 | | | 55,719,953 | 41,683,169 |
| 4 | 102,814,406.61 | 56,834,352 | | | 56,834,352 | 45,980,055 |
| 5 | 108,225,691.17 | 86,188,181 | 56,600,000 | - | 142,788,181 | - 34,562,490 |
| 6 | 112,554,718.81 | 87,911,945 | | | 87,911,945 | 24,642,774 |
| 7 | 117,056,907.56 | 89,670,184 | | | 89,670,184 | 27,386,724 |
| 8 | 121,739,183.87 | 91,463,587 | | | 91,463,587 | 30,275,597 |
| 9 | 126,608,751.22 | 93,292,859 | | | 93,292,859 | 33,315,892 |
| 10 | 131,673,101.27 | 95,158,716 | | | 95,158,716 | 36,514,385 |
| 11 | 136,940,025.32 | 97,061,890 | | | 97,061,890 | 39,878,135 |
| 12 | 142,417,626.33 | 99,003,128 | | | 99,003,128 | 43,414,498 |
| 13 | 148,114,331.39 | 100,983,191 | | | 100,983,191 | 47,131,141 |
| 14 | 154,038,904.64 | 103,002,855 | | | 103,002,855 | 51,036,050 |
| 15 | 160,200,460.83 | 105,062,912 | 30,000,000 | | 135,062,912 | 25,137,549 |
| 16 | 166,608,479.26 | 107,164,170 | | | 107,164,170 | 59,444,309 |
| 17 | 173,272,818.43 | 109,307,453 | | | 109,307,453 | 63,965,365 |
| 18 | 180,203,731.17 | 111,493,602 | | | 111,493,602 | 68,710,129 |
| 19 | 187,411,880.42 | 113,723,474 | | | 113,723,474 | 73,688,406 |
| 20 | 194,908,355.63 | 115,997,944 | | | 115,997,944 | 78,910,412 |
| 21 | 202,704,689.86 | 118,317,903 | | | 118,317,903 | 84,386,787 |
| 22 | 210,812,877.45 | 120,684,261 | | | 120,684,261 | 90,128,617 |
| 23 | 219,245,392.55 | 123,097,946 | | | 123,097,946 | 96,147,446 |
| 24 | 228,015,208.25 | 125,559,905 | | | 125,559,905 | 102,455,303 |
| | | | | | | |
| Total | 2,594,558,092 | 1,763,732,292 | 171,500,000 | 290,849,400 | 2,226,081,692 | 368,476,400 |

## 7.5  Public Private Partnership

There are many different ways a Public Private Partnership (PPP) can be conducted, Governments may provide a capital subsidy in the form of a one-time grant so as to make the project economically viable. In other cases, Governments may support the project by providing revenue subsidies, including tax breaks or by guaranteed annual revenues for a fixed period.

To get projects moving quickly, the Federal Government is funding up to 50% of the eligible costs for projects. Canadians need immediate investments in their communities' public transit systems, so they can get to work on time, and back home at the end of the day. The Public Transit Infrastructure Fund is making these long overdue investments. Under the previous Building Canada Fund, funding could be used for up to 25% for private sector projects.

The Government of Canada has announced a historic plan to invest more the $180 billion in infrastructure over 12 years. The priority is to promote infrastructure that will contribute to long-term economic growth, build inclusive communities, and support a low carbon, green economy. Key areas for investment include public transit, green and social infrastructure, transportation infrastructure that supports trade, and infrastructure in rural and northern communities.

The 2014 New Building Canada Fund (NBCF) is one component within the overall $53-billion 2014 New Building Canada Plan (NBCP). It is a $14-billion Fund to support projects of national,

regional and local significance that promote economic growth, job creation and productivity. The $10-billion Provincial-Territorial Infrastructure Component (PTIC) which supports infrastructure projects of national, regional and local significance that contribute to economic growth, a clean environment, and stronger communities.

The Government of Alberta recently announced $215 million over 5 years for the Alberta Community Transit Fund, to help expand Alberta's transit system, green Alberta's transit fleet, and increase transit ridership. Private and non-profit organizations can apply for funding in partnership with an eligible municipality.

As part of the Climate Leadership Plan, the Alberta Government will use revenue from the Carbon Levy to pay for initiatives that reduce emissions and support adaption and transmission to a lower carbon economy, including transit and infrastructure projects. Over the next 3 years, $5.3 billion will be spent to advance climate leadership initiatives including public transit, innovative research, energy efficiency programs, infrastructure projects, and support to Indigenous communities.

The mission of the Canada Infrastructure Bank (CIB) is to work with provincial, territorial, municipal, federal, Indigenous and private sector investor partners to transform the way infrastructure is planned, financed and delivered in Canada. The CIB uses financial instruments including loans, equity, and where appropriate, loan guarantees to deliver federal support to projects to make them commercially viable. The CIB will provide financing and investment using a combination of these instruments depending on a project's unique characteristics. The Government of Canada sets the high-level policy priorities for the CIB, including:
  ➢ projects that support the Government's current priorities to invest in public transit, trade and transportation, and green infrastructure;
  ➢ projects that contribute to the objectives of the Investing in Canada Plan and the Pan-Canadian Framework on Clean Growth and Climate Change; and
  ➢ projects generally eligible for cost sharing under federal infrastructure support programs.


Public Private Partnerships (P3) are increasingly used to execute large infrastructure projects, however they are considered more a financing rather than a funding mechanism. The P3 Canada Fund targets P3 infrastructure projects, and lists transit as one of the eligible categories. The amount of funding support, in combination with any other direct Federal assistance, may not exceed 25% of the project's direct construction costs. The level, form and conditions of any funding support will vary depending on the needs of a given project.

There are many examples of PPPs in operation across the globe, and also in Canada. Evaluating relevant examples and applying them to Regional Rail in the Calgary – Edmonton corridor creates a revised IRR calculation for regional passenger rail in the corridor of approximately 15% to 20%.

## 8. Regional Rail System with Express Services



Ville A      $CG_0$      Ville B

$$T_0 = K \, \frac{(\text{Pop A x Pop B})^{\alpha} \text{ x } (\text{Rich A x Rich B})^{\beta}}{CG_0^2}$$

Ville A    $CG_1$    Ville B      Trafic

$$T_1 = K \, \frac{(\text{Pop A x Pop B})^{\alpha} \text{ x } (\text{Rich A x Rich B})^{\beta}}{CG_1^2}$$
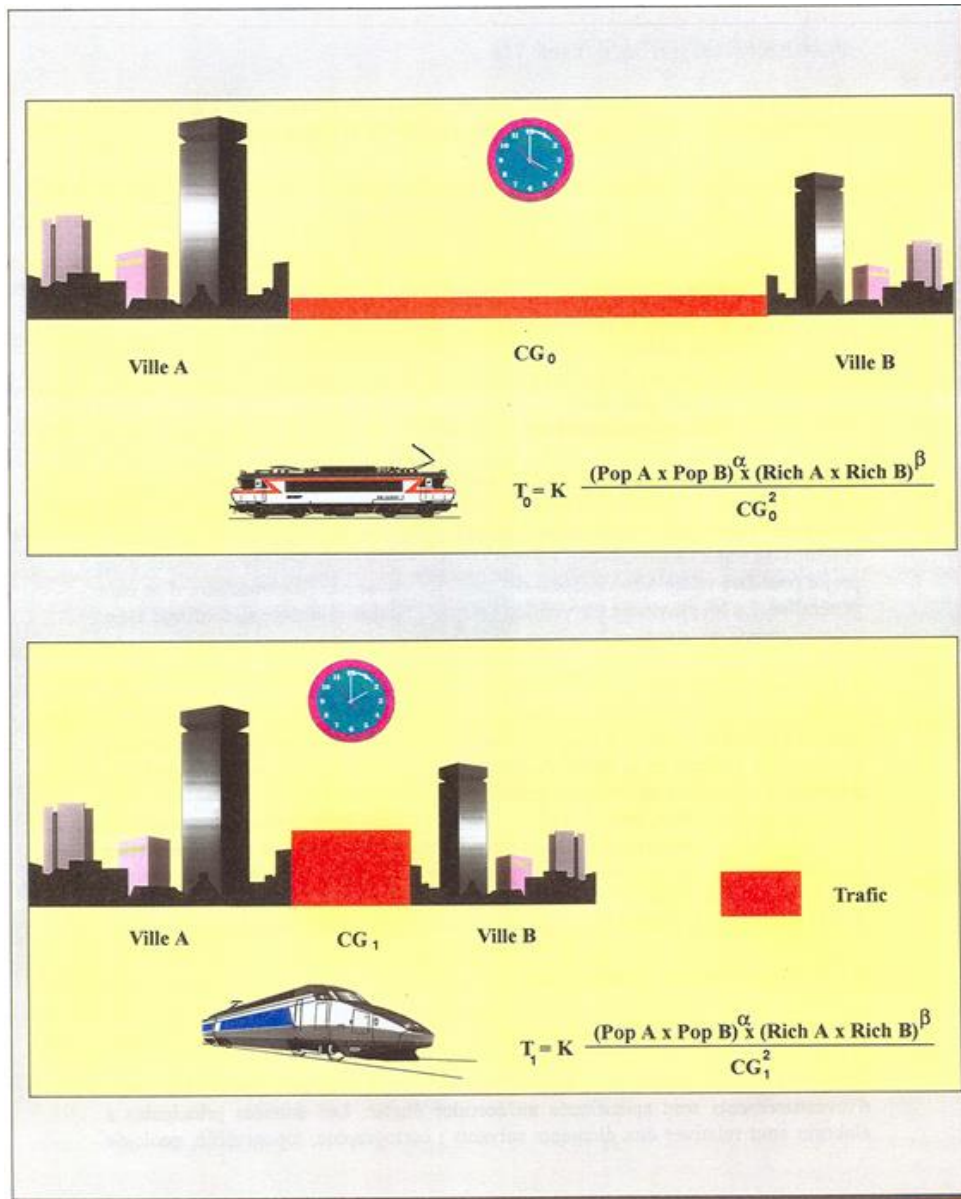
The faster the mode of travel, the less time it takes between destinations, and therefore the greater the market share that mode will take. With the inclusion of express services in the Calgary – Edmonton corridor, that only service the principle urban areas of Calgary, Edmonton, and Red Deer, the speed of the services can be increased and the journey time between these destinations substantially reduced. By introducing Express services, ridership increases by over 3,500 passengers per day.

