

Connecting Communities: An AADT Analysis of the Calgary – Edmonton Corridor

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Abstract

As part of Integrated Travel's 'Rail for All: Connecting Communities' initiative aimed at bringing numerous benefits to underserved communities along the Calgary-Edmonton corridor, our team conducted an Annual Average Daily Traffic (AADT) analysis for Highway 2 and 2A using datasets from 2013-2022. This analysis determined vehicle patterns and calculated greenhouse gas emissions, thereby highlighting the benefits of implementing rail along the corridor. We discovered significant vehicle usage patterns indicating a strong reliance on this corridor for both local and long-distance travel. For Highway 2, traffic volumes showed variations with Weighted Annual Average Daily Traffic (WAADT) reaching up to 86,990 vehicles in areas near Leduc to Edmonton, reflecting the intense use of this route. Conversely, Highway 2A, serving as an alternative and providing access to smaller communities, also exhibited substantial traffic with annual GHG emissions reaching approximately 654.67 metric tonnes (MT) annually. Moreover, the most accessible crossing stations, located at key intersections and community access points such as north of Okotoks, High River, and extending up towards Leduc and Edmonton, underline the vast beneficial effects that implementing 'Rail for All' will yield for Albertans.

Introduction

The Calgary-Edmonton corridor contains the busiest highway in the entire province of Alberta, therefore containing both large and diverse volumes of vehicle traffic. The highway primarily connects the financial and business hub of Calgary with the governmental hub of Edmonton, with multiple smaller communities, businesses, and services in between. The corridor encompasses the following counties, in order from South to North: Municipal District of Foothills No. 31, Calgary, Rocky View County, Mountain View County, Red Deer County, Lacombe County, Ponoka County, County of Wetaskiwin No. 10, Leduc County, Edmonton, Parkland County, Strathcona County, and Sturgeon County.

Highway 2 and 2A connect Calgary to Edmonton, with Highway 2 directly between the two city hubs and 2A servicing smaller surrounding communities within the corridor. The primary mode of transportation within this corridor is by private passenger vehicle, and therefore traffic lineups, long commute times, and large quantities of vehicle greenhouse gas emissions are extensive in the corridor currently. Additionally, because private passenger vehicles are the primary mode of transportation in Alberta and in the Calgary-Edmonton corridor, those who don't have a driver's license or private vehicle are severely limited in accessing and being connected community to community.

Integrated Travel's "Rail for All: Connecting Communities" program "aims to support the region and its growing travel demands by providing the necessary transportation system capacity and attractive travel options in terms of speed, convenience, comfort, reliability, and transportation equity" by investing in capital improvements to the already existing Canadian Pacific rail corridor between Calgary and Edmonton. This regional transit system increases community access for all

Albertans; it meets the needs of commuters from the suburbs and outlying municipalities and offers convenient, low-cost train transit options through the congested Calgary-Edmonton corridor.

To fully analyze the extent to which this regional transit system would benefit the current vehicle transportation situation in the Calgary-Edmonton corridor, our team conducted an AADT analysis for Highway 2 and 2A, examining traffic data from 2013 to 2022 to determine traffic volume trends and compare between the two highways. We then calculated the greenhouse gas emissions associated with vehicles traveling on these highways to determine trends or areas for improvement in reducing emissions, and discuss vehicle composition, the impact of infrastructure and development on the highways, policy implications, and provide future projections for AADT trends and GHG emissions.

Methodology

We used online datasets provided by the Government of Alberta from 2013-2022 to analyze traffic patterns over time. We allocated data collection into sections, from Highway 2 Aldersyde to Red Deer, Highway 2 Red Deer to Edmonton, and the entirety of 2A. In our study, we utilized a systematic approach to calculate greenhouse gas (GHG) emissions for specific highway segments. The GHG emissions were determined using the formula: $\text{GHG emissions} = \text{AADT} \times \text{Vehicle Class Percentage} \times \text{Emission Factor}$. We analyzed traffic patterns over time using datasets provided by the Government of Alberta from 2013-2022. The data collection was segmented into three sections: Highway 2 from Aldersyde to Red Deer, Highway 2 from Red Deer to Edmonton, and the entirety of Highway 2A. This method allowed for a detailed analysis of traffic trends and GHG emissions, providing valuable insights into the environmental impact of traffic in the study area.

Results

AADT on Highway 2 from Foothills County to Red Deer

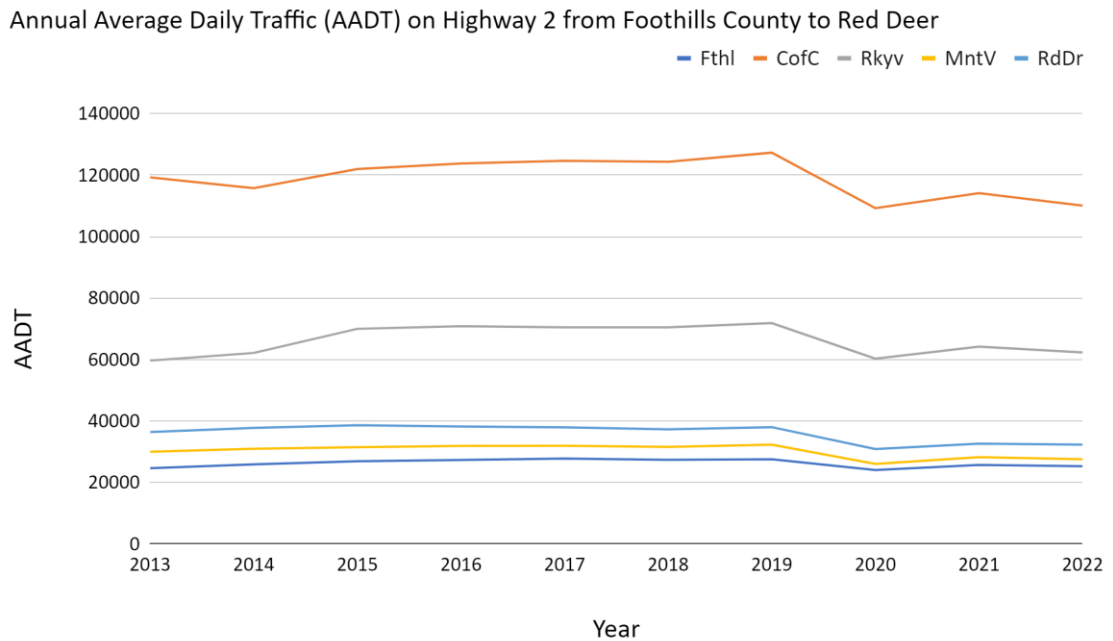


Figure 1

Figure 1 illustrates the Annual Average Daily Traffic (AADT) on Highway 2 for the years 2013 to 2022. Each colored line on the graph represents a different municipality, with each municipality labeled in the legend as follows: Fthl: Foothills County, CofC: City of Calgary, Rkyv: Rocky View, MntV: Mountain View, RdDr: Red Deer. As the graph shows, the City of Calgary by far encompasses the greatest yearly AADT, with a decrease from 2019 to 2020, likely attributed to COVID and therefore less frequent travel, and since then a slight increase, with an AADT amount of approximately 110,079 vehicles in 2022. Followed by Rocky View with 62,298 vehicles in 2022, Red Deer with 32,309 vehicles in 2022, Mountain View with 27,566 vehicles in 2022 and Foothills County 25,267 vehicles in 2022.