Utilizing a similar time table, express services would depart just prior to the regional rail service, so as not to be impacted by the frequently stopping regional service. With speeds up to 200kph, the journey time between Calgary and Edmonton would be less than 2hrs.

| Calgary - Edmonton Express Timetable | | | | | | |
|---|---|---|---|---|---|---|
| Calgary Tower | Dep | 6:50 | 9:10 | 13:40 | 17:40 | 21:25 |
| Red Deer | Arr | 7:47 | 10:07 | 14:37 | 18:37 | 22:22 |
| | Dep | 7:52 | 10:12 | 14:42 | 18:42 | 22:27 |
| Edmonton GC | Arr | 8:50 | 11:10 | 15:40 | 19:40 | 23:25 |
| Edmonton - Calgary Express Timetable | | | | | | |
| Edmonton GC | Dep | 6:50 | 9:10 | 13:40 | 17:40 | 21:25 |
| Red Deer | Arr | 7:48 | 10:08 | 14:38 | 18:38 | 22:23 |
| | Dep | 7:53 | 10:13 | 14:43 | 18:43 | 22:28 |
| Calgary Tower | Arr | 8:50 | 11:10 | 15:40 | 19:40 | 23:25 |

## 8.1  Infrastructure Costs

Infrastructure costs are taken from the Calgary Bow Valley mass Transit Feasibility Study 2019, and updated with the Calgary Banff Rail Study 2021, and incorporated into Table 8 in the Appendix. For express services, the entire length of track would have to be upgraded and twinned to ensure higher operating speeds and eliminate any potential for conflicts with regional and freight services. The total cost to build the required infrastructure would be CAD 2,155 million.

## 8.2  Rolling Stock

The same rolling stock would be used for the express services as would be used for the regional services, with a top speed of 200kph, to ensure compatibility across the service and network. The cost of purchase for the required rolling stock would be CAD 283 million.

## 8.3  Operating Costs

Operating costs are taken from the Calgary Bow Valley Mass Transit Feasibility Study 2019, and updated with the Calgary Banff Rail Study 2021, tabulated and applied to various service scenarios according to the time table above. See Table 9 in the Appendix. For the full service, including express trains, the annual operating cost would be approximately CAD 122 million per year.

## 8.4  Internal Rate of Return

With the forecast revenue, infrastructure costs, rolling stock costs, and operating costs, we can calculate the Internal Rate of Return (IRR).

As with the regional rail service, the fares are calculated by taking the existing fares charged for public transportation services within the corridor, and extrapolating them for the distance covered. A fare of CAD4.00 is maintained for proximal destinations, and the fare of CAD76.00 is maintained for express services between Edmonton and Calgary. See Table 10 in the Appendix.

The same population growth as calculated for regional rail is expected for the regional and express service scenario.

| Regional Rail and Express | | | | | | IRR -0.98% |
|---|---|---|---|---|---|---|
| Year | Passenger Revenue | Operating costs | Rolling Stock | Infrastructure costs | Total Expenses | Balance |
| 0 | 54,112,845.58 | 75,444,032 | 141,500,000 | 346,264,400 | 563,208,432 | - 509,095,586 |
| 1 | 81,169,268.37 | 76,952,913 | | | 76,952,913 | 4,216,356 |
| 2 | 91,991,837.49 | 78,491,971 | | | 78,491,971 | 13,499,867 |
| 3 | 97,403,122.05 | 103,220,493 | 56,600,000 | 854,626,353 | 1,014,446,846 | - 917,043,724 |
| 4 | 102,814,406.61 | 105,284,903 | | | 105,284,903 | - 2,470,496 |
| 5 | 173,090,475.97 | 141,902,651 | 84,900,000 | 889,153,258 | 1,115,955,909 | - 942,865,433 |
| 6 | 193,454,061.38 | 144,740,704 | | | 144,740,704 | 48,713,357 |
| 7 | 203,635,854.08 | 147,635,518 | | | 147,635,518 | 56,000,336 |
| 8 | 211,781,288.25 | 150,588,228 | | | 150,588,228 | 61,193,060 |
| 9 | 220,252,539.78 | 153,599,993 | | | 153,599,993 | 66,652,547 |
| 10 | 229,062,641.37 | 156,671,993 | | | 156,671,993 | 72,390,648 |
| 11 | 238,225,147.02 | 159,805,433 | | | 159,805,433 | 78,419,714 |
| 12 | 247,754,152.91 | 163,001,541 | | | 163,001,541 | 84,752,612 |
| 13 | 257,664,319.02 | 166,261,572 | | | 166,261,572 | 91,402,747 |
| 14 | 267,970,891.78 | 169,586,804 | | | 169,586,804 | 98,384,088 |
| 15 | 278,689,727.45 | 172,978,540 | 60,000,000 | | 232,978,540 | 45,711,188 |
| 16 | 289,837,316.55 | 176,438,111 | | | 176,438,111 | 113,399,206 |
| 17 | 301,430,809.21 | 179,966,873 | | | 179,966,873 | 121,463,936 |
| 18 | 313,488,041.58 | 183,566,210 | | | 183,566,210 | 129,921,831 |
| 19 | 326,027,563.25 | 187,237,534 | | | 187,237,534 | 138,790,029 |
| 20 | 339,068,665.78 | 190,982,285 | | | 190,982,285 | 148,086,381 |
| 21 | 352,631,412.41 | 194,801,931 | | | 194,801,931 | 157,829,482 |
| 22 | 366,736,668.90 | 198,697,969 | | | 198,697,969 | 168,038,699 |
| 23 | 381,406,135.66 | 202,671,929 | | | 202,671,929 | 178,734,207 |
| 24 | 396,662,381.09 | 206,725,367 | | | 206,725,367 | 189,937,014 |
| Total | 4,179,856,310 | 2,893,376,017 | 343,000,000 | 2,090,044,010 | 5,326,420,027 | - 1,146,563,717 |

## 8.5  Public Private Partnership

There are many different ways a Public Private Partnership (PPP) can be conducted, Governments may provide a capital subsidy in the form of a one-time grant so as to make the project economically viable. In other cases, Governments may support the project by providing revenue subsidies, including tax breaks or by guaranteed annual revenues for a fixed period.

There are many examples of PPPs in operation across the globe, and also in Canada. Evaluating relevant examples and applying them to Regional & Express Rail in the Calgary – Edmonton corridor creates a revised IRR of between 1.5% and 8.6%.

## 9. ECONOMIC IMPACT

The ARR Red Deer Commuter and Calgary – Edmonton corridor trains will be geared towards carrying commuters to downtown Calgary and Edmonton, and back during peak travel periods in the morning and afternoon. Peak service can be adjusted to meet demands. During peak periods the ARR journey time would be faster than the journey time by car. Even when roads are not congested, ARR transit times would be attractive, taking into account reduced stress, the ability to make more productive use of time, and increased reliability and predictability.

Equally important, ARR would provide major economic benefits. Workers would have access to a wider range of jobs, and employers would be able to draw employees from a wider pool as connections across the region make it more convenient for workers to live in one area and work in another. Better matching workers and jobs means more productivity and more competitive businesses. Moreover, by relieving traffic congestion, ARR would reduce costs for businesses.

The development of an Alberta Regional Rail system will provide an integrating force for the communities of the Calgary-Edmonton corridor. It will provide opportunities to fundamentally change the character of business, while expanding the level of social, personal and tourist interaction. It will support existing manufacturing and service industry, while fostering the growth of new businesses and attract the "New Economy" businesses including high-tech/high value-added industry tied to computer, telecommunications and professional services businesses.

Implementation of an Alberta Regional Rail system will encourage businesses to distribute their operations more widely in the highly accessible smaller communities. These communities provide a high quality of life for residents in terms of lower cost housing, good schools, friendly neighbourhoods, and less congested roads. Alberta Regional Rail will offer an energy-efficient and cost-effective alternative to automobile and air travel that businesses and individuals will be able to use to connect with all of the towns and cities in the Calgary-Edmonton corridor, Calgary-Banff corridor, and beyond. Alberta Regional Rail system will provide a level of service that will be critical to attracting and developing "New Economy" businesses.

The entire province would also benefit from the environmental impact, which would include reduced carbon dioxide emissions, particulates, and other air contaminants. ARR would be powered with electricity, which can be generated from more sustainable and non-polluting sources, and clean air generators. ARR trains will also be equipped with regenerative braking so that power is returned to the system as trains stop.

Alberta Regional Rail would support the region and its growing travel demands by providing needed transportation system capacity and attractive travel options in terms of speed, convenience, comfort and reliability. It is a financially affordable investment and would create a financially sustainable backbone for transit systems far into the future. It would create net value as the benefits to citizens and businesses would exceed its cost.

## 10.  CONCLUSIONS

Now, it is time to conclude this report putting the main results in clear evidence.

Using this basic Gravity Model calculation, we estimate regional rail ridership to be in the region of 5.2 million passengers per year.

Due to the nature of Calgary being the financial and business hub, Edmonton being the Government Centre with the Provincial Legislature, and the corridor being an established Industrial Corridor, the overall ridership can be estimated to be significantly larger than what is calculated through this Gravity Model.

This Gravity Model does not take into account the potential ridership draw of the Calgary International Airport, nor the Edmonton International Airport and nearby outlet mall, both of which could be easily connected to the regional rail system by means of an automated people mover.

Also not taken into account is the status of the Calgary – Edmonton corridor being an established Industrial Corridor, with travel from within the corridor to the business hub of Calgary and the Government Centre of Edmonton.

Taking into account these factors, the economics of regional and express rail services would improve, creating an IRR greater than the calculated 9.51% for a basic regional rail service.

A Public Private Partnership venture could be engaged in, that would further improve the economics of regional and express passenger rail services in the corridor, depending upon the value of Federal and Provincial grants and funds, or amount of subsidy approved.

The Reseau Electrique Metropolitain (REM) in Montreal is a recent mass transit PPP infrastructure investment between the Caisse de Depot et Placement du Quebec, the Government of Quebec, and the Government of Canada. The Government of Quebec and the Government of Canada each committed CAD 1.28 billion to the CAD 6.9 billion cost of the project, resulting in CDPQ Infra covering the remaining 63% of the infrastructure costs. If a similar formula is adopted for the regional and express passenger rail services in the Calgary – Edmonton corridor, the IRR would calculate out to be 3.21%

More studies need to be done in order to explore all the solutions, including a full feasibility study that will outline the socio-economic benefits, as well as environmental and wildlife impact assessments, and a capacity study of the CPR Right of Way within the corridor. Relations & Connections with Railways will be required in order to have access to the Tracks and Stations.

**APPENDIX**

## Table 1 - Distances Between Towns & Cities

| Distance between KM | Calgary | Airdrie | Crossfeild | Carstairs | Didsbury | Olds | Bowden | Innisfail | Penhold | Red Deer | Blackfalds | Lacombe | Morningside | Ponoka | Maskwacis | Wetaskiwin | Millet | Leduc | Nisku | Edmonton |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Calgary | 0 | 36.4 | 50.2 | 66.2 | 79.5 | 99.5 | 118 | 131.5 | 146 | 160.1 | 178.3 | 190 | 204.9 | 217.2 | 237.9 | 255.4 | 271.9 | 293.2 | 301.9 | 323.9 |
| Airdrie | 36.4 | 0 | 13.8 | 29.8 | 43.1 | 63.1 | 81.6 | 95.1 | 109.6 | 123.7 | 141.9 | 153.6 | 168.5 | 180.8 | 201.5 | 219 | 235.5 | 256.8 | 265.5 | 287.5 |
| Crossfield | 50.2 | 13.8 | 0 | 16 | 29.3 | 49.3 | 67.8 | 81.3 | 95.8 | 109.9 | 128.1 | 139.8 | 154.7 | 167 | 187.7 | 205.2 | 221.7 | 243 | 251.7 | 273.7 |
| Carstairs | 66.2 | 29.8 | 16 | 0 | 13.3 | 33.3 | 51.8 | 65.3 | 79.8 | 93.9 | 112.1 | 123.8 | 138.7 | 151 | 171.7 | 189.2 | 205.7 | 227 | 235.7 | 257.7 |
| Didsbury | 79.5 | 43.1 | 29.3 | 13.3 | 0 | 20 | 38.5 | 52 | 66.5 | 80.6 | 98.8 | 110.5 | 125.4 | 137.7 | 158.4 | 175.9 | 192.4 | 213.7 | 222.4 | 244.4 |
| Olds | 99.5 | 63.1 | 49.3 | 33.3 | 20 | 0 | 18.5 | 32 | 46.5 | 60.6 | 78.8 | 90.5 | 105.4 | 117.7 | 138.4 | 155.9 | 172.4 | 193.7 | 202.4 | 224.4 |
| Bowden | 118 | 81.6 | 67.8 | 51.8 | 38.5 | 18.5 | 0 | 13.5 | 28 | 42.1 | 60.3 | 72 | 86.9 | 99.2 | 119.9 | 137.4 | 153.9 | 175.2 | 183.9 | 205.9 |
| Innisfail | 131.5 | 95.1 | 81.3 | 65.3 | 52 | 32 | 13.5 | 0 | 14.5 | 28.6 | 46.8 | 58.5 | 73.4 | 85.7 | 106.4 | 123.9 | 140.4 | 161.7 | 170.4 | 192.4 |
| Penhold | 146 | 109.6 | 95.8 | 79.8 | 66.5 | 46.5 | 28 | 14.5 | 0 | 14.1 | 32.3 | 44 | 58.9 | 71.2 | 91.9 | 109.4 | 125.9 | 147.2 | 155.9 | 177.9 |
| Red Deer | 160.1 | 123.7 | 109.9 | 93.9 | 80.6 | 60.6 | 42.1 | 28.6 | 14.1 | 0 | 18.2 | 29.9 | 44.8 | 57.1 | 77.8 | 95.3 | 111.8 | 133.1 | 141.8 | 163.8 |
| Blackfalds | 178.3 | 141.9 | 128.1 | 112.1 | 98.8 | 78.8 | 60.3 | 46.8 | 32.3 | 18.2 | 0 | 11.7 | 26.6 | 38.9 | 59.6 | 77.1 | 93.6 | 114.9 | 123.6 | 145.6 |
| Lacombe | 190 | 153.6 | 139.8 | 123.8 | 110.5 | 90.5 | 72 | 58.5 | 44 | 29.9 | 11.7 | 0 | 14.9 | 27.2 | 47.9 | 65.4 | 81.9 | 103.2 | 111.9 | 133.9 |
| Morningside | 204.9 | 168.5 | 154.7 | 138.7 | 125.4 | 105.4 | 86.9 | 73.4 | 58.9 | 44.8 | 26.6 | 14.9 | 0 | 12.3 | 33 | 50.5 | 67 | 88.3 | 97 | 119 |
| Ponoka | 217.2 | 180.8 | 167 | 151 | 137.7 | 117.7 | 99.2 | 85.7 | 71.2 | 57.1 | 38.9 | 27.2 | 12.3 | 0 | 20.7 | 38.2 | 54.7 | 76 | 84.7 | 106.7 |
| Maskwacis | 237.9 | 201.5 | 187.7 | 171.7 | 158.4 | 138.4 | 119.9 | 106.4 | 91.9 | 77.8 | 59.6 | 47.9 | 33 | 20.7 | 0 | 17.5 | 34 | 55.3 | 64 | 86 |
| Wetaskiwin | 255.4 | 219 | 205.2 | 189.2 | 175.9 | 155.9 | 137.4 | 123.9 | 109.4 | 95.3 | 77.1 | 65.4 | 50.5 | 38.2 | 17.5 | 0 | 16.5 | 37.8 | 46.5 | 68.5 |
| Millet | 271.9 | 235.5 | 221.7 | 205.7 | 192.4 | 172.4 | 153.9 | 140.4 | 125.9 | 111.8 | 93.6 | 81.9 | 67 | 54.7 | 34 | 16.5 | 0 | 21.3 | 30 | 52 |
| Leduc | 293.2 | 256.8 | 243 | 227 | 213.7 | 193.7 | 175.2 | 161.7 | 147.2 | 133.1 | 114.9 | 103.2 | 88.3 | 76 | 55.3 | 37.8 | 21.3 | 0 | 8.7 | 30.7 |
| Nisku | 301.9 | 265.5 | 251.7 | 235.7 | 222.4 | 202.4 | 183.9 | 170.4 | 155.9 | 141.8 | 123.6 | 111.9 | 97 | 84.7 | 64 | 46.5 | 30 | 8.7 | 0 | 22 |
| Edmonton | 323.9 | 287.5 | 273.7 | 257.7 | 244.4 | 224.4 | 205.9 | 192.4 | 177.9 | 163.8 | 145.6 | 133.9 | 119 | 106.7 | 86 | 68.5 | 52 | 30.7 | 22 | 0 |