AADT on Highway 2 from City of Red Deer to City of Edmonton

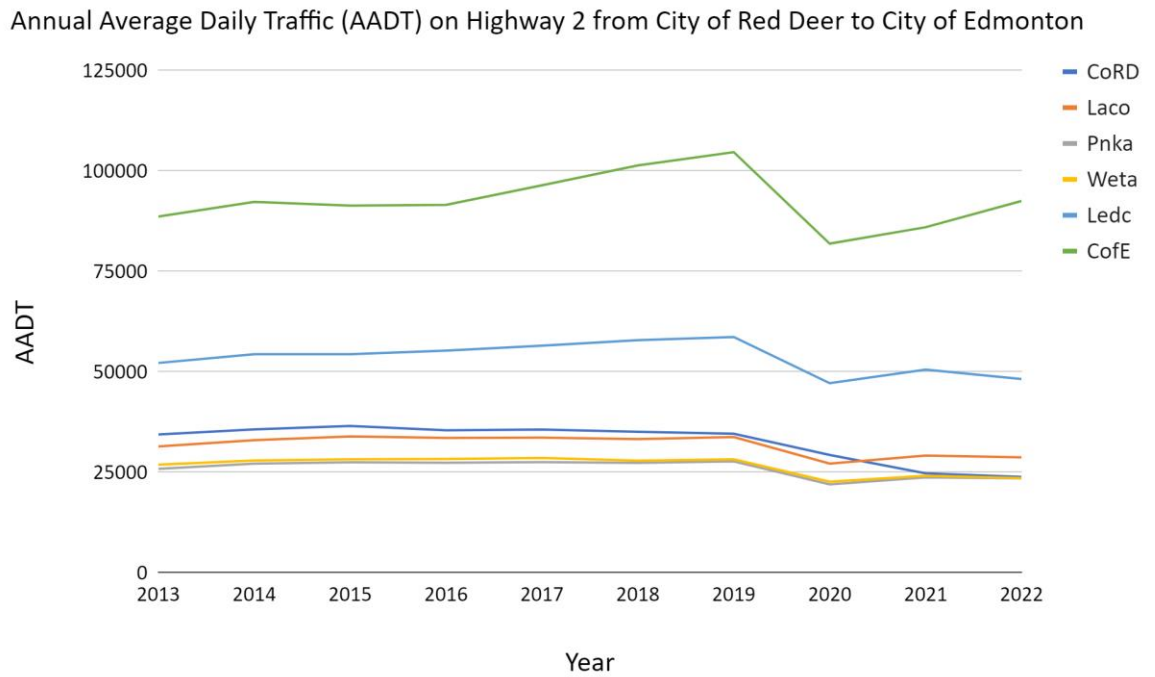


Figure 2

Figure 2 illustrates the Annual Average Daily Traffic (AADT) on Highway 2 for the years 2013 to 2022. Each colored line on the graph represents a different municipality, with each municipality labeled in the legend as follows, CoRD: City of Red Deer, Laco: Lacombe, Pnka: Ponoka, Weta: Wetaskiwin, Ledc: Leduc, CofE: City of Edmonton. Within the other municipalities, the next largest AADT volume is within the City of Edmonton, with approximately 92,532 vehicles in 2022, followed by Leduc with approximately 48,210 vehicles in 2022, Lacombe with approximately 28,727 vehicles, City of Red Deer with approximately 23,830 vehicles, Wetaskiwin with approximately 23,564 vehicles and Ponoka with approximately 23,501 vehicles.

Total Traffic Volume by Year on Highway 2

Total Traffic Volume By Year on Highway 2 from Foothills County to City of Edmonton