## Table 2 - Potential Attraction Between Towns & Cities

| Potential Attraction | Calgary | Airdrie | Crossfield | Carstairs | Didsbury | Olds | Bowden | Innisfail | Penhold | Red Deer | Blackfalds | Lacombe | Morningside | Ponoka | Maskwacis | Wetaskiwin | Millet | Leduc | Nisku | Edmonton | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Calgary | 0 | 96832.6944 | 4703.115616 | 6400.628032 | 6625.39488 | 12034.17386 | 1672.68352 | 10434.67024 | 4552.835456 | 131781.3257 | 13682.02848 | 13437.65987 | 156.81408 | 13065.22643 | 26879.2401 | 16457.6377 | 2469.82176 | 63392.09184 | 39.20352 | 1321026.639 | 1745643.884 |
| Airdrie | 96832.6944 | 0 | 266.6859 | 362.9418 | 375.687 | 682.3869 | 94.848 | 591.6885 | 258.1644 | 7472.5404 | 775.827 | 761.9703 | 8.892 | 740.8518 | 1524.1629 | 933.2154 | 140.049 | 3594.591 | 2.223 | 74907.6159 | 190327.0356 |
| Crossfield | 4703.115616 | 266.6859 | 0 | 17.627902 | 18.24693 | 33.143191 | 4.60672 | 28.738015 | 12.538916 | 362.937556 | 37.68153 | 37.008517 | 0.43188 | 35.982802 | 74.027831 | 45.325806 | 6.80211 | 174.58749 | 0.10797 | 3638.225501 | 9497.822183 |
| Carstairs | 6400.628032 | 362.9418 | 17.627902 | 0 | 24.83286 | 45.105682 | 6.26944 | 39.11053 | 17.064632 | 493.933912 | 51.28206 | 50.366134 | 0.58776 | 48.970204 | 100.746962 | 61.685412 | 9.25722 | 237.60198 | 0.14694 | 4951.383302 | 12919.54276 |
| Didsbury | 6625.39488 | 375.687 | 18.24693 | 24.83286 | 0 | 46.68963 | 6.4896 | 40.48395 | 17.66388 | 511.27908 | 53.0829 | 52.13481 | 0.6084 | 50.68986 | 104.28483 | 63.85158 | 9.5823 | 245.9457 | 0.1521 | 5125.25793 | 13372.35822 |
| Olds | 12034.17386 | 682.3869 | 33.143191 | 45.105682 | 46.68963 | 0 | 11.78752 | 73.533865 | 32.084156 | 928.672396 | 96.41823 | 94.696147 | 1.10508 | 92.071582 | 189.419921 | 115.978146 | 17.40501 | 446.72859 | 0.27627 | 9309.368891 | 24251.04506 |
| Bowden | 1672.68352 | 94.848 | 4.60672 | 6.26944 | 6.4896 | 11.78752 | 0 | 10.2208 | 4.45952 | 129.08032 | 13.4016 | 13.16224 | 0.1536 | 12.79744 | 26.32832 | 16.12032 | 2.4192 | 62.0928 | 0.0384 | 1293.95072 | 3380.91008 |
| Innisfail | 10434.67024 | 591.6885 | 28.738015 | 39.11053 | 40.48395 | 73.533865 | 10.2208 | 0 | 27.81974 | 805.23934 | 83.60295 | 82.109755 | 0.9582 | 79.83403 | 164.243465 | 100.56309 | 15.09165 | 387.35235 | 0.23955 | 8072.028515 | 21037.52854 |
| Penhold | 4552.835456 | 258.1644 | 12.538916 | 17.064632 | 17.66388 | 32.084156 | 4.45952 | 27.81974 | 0 | 351.340496 | 36.47748 | 35.825972 | 0.41808 | 34.833032 | 71.662396 | 43.877496 | 6.58476 | 169.00884 | 0.10452 | 3521.972116 | 9194.735888 |
| Red Deer | 131781.3257 | 7472.5404 | 362.937556 | 493.933912 | 511.27908 | 928.672396 | 129.08032 | 805.23934 | 351.340496 | 0 | 1055.83668 | 1036.978852 | 12.10128 | 1008.238312 | 2074.260236 | 1270.029336 | 190.59516 | 4891.94244 | 3.02532 | 101943.0988 | 256322.4556 |
| Blackfalds | 13682.02848 | 775.827 | 37.68153 | 51.28206 | 53.0829 | 96.41823 | 13.4016 | 83.60295 | 36.47748 | 1055.83668 | 0 | 107.66301 | 1.2564 | 104.67906 | 215.35743 | 131.85918 | 19.7883 | 507.8997 | 0.3141 | 10584.11253 | 27558.56862 |
| Lacombe | 13437.65987 | 761.9703 | 37.008517 | 50.366134 | 52.13481 | 94.696147 | 13.16224 | 82.109755 | 35.825972 | 1036.978852 | 107.66301 | 0 | 1.23396 | 102.809434 | 211.511027 | 129.504102 | 19.43487 | 498.82833 | 0.30849 | 10395.07442 | 27068.28024 |
| Morningside | 156.81408 | 8.892 | 0.43188 | 0.58776 | 0.6084 | 1.10508 | 0.1536 | 0.9582 | 0.41808 | 12.10128 | 1.2564 | 1.23396 | 0 | 1.19976 | 2.46828 | 1.51128 | 0.2268 | 5.8212 | 0.0036 | 121.30788 | 317.09952 |
| Ponoka | 13065.22643 | 740.8518 | 35.982802 | 48.970204 | 50.68986 | 92.071582 | 12.79744 | 79.83403 | 34.833032 | 1008.238312 | 104.67906 | 102.809434 | 1.19976 | 0 | 205.648862 | 125.914812 | 18.89622 | 485.00298 | 0.29994 | 10106.9682 | 26320.91476 |
| Maskwacis | 26879.2401 | 1524.1629 | 74.027831 | 100.746962 | 104.28483 | 189.419921 | 26.32832 | 164.243465 | 71.662396 | 2074.260236 | 215.35743 | 211.511027 | 2.46828 | 205.648862 | 0 | 259.045986 | 38.87541 | 997.80219 | 0.61707 | 20793.18153 | 53932.88474 |
| Wetaskiwin | 16457.6377 | 933.2154 | 45.325806 | 61.685412 | 63.85158 | 115.978146 | 16.12032 | 100.56309 | 43.877496 | 1270.029336 | 131.85918 | 129.504102 | 1.51128 | 125.914812 | 259.045986 | 0 | 23.80266 | 610.93494 | 0.37782 | 12731.26201 | 33122.49707 |
| Millet | 2469.82176 | 140.049 | 6.80211 | 9.25722 | 9.5823 | 17.40501 | 2.4192 | 15.09165 | 6.58476 | 190.59516 | 19.7883 | 19.43487 | 0.2268 | 18.89622 | 38.87541 | 23.80266 | 0 | 91.6839 | 0.0567 | 1910.59911 | 4990.97214 |
| Leduc | 63392.09184 | 3594.591 | 174.58749 | 237.60198 | 245.9457 | 446.72859 | 62.0928 | 387.35235 | 169.00884 | 4891.94244 | 507.8997 | 498.82833 | 5.8212 | 485.00298 | 997.80219 | 610.93494 | 91.6839 | 0 | 1.4553 | 49038.71049 | 125840.0821 |
| Nisku | 39.20352 | 2.223 | 0.10797 | 0.14694 | 0.1521 | 0.27627 | 0.0384 | 0.23955 | 0.10452 | 3.02532 | 0.3141 | 0.30849 | 0.0036 | 0.29994 | 0.61707 | 0.37782 | 0.0567 | 1.4553 | 0 | 30.32697 | 79.27758 |
| Edmonton | 1321026.639 | 74907.6159 | 3638.225501 | 4951.383302 | 5125.25793 | 9309.368891 | 1293.95072 | 8072.028515 | 3521.972116 | 101943.0988 | 10584.11253 | 10395.07442 | 121.30788 | 10106.9682 | 20793.18153 | 12731.26201 | 1910.59911 | 49038.71049 | 30.32697 | 0 | 1649501.084 |
| Total | 1745643.884 | 190327.0356 | 9497.822183 | 12919.54276 | 13372.35822 | 24251.04506 | 3380.91008 | 21037.52854 | 9194.735888 | 256322.4556 | 27558.56862 | 27068.28024 | 317.09952 | 26320.91476 | 53932.88474 | 33122.49707 | 4990.97214 | 125840.0821 | 79.27758 | 1649501.084 | 4234678.979 |
| Ratio | 0.412225789 | 0.044944856 | 0.002242867 | 0.003050891 | 0.003157821 | 0.005726773 | 0.000798386 | 0.004967916 | 0.002171295 | 0.060529371 | 0.006507829 | 0.00639205 | 7.48816E-05 | 0.006215563 | 0.012736003 | 0.007821726 | 0.001178595 | 0.029716558 | 1.8721E-05 | 0.389522108 | 1 |

## Table 3 - Potential Repulsion Between Towns & Cities

| Repulsion | Calgary | Airdrie | Crossfeild | Carstairs | Didsbury | Olds | Bowden | Innisfail | Penhold | Red Deer | Blackfalds | Lacombe | Morningside | Ponoka | Maskwacis | Wetaskiwin | Millet | Leduc | Nisku | Edmonton | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Calgary | 0 | 5.29984 | 10.08016 | 17.52976 | 25.281 | 39.601 | 55.696 | 69.169 | 85.264 | 102.52804 | 127.16356 | 144.4 | 167.93604 | 188.70336 | 226.38564 | 260.91664 | 295.71844 | 343.86496 | 364.57444 | 419.64484 | 2949.75672 |
| Airdrie | 5.29984 | 0 | 0.76176 | 3.55216 | 7.43044 | 15.92644 | 26.63424 | 36.17604 | 48.04864 | 61.20676 | 80.54244 | 94.37184 | 113.569 | 130.75456 | 162.409 | 191.844 | 221.841 | 263.78496 | 281.961 | 330.625 | 2076.73912 |
| Crossfeild | 10.08016 | 0.76176 | 0 | 1.024 | 3.43396 | 9.72196 | 18.38736 | 26.43876 | 36.71056 | 48.31204 | 65.63844 | 78.17616 | 95.72836 | 111.556 | 140.92516 | 168.42816 | 196.60356 | 236.196 | 253.41156 | 299.64676 | 1801.18072 |
| Carstairs | 17.52976 | 3.55216 | 1.024 | 0 | 0.70756 | 4.43556 | 10.73296 | 17.05636 | 25.47216 | 35.26884 | 50.26564 | 61.30576 | 76.95076 | 91.204 | 117.92356 | 143.18656 | 169.24996 | 206.116 | 222.21796 | 265.63716 | 1519.83672 |
| Didsbury | 25.281 | 7.43044 | 3.43396 | 0.70756 | 0 | 1.6 | 5.929 | 10.816 | 17.689 | 25.98544 | 39.04576 | 48.841 | 62.90064 | 75.84516 | 100.36224 | 123.76324 | 148.07104 | 182.67076 | 197.84704 | 238.92544 | 1317.14472 |
| Olds | 39.601 | 15.92644 | 9.72196 | 4.43556 | 1.6 | 0 | 1.369 | 4.096 | 8.649 | 14.68944 | 24.83776 | 32.761 | 44.43664 | 55.41316 | 76.61824 | 97.21924 | 118.88704 | 150.07876 | 163.86304 | 201.42144 | 1065.62472 |
| Bowden | 55.696 | 26.63424 | 18.38736 | 10.73296 | 5.929 | 1.369 | 0 | 0.729 | 3.136 | 7.08964 | 14.54436 | 20.736 | 30.20644 | 39.36256 | 57.50404 | 75.51504 | 94.74084 | 122.78016 | 135.27684 | 169.57924 | 889.94872 |
| Innisfail | 69.169 | 36.17604 | 26.43876 | 17.05636 | 10.816 | 4.096 | 0.729 | 0 | 0.841 | 3.27184 | 8.76096 | 13.689 | 21.55024 | 29.37796 | 45.28384 | 61.40484 | 78.84864 | 104.58756 | 116.14464 | 148.07104 | 796.31272 |
| Penhold | 85.264 | 48.04864 | 36.71056 | 25.47216 | 17.689 | 8.649 | 3.136 | 0.841 | 0 | 0.79524 | 4.17316 | 7.744 | 13.87684 | 20.27776 | 33.78244 | 47.87344 | 63.40324 | 86.67136 | 97.21924 | 126.59364 | 728.22072 |
| Red Deer | 102.52804 | 61.20676 | 48.31204 | 35.26884 | 25.98544 | 14.68944 | 7.08964 | 3.27184 | 0.79524 | 0 | 1.32496 | 3.57604 | 8.02816 | 13.04164 | 24.21136 | 36.32836 | 49.99696 | 70.86244 | 80.42896 | 107.32176 | 694.26792 |
| Blackfalds | 127.16356 | 80.54244 | 65.63844 | 50.26564 | 39.04576 | 24.83776 | 14.54436 | 8.76096 | 4.17316 | 1.32496 | 0 | 0.54756 | 2.83024 | 6.05284 | 14.20864 | 23.77764 | 35.04384 | 52.80804 | 61.10784 | 84.79744 | 697.47112 |
| Lacombe | 144.4 | 94.37184 | 78.17616 | 61.30576 | 48.841 | 32.761 | 20.736 | 13.689 | 7.744 | 3.57604 | 0.54756 | 0 | 0.88804 | 2.95936 | 9.17764 | 17.10864 | 26.83044 | 42.60096 | 50.08644 | 71.71684 | 727.51672 |
| Morningside | 167.93604 | 113.569 | 95.72836 | 76.95076 | 62.90064 | 44.43664 | 30.20644 | 21.55024 | 13.87684 | 8.02816 | 2.83024 | 0.88804 | 0 | 0.60516 | 4.356 | 10.201 | 17.956 | 31.18756 | 37.636 | 56.644 | 797.48712 |
| Ponoka | 188.70336 | 130.75456 | 111.556 | 91.204 | 75.84516 | 55.41316 | 39.36256 | 29.37796 | 20.27776 | 13.04164 | 6.05284 | 2.95936 | 0.60516 | 0 | 1.71396 | 5.83696 | 11.96836 | 23.104 | 28.69636 | 45.53956 | 882.01272 |
| Maskwacis | 226.38564 | 162.409 | 140.92516 | 117.92356 | 100.36224 | 76.61824 | 57.50404 | 45.28384 | 33.78244 | 24.21136 | 14.20864 | 9.17764 | 4.356 | 1.71396 | 0 | 1.225 | 4.624 | 12.23236 | 16.384 | 29.584 | 1078.91112 |
| Wetaskiwin | 260.91664 | 191.844 | 168.42816 | 143.18656 | 123.76324 | 97.21924 | 75.51504 | 61.40484 | 47.87344 | 36.32836 | 23.77764 | 17.10864 | 10.201 | 5.83696 | 1.225 | 0 | 1.089 | 5.71536 | 8.649 | 18.769 | 1298.85112 |
| Millet | 295.71844 | 221.841 | 196.60356 | 169.24996 | 148.07104 | 118.88704 | 94.74084 | 78.84864 | 63.40324 | 49.99696 | 35.04384 | 26.83044 | 17.956 | 11.96836 | 4.624 | 1.089 | 0 | 1.81476 | 3.6 | 10.816 | 1551.10312 |
| Leduc | 343.86496 | 263.78496 | 236.196 | 206.116 | 182.67076 | 150.07876 | 122.78016 | 104.58756 | 86.67136 | 70.86244 | 52.80804 | 42.60096 | 31.18756 | 23.104 | 12.23236 | 5.71536 | 1.81476 | 0 | 0.30276 | 3.76996 | 1941.14872 |
| Nisku | 364.57444 | 281.961 | 253.41156 | 222.21796 | 197.84704 | 163.86304 | 135.27684 | 116.14464 | 97.21924 | 80.42896 | 61.10784 | 50.08644 | 37.636 | 28.69636 | 16.384 | 8.649 | 3.6 | 0.30276 | 0 | 1.936 | 2121.34312 |
| Edmonton | 419.64484 | 330.625 | 299.64676 | 265.63716 | 238.92544 | 201.42144 | 169.57924 | 148.07104 | 126.59364 | 107.32176 | 84.79744 | 71.71684 | 56.644 | 45.53956 | 29.584 | 18.769 | 10.816 | 3.76996 | 1.936 | 0 | 2631.03912 |
| Total | 2949.75672 | 2076.73912 | 1801.18072 | 1519.83672 | 1317.14472 | 1065.62472 | 889.94872 | 796.31272 | 728.22072 | 694.26792 | 697.47112 | 727.51672 | 797.48712 | 882.01272 | 1078.91112 | 1298.85112 | 1551.10312 | 1941.14872 | 2121.34312 | 2631.03912 | 27565.9168 |
| Ratio | 0.107007387 | 0.075337205 | 0.06534086 | 0.055134634 | 0.04778164 | 0.038657329 | 0.032284387 | 0.028887583 | 0.026417432 | 0.025185737 | 0.025301938 | 0.026391893 | 0.028930187 | 0.031996495 | 0.039139316 | 0.047118009 | 0.056268875 | 0.070418435 | 0.07695529 | 0.09544537 | 1 |

Table 4 - Potential Total Traffic Between Towns & Cities

| Potential Traffic Index | Calgary | Airdrie | Crossfield | Carstairs | Didsbury | Olds | Bowden | Innisfail | Penhold | Red Deer | Blackfalds | Lacombe | Morningside | Ponoka | Maskwacis | Wetaskiwin | Millet | Leduc | Nisku | Edmonton | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Calgary | 0 | 18270.87127 | 466.5715243 | 365.1292449 | 262.070127 | 303.8856053 | 30.0323815 | 150.8576131 | 53.3969255 | 1285.319857 | 107.5939403 | 93.05858637 | 0.933772643 | 69.23685107 | 118.7320896 | 63.07622885 | 8.35193693 | 184.3517055 | 0.107532278 | 3147.963499 | 24981.54069 |
| Airdrie | 18270.87127 | 0 | 350.0917612 | 102.1749583 | 50.56053208 | 42.8461665 | 3.561130334 | 16.35581175 | 5.37298038 | 122.0868479 | 9.63252417 | 8.074127833 | 0.078296014 | 5.66597295 | 9.384719443 | 4.86444924 | 0.631303501 | 13.62697479 | 0.007884069 | 226.5636776 | 19242.45139 |
| Crossfield | 466.5715243 | 350.0917612 | 0 | 17.21474805 | 5.313669932 | 3.40910588 | 0.250537326 | 1.086965312 | 0.341561556 | 7.512362467 | 0.574077172 | 0.473399013 | 0.004511516 | 0.322553713 | 0.525298896 | 0.269110617 | 0.034598102 | 0.739163618 | 0.000426066 | 12.1417148 | 866.8770895 |
| Carstairs | 365.1292449 | 102.1749583 | 17.21474805 | 0 | 35.09647238 | 10.16910649 | 0.584129634 | 2.293017385 | 0.669932664 | 14.00482443 | 1.02022097 | 0.821556311 | 0.007638131 | 0.536930442 | 0.854341253 | 0.430804483 | 0.054695552 | 1.152758544 | 0.000661243 | 18.63964854 | 570.8556897 |
| Didsbury | 262.070127 | 50.56053208 | 5.313669932 | 35.09647238 | 0 | 29.18101875 | 1.094552201 | 3.74296875 | 0.998579908 | 19.67559834 | 1.359504848 | 1.067439446 | 0.009672398 | 0.668333484 | 1.039084321 | 0.515917166 | 0.064714207 | 1.346387895 | 0.000768776 | 21.45128593 | 435.2566278 |
| Olds | 303.8856053 | 42.8461665 | 3.40910588 | 10.16910649 | 29.18101875 | 0 | 8.610314098 | 17.95260376 | 3.709579836 | 63.2204084 | 3.881921317 | 2.890514545 | 0.024868667 | 1.661547221 | 2.472256228 | 1.192954666 | 0.146399557 | 2.976627672 | 0.001685981 | 46.21836132 | 544.4510462 |
| Bowden | 30.0323815 | 3.561130334 | 0.250537326 | 0.584129634 | 1.094552201 | 8.610314098 | 0 | 14.02030178 | 1.422040816 | 18.20689344 | 0.921429338 | 0.634753086 | 0.005085008 | 0.325117066 | 0.457851657 | 0.213471648 | 0.025534922 | 0.5057234 | 0.000283862 | 7.630360414 | 88.50189153 |
| Innisfail | 150.8576131 | 16.35581175 | 1.086965312 | 2.293017385 | 3.74296875 | 17.95260376 | 14.02030178 | 0 | 33.07935791 | 246.1120776 | 9.542669981 | 5.99822887 | 0.044463542 | 1.661547221 | 3.626977416 | 1.637706246 | 0.191400258 | 3.703617811 | 0.002062514 | 54.51456622 | 567.4798906 |
| Penhold | 53.3969255 | 5.37298038 | 0.341561556 | 0.669932664 | 0.998579908 | 3.709579836 | 1.422040816 | 33.07935791 | 0 | 441.8043559 | 8.740973267 | 4.626287707 | 0.030127897 | 1.717794865 | 2.121291298 | 0.916531087 | 0.10385526 | 1.9499964 | 0.001075096 | 27.82108261 | 588.82433 |
| Red Deer | 1285.319857 | 122.0868479 | 7.512362467 | 14.00482443 | 19.67559834 | 63.2204084 | 18.20689344 | 246.1120776 | 441.8043559 | 0 | 796.8819285 | 289.9796568 | 1.507354114 | 77.30916603 | 85.67301614 | 34.95972117 | 3.812134978 | 69.03434937 | 0.037614809 | 949.8828453 | 4527.021013 |
| Blackfalds | 107.5939403 | 9.63252417 | 0.574077172 | 1.02022097 | 1.359504848 | 3.881921317 | 0.921429338 | 9.542669981 | 8.740973267 | 796.8819285 | 0 | 196.6232194 | 0.44391995 | 17.2942057 | 15.15679404 | 5.545511666 | 0.564672707 | 9.617847964 | 0.005140093 | 124.8164158 | 1310.216917 |
| Lacombe | 93.05858637 | 8.074127833 | 0.473399013 | 0.821556311 | 1.067439446 | 2.890514545 | 0.634753086 | 5.99822887 | 4.626287707 | 289.9796568 | 196.6232194 | 0 | 1.389532003 | 34.74042834 | 23.04634165 | 7.569514701 | 0.724358974 | 11.70932134 | 0.006159152 | 144.9460743 | 828.3794998 |
| Morningside | 0.933772643 | 0.078296014 | 0.004511516 | 0.007638131 | 0.009672398 | 0.024868667 | 0.005085008 | 0.044463542 | 0.030127897 | 1.507354114 | 0.44391995 | 1.389532003 | 0 | 1.982550069 | 0.566639118 | 0.148150181 | 0.012630875 | 0.186651344 | 9.56531E-05 | 2.141583928 | 9.517543052 |
| Ponoka | 69.23685107 | 5.66597295 | 0.322553713 | 0.536930442 | 0.668333484 | 1.661547221 | 0.325117066 | 2.717480383 | 1.717794865 | 77.30916603 | 17.2942057 | 34.74042834 | 1.982550069 | 0 | 119.9846332 | 21.57198473 | 1.578847896 | 20.99216499 | 0.010452197 | 221.938205 | 600.2552194 |
| Maskwacis | 118.7320896 | 9.384719443 | 0.525298896 | 0.854341253 | 1.039084321 | 2.472256228 | 0.457851657 | 3.626977416 | 2.121291298 | 85.67301614 | 15.15679404 | 23.04634165 | 0.566639118 | 119.9846332 | 0 | 211.466111 | 8.407311851 | 81.57070181 | 0.037662964 | 702.8522692 | 1387.975391 |
| Wetaskiwin | 63.07622885 | 4.86444924 | 0.269110617 | 0.430804483 | 0.515917166 | 1.192954666 | 0.213471648 | 1.637706246 | 0.916531087 | 34.95972117 | 5.545511666 | 7.569514701 | 0.148150181 | 21.57198473 | 211.466111 | 0 | 21.85735537 | 106.8935185 | 0.043683663 | 678.3132829 | 1161.486008 |
| Millet | 8.35193693 | 0.631303501 | 0.034598102 | 0.054695552 | 0.064714207 | 0.146399557 | 0.025534922 | 0.191400258 | 0.10385526 | 3.812134978 | 0.564672707 | 0.724358974 | 0.012630875 | 1.578847896 | 8.407311851 | 21.85735537 | 0 | 50.52122595 | 0.01575 | 176.6456278 | 273.7443547 |
| Leduc | 184.3517055 | 13.62697479 | 0.739163618 | 1.152758544 | 1.346387895 | 2.976627672 | 0.5057234 | 3.703617811 | 1.9499964 | 69.03434937 | 9.617847964 | 11.70932134 | 0.186651344 | 20.99216499 | 81.57070181 | 106.8935185 | 50.52122595 | 0 | 4.806777646 | 13007.75353 | 13573.43904 |
| Nisku | 0.107532278 | 0.007884069 | 0.000426066 | 0.000661243 | 0.000768776 | 0.001685981 | 0.000283862 | 0.002062514 | 0.001075096 | 0.037614809 | 0.005140093 | 0.006159152 | 9.56531E-05 | 0.010452197 | 0.037662964 | 0.043683663 | 0.01575 | 4.806777646 | 0 | 15.66475723 | 20.75047329 |
| Edmonton | 3147.963499 | 226.5636776 | 12.1417148 | 18.63964854 | 21.45128593 | 46.21836132 | 7.630360414 | 54.51456622 | 27.82108261 | 949.8828453 | 124.8164158 | 144.9460743 | 2.141583928 | 221.938205 | 702.8522692 | 678.3132829 | 176.6456278 | 13007.75353 | 15.66475723 | 0 | 19587.89879 |
| Total | 24981.54069 | 19242.45139 | 866.8770895 | 570.8556897 | 435.2566278 | 544.4510462 | 88.50189153 | 567.4798906 | 588.82433 | 4527.021013 | 1310.216917 | 828.3794998 | 9.517543052 | 600.2552194 | 1387.975391 | 1161.486008 | 273.7443547 | 13573.43904 | 20.75047329 | 19587.89879 | 91166.92289 |
| Ratio | 0.274019786 | 0.211068343 | 0.00950868 | 0.006261654 | 0.004774282 | 0.005972024 | 0.000970768 | 0.006224625 | 0.00645875 | 0.049656398 | 0.014371626 | 0.009086404 | 0.000104397 | 0.006584134 | 0.01522455 | 0.012740213 | 0.003002672 | 0.148885567 | 0.00022761 | 0.214857518 | 1 |