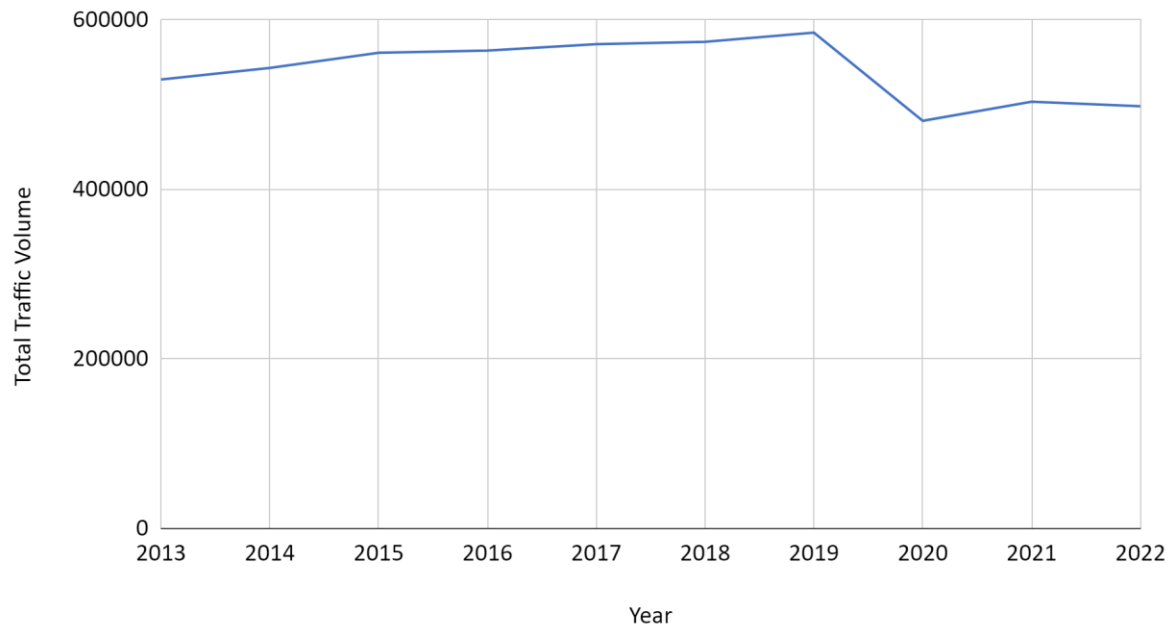


Figure 3

Figure 3 illustrates the Total Traffic Volume by year on Highway 2 from 2013 to 2022. The blue line on the graph represents the total number of vehicles and the x-axis displays the years ranging from 2013 to 2022. The graph shows that throughout Highway 2 from Foothills County to Edmonton, between 2013 and 2019 total traffic volume remained relatively consistent ranging from 529,454 to 584,669 vehicles per year, but dipped from 2019 to 2020 due to COVID-19, and as of 2022 it was at approximately 497,884 vehicles per year.

AADT for Highway 2A

Annual Average Daily Traffic (AADT) on Highway 2A from Foothills County to Leduc

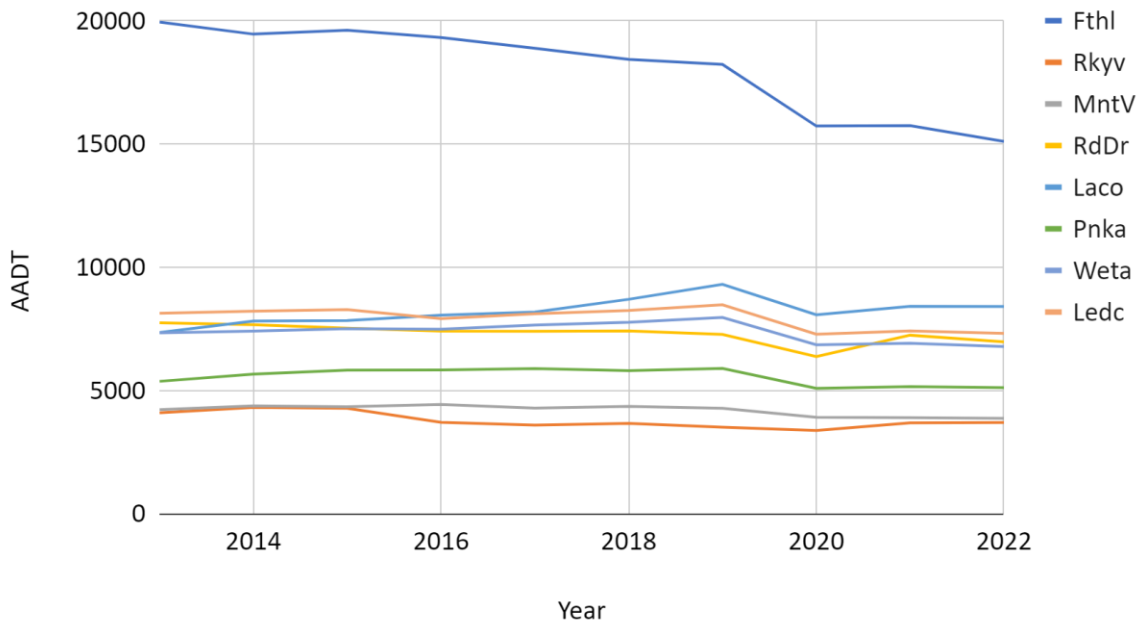


Figure 4

Figure 4 illustrates the Annual Average Daily Traffic (AADT) on Highway 2A from Foothills County to Leduc for the years 2013 to 2022. Each colored line on the graph represents a different municipality, with each municipality labeled in the legend as follows: Fthl: Foothills County, Rkyv: Rocky View, MntV: Mountain View, RdDr: Red Deer, Laco: Lacombe, Pnka: Ponoka, Weta: Wetaskiwin, Ledc: Leduc. The graph shows that across all municipalities on Highway 2A, there was a dramatic decrease in vehicle traffic from 2019 to 2020, attributed to the pandemic. The data shows that Foothills County has the highest AADT between 2013 and 2022, with roughly 1504 vehicles in 2022, followed by Lacombe with about 8405 vehicles in 2022, Leduc with approximately 7316 vehicles, Red Deer with approximately 6972 vehicles, Wetaskiwin with approximately 6780 vehicles, Ponoka with approximately 5114 vehicles, Mountain View with approximately 3873 vehicles and Rocky View with the lowest AADT, with approximately 3700 vehicles in 2022.

Total Traffic Volume by Year on Highway 2A

Total Traffic Volume By Year on Highway 2A from Foothills County to Leduc

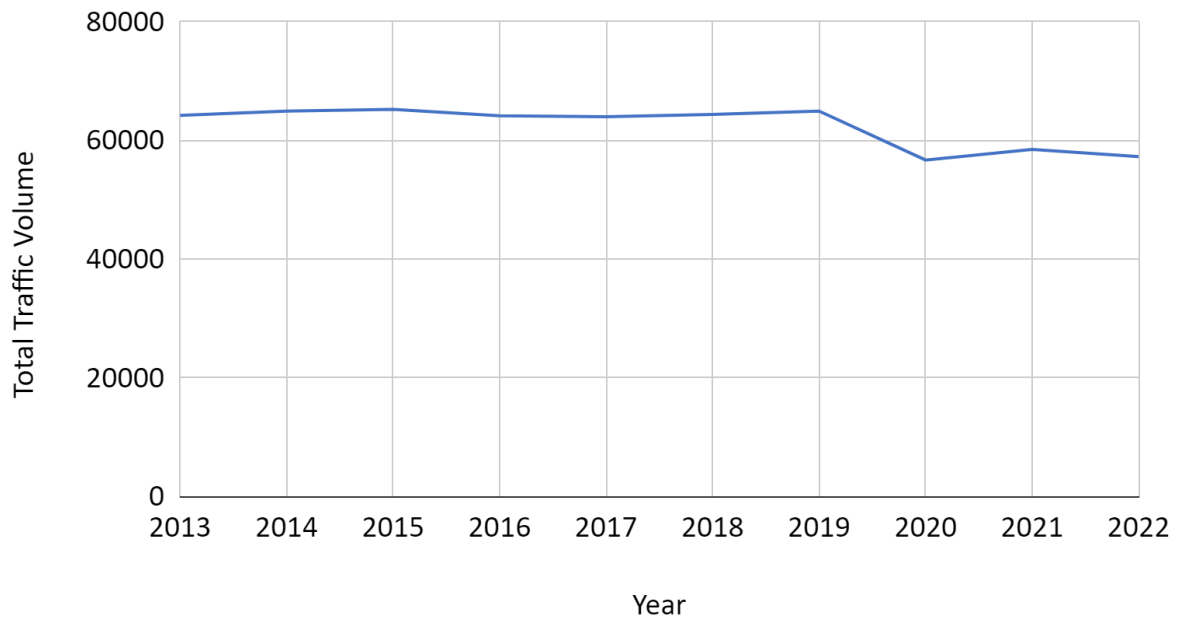


Figure 5

Figure 5 illustrates the Total Traffic Volume by year on Highway 2A from 2013 to 2022. The blue line on the graph represents the total number of vehicles. The x-axis displays the years ranging from 2013 to 2022. The y-axis displays the total traffic volume in the millions. On Highway 2A, from 2013 to 2019, there was a slight increase in total traffic volume per year, starting at approximately 64,201 total vehicles in 2013 and ending at approximately 64,939 total vehicles per hour in 2019. In 2020, there was a dramatic decrease due to the pandemic, but there has been a gradual increase in total traffic volume per year from 2020 to 2022, with approximately 57,264 total vehicles on Highway 2A in the year 2022.