Table 5 - Market Share of a Regional Rail System Between Towns & Cities

| Potential Market Index | Calgary | Airdrie | Crossfield | Carstairs | Didsbury | Olds | Bowden | Innisfail | Penhold | Red Deer | Blackfalds | Lacombe | Morningside | Ponoka | Maskwacis | Wetaskiwin | Millet | Leduc | Nisku | Edmonton | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Calgary | - | 3,131 | 81 | 65 | 47 | 56 | 6 | 29 | 10 | 251 | 21 | 19 | 0 | 14 | 25 | 13 | 2 | 41 | 0 | 713 | 4523.316032 |
| Airdrie | 3,131 | - | 58 | 17 | 9 | 8 | 1 | 3 | 1 | 23 | 2 | 2 | 0 | 1 | 2 | 1 | 0 | 3 | 0 | 50 | 3310.956574 |
| Crossfield | 81 | 58 | - | 3 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 148.9585101 |
| Carstairs | 65 | 17 | 3 | - | 6 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 100.6376638 |
| Didsbury | 47 | 9 | 1 | 6 | - | 5 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 77.7344946 |
| Olds | 56 | 8 | 1 | 2 | 5 | - | 1 | 3 | 1 | 11 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 10 | 99.28639877 |
| Bowden | 6 | 1 | 0 | 0 | 0 | 1 | - | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 15.88315564 |
| Innisfail | 29 | 3 | 0 | 0 | 1 | 3 | 2 | - | 6 | 42 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 11 | 101.5012791 |
| Penhold | 10 | 1 | 0 | 0 | 0 | 1 | 0 | 6 | - | 74 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 100.9381264 |
| Red Deer | 251 | 23 | 1 | 3 | 4 | 11 | 3 | 42 | 74 | - | 134 | 49 | 0 | 14 | 15 | 6 | 1 | 13 | 0 | 186 | 829.5750565 |
| Blackfalds | 21 | 2 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 134 | - | 33 | 0 | 3 | 3 | 1 | 0 | 2 | 0 | 24 | 226.9069348 |
| Lacombe | 19 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 49 | 33 | - | 0 | 6 | 4 | 1 | 0 | 2 | 0 | 28 | 146.5820456 |
| Morningside | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.686958105 |
| Ponoka | 108 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 3 | 6 | 0 | - | 20 | 4 | 0 | 4 | 0 | 41 | 108.5680291 |
| Maskwacis | 25 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 15 | 3 | 4 | 0 | 20 | - | 35 | 1 | 14 | 0 | 127 | 249.5717572 |
| Wetaskiwin | 13 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 1 | 0 | 4 | 35 | - | 4 | 18 | 0 | 120 | 205.8066277 |
| Millet | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4 | - | 9 | 0 | 31 | 47.69441328 |
| Leduc | 41 | 3 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 13 | 2 | 2 | 0 | 4 | 14 | 18 | 9 | - | 1 | 2,215 | 2323.679533 |
| Nisku | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | - | 3 | 3.494425792 |
| Edmonton | 713 | 50 | 3 | 4 | 5 | 10 | 2 | 11 | 6 | 186 | 24 | 28 | 0 | 41 | 127 | 120 | 31 | 2,215 | 3 | - | 3576.333705 |
| Total | 4523.316032 | 3310.956574 | 148.9585101 | 100.6376638 | 77.7344946 | 99.28639877 | 15.88315564 | 101.5012791 | 100.9381264 | 829.5750565 | 226.9069348 | 146.5820456 | 1.686958105 | 108.5680291 | 249.5717572 | 205.8066277 | 47.69441328 | 2323.679533 | 3.494425792 | 3576.333705 | 16199.11172 |
| Ratio | 0.27923235 | 0.204391243 | 0.009195474 | 0.006212542 | 0.004798689 | 0.006129126 | 0.000980495 | 0.006265855 | 0.00623109 | 0.051211145 | 0.014007369 | 0.009048771 | 0.000104139 | 0.006702098 | 0.015406509 | 0.012704809 | 0.002944261 | 0.143444874 | 0.000215717 | 0.220773445 | 1 |

Table 6 - Market Share of a Regional Rail and Express System Between Towns & Cities