Greenhouse Gas Emissions from Highway 2 and 2A

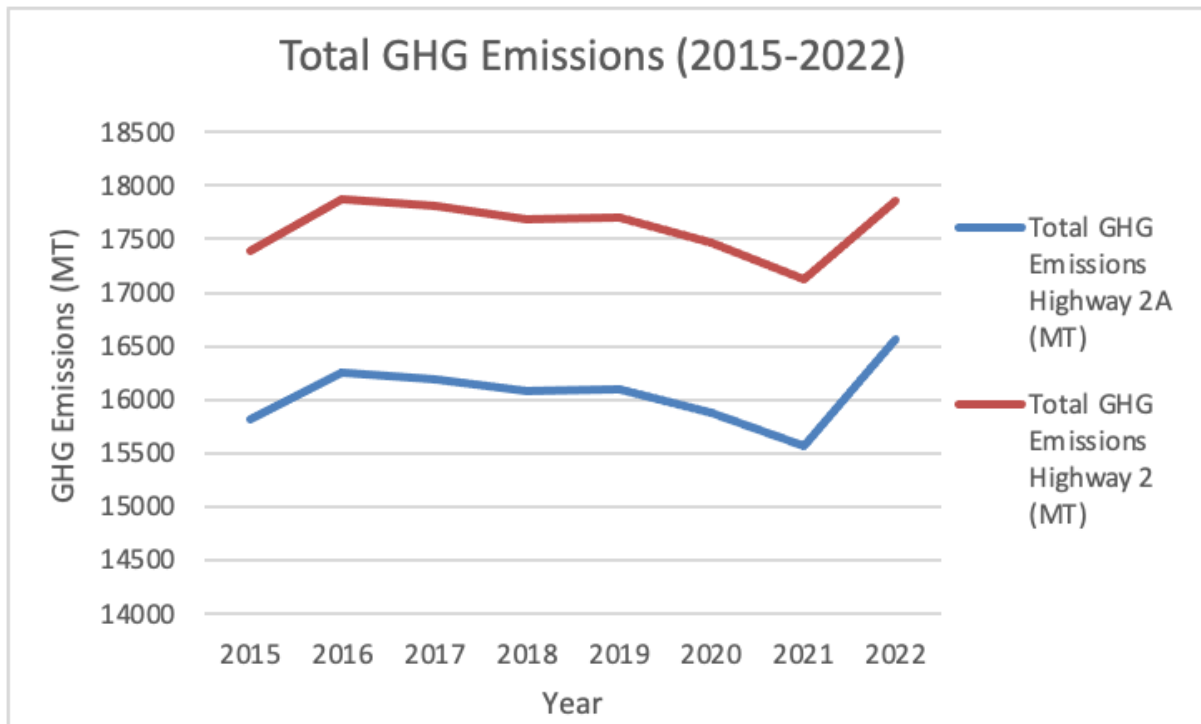


Figure 6

Figure 6 outlines the total greenhouse gas (GHG) emissions from Highway 2 and Highway 2A from 2015 to 2022, based on the datasets provided by the Government of Alberta. Emissions are reported in metric tonnes on the y-axis, demonstrating a general stability over the initial period. From 2015 to 2019, GHG emissions for Highway 2 averaged around 17,500 MT per year, while Highway 2A's emissions were consistently lower, averaging around 16,000 MT, indicative of the lighter traffic volume on this route. Contrary to the previous trend, a decrease was observed in 2020, with Highway 2 emissions reducing to approximately 16,000 MT and Highway 2A to about 15,500 MT, reflecting the impact of reduced traffic during the pandemic. The following years, 2021 and 2022, saw a gradual return to previous levels, with emissions for Highway 2 rising to nearly 18,000 MT and Highway 2A to roughly 16,500 MT, aligning with the gradual recovery in traffic volumes post-pandemic.