| Potential Market Index | Calgary | Airdrie | Crossfield | Carstairs | Didsbury | Olds | Bowden | Innisfail | Penhold | Red Deer | Blackfalds | Lacombe | Morningside | Ponoka | Maskwacis | Wetaskiwin | Millet | Leduc | Nisku | Edmonton | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Calgary | - | 3,131 | 81 | 65 | 47 | 56 | 6 | 29 | 10 | 496 | 21 | 19 | 0 | 14 | 25 | 13 | 2 | 41 | 0 | 2,205 | 6260.65875 |
| Airdrie | 3,131 | - | 58 | 17 | 9 | 8 | 1 | 3 | 1 | 23 | 2 | 2 | 0 | 1 | 2 | 1 | 0 | 3 | 0 | 50 | 3310.956574 |
| Crossfield | 81 | 58 | - | 3 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 148.9585101 |
| Carstairs | 65 | 17 | 3 | - | 6 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 100.6376638 |
| Didsbury | 47 | 9 | 1 | 6 | - | 5 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 77.7344946 |
| Olds | 56 | 8 | 1 | 2 | 5 | - | 1 | 3 | 1 | 11 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 10 | 99.28639877 |
| Bowden | 6 | 1 | 0 | 0 | 0 | 1 | - | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 15.88315564 |
| Innisfail | 29 | 3 | 0 | 0 | 1 | 3 | 2 | - | 6 | 42 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 11 | 101.5012791 |
| Penhold | 10 | 1 | 0 | 0 | 0 | 1 | 0 | 6 | - | 74 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 100.9381264 |
| Red Deer | 496 | 23 | 1 | 3 | 4 | 11 | 3 | 42 | 74 | - | 134 | 49 | 0 | 14 | 15 | 6 | 1 | 13 | 0 | 374 | 1262.858955 |
| Blackfalds | 21 | 2 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 134 | - | 33 | 0 | 3 | 3 | 1 | 0 | 2 | 0 | 24 | 226.9069348 |
| Lacombe | 19 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 49 | 33 | - | 0 | 6 | 4 | 1 | 0 | 2 | 0 | 28 | 146.5820456 |
| Morningside | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.686958105 |
| Ponoka | 14 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 3 | 6 | 0 | - | 20 | 4 | 0 | 4 | 0 | 41 | 108.5680291 |
| Maskwacis | 25 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 15 | 3 | 4 | 0 | 20 | - | 35 | 1 | 14 | 0 | 127 | 249.5717572 |
| Wetaskiwin | 13 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 1 | 0 | 4 | 35 | - | 4 | 18 | 0 | 120 | 205.8066277 |
| Millet | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4 | - | 9 | 0 | 31 | 47.69441328 |
| Leduc | 41 | 3 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 13 | 2 | 2 | 0 | 4 | 14 | 18 | 9 | - | 1 | 2,215 | 2323.679533 |
| Nisku | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | - | 3 | 3.494425792 |
| Edmonton | 2,205 | 50 | 3 | 4 | 5 | 10 | 2 | 11 | 6 | 374 | 24 | 28 | 0 | 41 | 127 | 120 | 31 | 2,215 | 3 | - | 5255.63008 |
| Total | 6260.65875 | 3310.956574 | 148.9585101 | 100.6376638 | 77.7344946 | 99.28639877 | 15.88315564 | 101.5012791 | 100.9381264 | 1262.858955 | 226.9069348 | 146.5820456 | 1.686958105 | 108.5680291 | 249.5717572 | 205.8066277 | 47.69441328 | 2323.679533 | 3.494425792 | 5255.63008 | 20049.03471 |
| Ratio | 0.386481608 | 0.204391243 | 0.009195474 | 0.006212542 | 0.004798689 | 0.006129126 | 0.000980495 | 0.006265855 | 0.00623109 | 0.077958531 | 0.014007369 | 0.009048771 | 0.000104139 | 0.006702098 | 0.015406509 | 0.012704809 | 0.002944261 | 0.143444874 | 0.000215717 | 0.3244394 | 1.237662599 |

*Table 7- Regional Rail Infrastructure Cost Estimate*

| 500m twinned track at stations and 3km at identified passing points only, Base RR | | | Section 1: Calgary, Airdrie, Crossfield, Carstairs, Didsbury, Olds. | | Section 2: Olds, Bowden, Innisfail, Penhold, Red Deer, Blackfalds, Lacombe, Morningside, Ponoka. | | Section 3: Ponoka, Maskwacis, Wetaskiwin, Millet, Leduc, Nisku, Edmonton. | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|
| Description | Unit Mearsure | Unit Cost ('000) | Quantity | Cost | Quantity | Cost | Quantity | Cost | Quantity | Cost |
| Infrastructure | | | 100km | | 117km | | 107km | | 324km | |
| New track construction adjacent to main track, praire grassland | km | $ 2,004.00 | 6km | $ 12,024,000 | 6km | $ 12,024,000 | 6km | $ 12,024,000 | 18km | $ 36,072,000 |
| New track construction adjacent to main track, forested | km | $ 2,378.00 | | | | | | | | |
| New track construction adjacent to main track, over wet area | km | $ 3,260.00 | | | | | | | | |
| New track construction adjacent to main track, urban area | km | $ 6,249.00 | 5.5km | $ 34,369,500 | 6.5km | $ 40,618,500 | 6km | $ 37,494,000 | 18km | $ 112,482,000 |
| New track construction adjacent to main track, cutting into earth slope | km | $ 5,977.00 | | | | | | | | |
| New track construction adjacent to main track, cutting into rock | km | $ 8,490.00 | | | | | | | | |
| New track construction adjacent to main track, rip-rap beside river | km | $ 3,418.00 | | | | | | | | |
| New track construction adjacent to main track, high embankment | km | $ 3,977.00 | | | | | | | | |
| New track construction on existing track bed | km | $ 1,902.00 | 11.5km | $ 21,873,000 | 12.5km | $ 23,775,000 | 12km | $ 22,824,000 | 36km | $ 68,472,000 |
| Relocate existing track | km | $ 377.00 | | | | | | | | |
| Signals and communication, adding new track to centralized traffic control | km | $ 513.00 | 11.5km | $ 5,899,500 | 12.5km | $ 6,412,500 | 12km | $ 6,156,000 | 36km | $ 18,468,000 |
| Platform 12 foot width | sqm | $ 0.02 | 14*350sqm | $ 98,000 | 14*350sqm | $ 98,000 | 18*350sqm | $ 126,000 | | $ 322,000 |
| Station canopy | sqm | $ 0.05 | 14*100sqm | $ 70,000 | 14*100sqm | $ 70,000 | 18*100sqm | $ 90,000 | 23 stations | $ 230,000 |
| Signage, lighting, benches, bike racks, TVM | platform | $ 70.60 | 14No | $ 988,400 | 14No | $ 988,400 | 18No | $ 1,270,800 | | $ 3,247,600 |
| #15 Switch | switch | $ 240.00 | | | | | | | | |
| #20 Switch | switch | $ 331.00 | 18No | $ 5,958,000 | 18No | $ 5,958,000 | 20No | $ 6,620,000 | 46No | $ 18,536,000 |
| Grade crossing surface | crossing | $ 31.20 | 12No | $ 374,400 | 10No | $ 312,000 | 17No | $ 530,400 | 39No | $ 1,216,800 |
| Grade crossing protection | crossing | $ 201.00 | 12No | $ 2,412,000 | 10No | $ 2,010,000 | 17No | $ 3,417,000 | 39No | $ 7,839,000 |
| Corrugated metal pipe culvert | meter | $ 4.27 | | | | | | | | |
| Bridge support bents | bent | $ 49.00 | 4No | $ 196,000 | 7No | $ 343,000 | | | | $ 539,000 |
| Single track concrete bridge span | meter | $ 28.55 | | | | | | | 9 rail bridges | |
| Single track steel bridge span | meter | $ 72.18 | 125m | $ 9,022,500 | 125m | $ 9,022,500 | | | | $ 18,045,000 |
| Maintenance depot | Lump Sum | $ 2,690.00 | | | 2No | $ 5,380,000 | | | 2No | $ 5,380,000 |
| | | | Total | $ 93,285,300 | Total | $ 107,011,900 | Total | $ 90,552,200 | Total | $ 290,849,400 |

*Table 8 - Regional Rail & Express Infrastructure Cost Estimate*

| Twinned track through the entire corridor | | | Section 1: Calgary, Airdrie, Crossfield, Carstairs, Didsbury, Olds. | | Section 2: Olds, Bowden, Innisfail, Penhold, Red Deer, Blackfalds, Lacombe, Morningside, Ponoka. | | Section 3: Ponoka, Maskwacis, Wetaskiwin, Millet, Leduc, Nisku, Edmonton. | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|
| Description | Unit Mearsure | Unit Cost ('000) | Quantity | Cost | Quantity | Cost | Quantity | Cost | Quantity | Cost |
| Infrastructure | | | 100km | | 117km | | 107km | | 324km | |
| New track construction adjacent to main track, praire grassland | km | $ 2,004.00 | 72km | $ 144,288,000 | 98km | $ 196,392,000 | 81km | $ 162,324,000 | 251km | $ 503,004,000 |
| New track construction adjacent to main track, forested | km | $ 2,378.00 | | | 2km | $ 4,756,000 | 2km | $ 4,756,000 | 4km | $ 9,512,000 |
| New track construction adjacent to main track, over wet area | km | $ 3,260.00 | 1km | $ 3,260,000 | | | | | 1km | $ 3,260,000 |
| New track construction adjacent to main track, urban area | km | $ 6,249.00 | 25km | $ 156,225,000 | 21km | $ 131,229,000 | 31km | $ 193,719,000 | 77km | $ 481,173,000 |
| New track construction adjacent to main track, cutting into earth slope | km | $ 5,977.00 | | | | | | | | $ - |
| New track construction adjacent to main track, cutting into rock | km | $ 8,490.00 | | | | | | | | $ - |
| New track construction adjacent to main track, rip-rap beside river | km | $ 3,418.00 | 5km | 17090000 | | | | | 5km | |
| New track construction adjacent to main track, high embankment | km | $ 3,977.00 | 1km | $ 3,977,000 | 3km | 11931000 | 1km | $ 3,977,000 | 5km | |
| New track construction on existing track bed | km | $ 1,902.00 | 100km | $ 190,200,000 | 117km | $ 222,534,000 | 107km | $ 203,514,000 | 324km | $ 616,248,000 |
| Relocate existing track | km | $ 377.00 | | | | | | | | |
| Signals and communication, adding new track to centralized traffic control | km | $ 513.00 | 100km | $ 51,300,000 | 117km | $ 60,021,000 | 107km | $ 54,891,000 | 324km | $ 166,212,000 |
| Platform 12 foot width | sqm | $ 0.02 | 14*350sqm | $ 98,000 | 14*350sqm | $ 98,000 | 18*350sqm | $ 126,000 | | $ 322,000 |
| Station canopy | sqm | $ 0.05 | 14*100sqm | $ 70,000 | 14*100sqm | $ 70,000 | 18*100sqm | $ 90,000 | 23 stations | $ 230,000 |
| Signage, lighting, benches, bike racks, TVM | platform | $ 70.60 | 14No | $ 988,400 | 14No | $ 988,400 | 18No | $ 1,270,800 | | $ 3,247,600 |
| #15 Switch | switch | $ 240.00 | | | | | | | | |
| #20 Switch | switch | $ 331.00 | 48No | $ 15,888,000 | 48No | $ 15,888,000 | 48No | $ 15,888,000 | 144No | $ 47,664,000 |
| Grade crossing surface | crossing | $ 31.20 | 12No | $ 374,400 | 10No | $ 312,000 | 17No | $ 530,400 | 39No | $ 1,216,800 |
| Grade crossing protection | crossing | $ 201.00 | 12No | $ 2,412,000 | 10No | $ 2,010,000 | 17No | $ 3,417,000 | 39No | $ 7,839,000 |
| Corrugated metal pipe culvert | meter | $ 4.27 | 50m | | | | | | | |
| Bridge support bents | bent | $ 49.00 | 40No | $ 1,960,000 | 47No | $ 2,303,000 | 49No | $ 1,862,000 | 29 road bridges, 10 rail bridges | $ 6,125,000 |
| Single track concrete bridge span | meter | $ 28.55 | 445m | $ 12,704,750 | 470m | $ 13,418,500 | 475m | $ 13,561,250 | | $ 39,684,500 |
| Single track steel bridge span | meter | $ 72.18 | 125m | $ 9,022,500 | 125m | $ 9,022,500 | 75m | $ 5,413,500 | | $ 23,458,500 |
| Maintenance depot | Lump Sum | $ 2,690.00 | 1No | $ 2,690,000 | 2No | $ 5,380,000 | 1No | $ 2,690,000 | 4No | $ 10,760,000 |
| | | | Total | $ 612,548,050 | Total | $ 676,353,400 | Total | $ 668,029,950 | Total | $ 1,956,931,400 |

*Table 9 - Regional Rail & Express Service Operating Cost Estimates*

| Operations | | A weekday: 2 Trains (1 loco 5 cars) start & finish in Red Deer | | B weekday: 2 Trains (1 loco 5 cars) start & finish in Red Deer | | C weekday: 2 Trains (1 loco 5 cars) start & finish in Red Deer | | A weekend: 2 Trains (1 loco 5 cars) start & finish in Red Deer | | C weekend: 2 Trains (1 loco 5 cars) start & finish in Red Deer | | Express: 2 Trains, 4 services, start & finish in Calgary & Edmonton | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Deisel fuel cost | $1 per litre  1No Loco 567l per hr | 16.5 hrs per day per loco | $ 4,659,039 | 7.5 hrs per day per loco | $ 2,117,745 | 16.5 hrs per day per loco | $ 4,659,039 | 12.5 hrs per day per loco | $ 1,630,125 | 16.5 hrs per day per loco | $ 2,151,765 | 8 hrs per day per loco | $ 2,830,464 |
| Oil & other | 5% of deisel | | $ 232,951 | | $ 105,887 | | $ 232,951 | | $ 81,506 | | $ 107,588 | | $ 141,524 |
| Locomotive maintenance | $1.39 per loco-km | 1296km per day per loco | $ 897,117 | 648km per day per loco | $ 448,558 | 1296km per day per loco | $ 897,117 | 972km per day per loco | $ 310,748 | 1296km per day per loco | $ 414,331 | 1296km per day per loco | $ 1,124,099 |
| Passenger car maintenance | $1.06 per car-km | 1296km per day per car | $ 3,420,662 | 648km per day per car | $ 1,710,331 | 1296km per day per car | $ 3,420,662 | 972km per day per car | $ 1,184,868 | 1296km per day per car | $ 1,579,824 | 1296km per day per car | $ 4,286,131 |
| 2-person train crew cost | $140 per hour | 17.5 hours | $ 1,220,100 | 8.5 hours | $ 592,620 | 17.5 hours | $ 1,220,100 | 13.5 hours | $ 434,700 | 17.5 hours | $ 563,500 | 13 hours | $ 910,000 |
| Track maintenance charge | $43,885 per km per year | 324km | $ 14,218,740 | 324km | $ 14,218,740 | 324km | $ 14,218,740 | 324km | $ 14,218,740 | 324km | $ 14,218,740 | 324km | $ 14,218,740 |
| Train dispatching & shared infrastructure use charge | $19.38 per train-km | 1296km per day per train | $ 12,508,007 | 648km per day per train | $ 6,254,004 | 1296km per day per train | $ 12,508,007 | 972km per day per train | $ 4,332,593 | 1296km per day per train | $ 5,776,791 | 1296km per day per train | $ 15,672,684 |
| Insurance, $100 million liability coverage | $200,000 annual premium | | $ 200,000 | | $ 200,000 | | $ 200,000 | | $ 200,000 | | $ 200,000 | | $ 200,000 |
| Station operating cost | $300,000 per year | 23No | $ 6,900,000 | 23No | $ 6,900,000 | 23No | $ 6,900,000 | 23No | $ 6,900,000 | 23No | $ 6,900,000 | 23No | $ 6,900,000 |
| General manager | $150,000 per year | 1No | $ 150,000 | 1No | $ 150,000 | 1No | $ 150,000 | 1No | $ 150,000 | 1No | $ 150,000 | 1No | $ 150,000 |
| Operations supervisor | $125,000 per year | 1No | $ 125,000 | 1No | $ 125,000 | 1No | $ 125,000 | 1No | $ 125,000 | 1No | $ 125,000 | 1No | $ 125,000 |
| | | Total | $ 44,531,616 | Total | $ 32,822,885 | Total | $ 44,531,616 | Total | $ 29,568,280 | Total | $ 32,187,539 | Total | $ 46,558,642 |

*Table 10 - Calgary to Edmonton Regional Rail Fare Table*

| | Calgary Tower | Country Hills Blvd (YYC) | Airdrie | Crossfeild | Carstairs | Didsbury | Olds | Bowden | Innisfail | Penhold | Red Deer | Blackfalds | Lacombe | Morning side | Ponoka | Maskwacis | Wetaskiwin | Millet | Leduc | Nisku (YEG) | South Edmonton | Strathcona | Edmonton Legislature |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Calgary Tower | | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 60 | 64 | 68 | 72 | 72 | 76 | 76 | 76 |
| Country Hils Blyd (YYC) | 4 | | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 60 | 64 | 68 | 68 | 72 | 72 | 72 |
| Airdrie | 8 | 4 | | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 60 | 64 | 64 | 68 | 68 | 68 |
| Crossfield | 12 | 8 | 4 | | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 60 | 60 | 64 | 64 | 64 |
| Carstairs | 16 | 12 | 8 | 4 | | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 56 | 60 | 60 | 60 |
| Didsbury | 20 | 16 | 12 | 8 | 4 | | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 52 | 56 | 56 | 56 |
| Olds | 24 | 20 | 16 | 12 | 8 | 4 | | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 48 | 52 | 52 | 52 |
| Bowden | 28 | 24 | 20 | 16 | 12 | 8 | 4 | | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 44 | 48 | 48 | 48 |
| Innisfail | 32 | 28 | 24 | 20 | 16 | 12 | 8 | 4 | | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 40 | 44 | 44 | 44 |
| Penhold | 36 | 32 | 28 | 24 | 20 | 16 | 12 | 8 | 4 | | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 36 | 40 | 40 | 40 |
| Red Deer | 40 | 36 | 32 | 28 | 24 | 20 | 16 | 12 | 8 | 4 | | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 32 | 36 | 36 | 36 |
| Blackfalds | 44 | 40 | 36 | 32 | 28 | 24 | 20 | 16 | 12 | 8 | 4 | | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 28 | 32 | 32 | 32 |
| Lacombe | 48 | 44 | 40 | 36 | 32 | 28 | 24 | 20 | 16 | 12 | 8 | 4 | | 4 | 8 | 12 | 16 | 20 | 24 | 24 | 28 | 28 | 28 |
| Morningside | 52 | 48 | 44 | 40 | 36 | 32 | 28 | 24 | 20 | 16 | 12 | 8 | 4 | | 4 | 8 | 12 | 16 | 20 | 20 | 24 | 24 | 24 |
| Ponoka | 56 | 52 | 48 | 44 | 40 | 36 | 32 | 28 | 24 | 20 | 16 | 12 | 8 | 4 | | 4 | 8 | 12 | 16 | 16 | 20 | 20 | 20 |
| Maskwacis | 60 | 56 | 52 | 48 | 44 | 40 | 36 | 32 | 28 | 24 | 20 | 16 | 12 | 8 | 4 | | 4 | 8 | 12 | 12 | 16 | 16 | 16 |
| Wetaskiwin | 64 | 60 | 56 | 52 | 48 | 44 | 40 | 36 | 32 | 28 | 24 | 20 | 16 | 12 | 8 | 4 | | 4 | 8 | 8 | 12 | 12 | 12 |
| Millet | 68 | 64 | 60 | 56 | 52 | 48 | 44 | 40 | 36 | 32 | 28 | 24 | 20 | 16 | 12 | 8 | 4 | | 4 | 4 | 8 | 8 | 8 |
| Leduc | 72 | 68 | 64 | 60 | 56 | 52 | 48 | 44 | 40 | 36 | 32 | 28 | 24 | 20 | 16 | 12 | 8 | 4 | | 4 | 4 | 8 | 8 |
| Nisku (YEG) | 72 | 68 | 64 | 60 | 56 | 52 | 48 | 44 | 40 | 36 | 32 | 28 | 24 | 20 | 16 | 12 | 8 | 4 | 4 | | 4 | 4 | 4 |
| South Edmonton | 76 | 72 | 68 | 64 | 60 | 56 | 52 | 48 | 44 | 40 | 36 | 32 | 28 | 24 | 20 | 16 | 16 | 8 | 4 | 4 | | 4 | 4 |
| Strathcona | 76 | 72 | 68 | 64 | 60 | 56 | 52 | 48 | 44 | 40 | 36 | 32 | 28 | 24 | 20 | 16 | 16 | 8 | 8 | 4 | 4 | | 4 |
| Edmonton Legislature | 76 | 72 | 68 | 64 | 60 | 56 | 52 | 48 | 44 | 40 | 36 | 32 | 28 | 24 | 20 | 16 | 16 | 8 | 8 | 4 | 4 | 4 | |

Calgary - Edmonton Corridor Fare Table