Greenhouse Gas Emissions by Vehicle Type

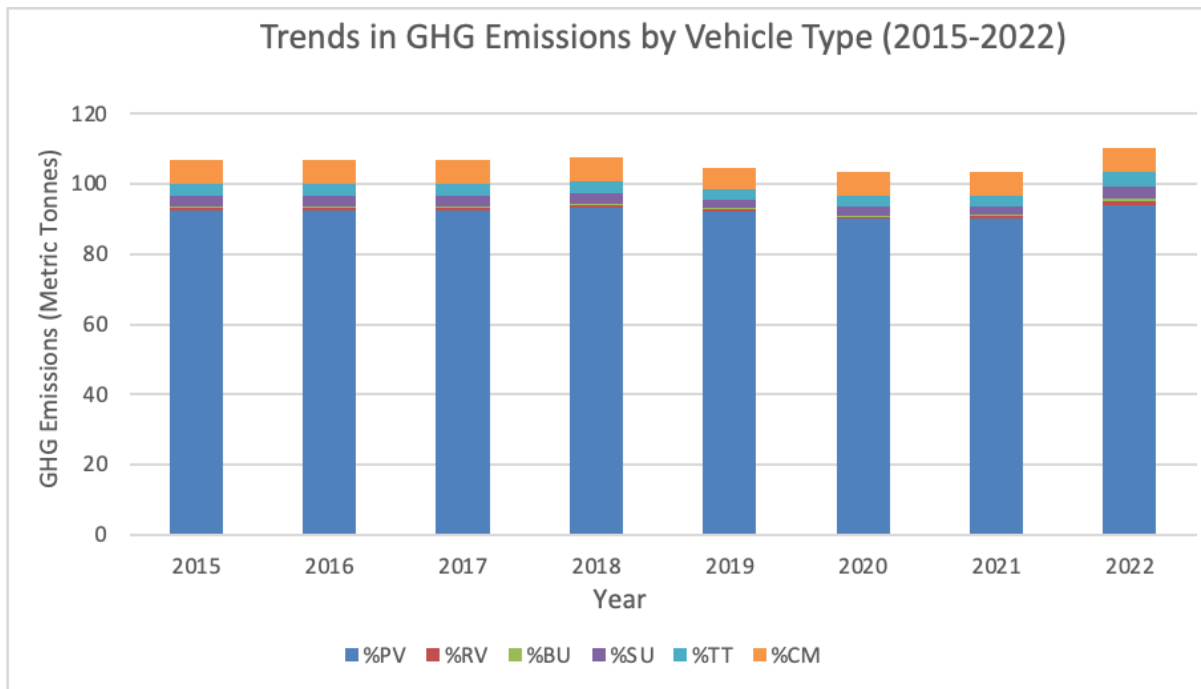


Figure 7

Figure 7 displays vehicle type data from both Highway 2 and Highway 2A to illustrate the breakdown of GHG emissions by vehicle type along both highways from 2015 to 2022. The colors in the stacked bar chart designate different vehicle categories—passenger vehicles (PV), recreational vehicles (RV), buses (BU), single-unit trucks (SU), tractor-trailers (TT), and commercial vehicles (CM). The y-axis measures GHG emissions in metric tonnes, and the x-axis denotes the year. The data indicates that from 2015 to 2019, GHG emissions by vehicle type remain relatively unchanged. However, a slight decrease is noted in 2020 across all vehicle types, which corresponds with the decrease in traffic during the pandemic. By 2022, emissions show a minor increase as traffic volumes begin to recover. Passenger vehicles are shown to be the most significant contributors to GHG emissions, with a reported 94 metric tonnes in 2022, followed by commercial vehicles at approximately 20 metric tonnes, tractor-trailers around 10 metric tonnes, and single-unit trucks, with recreational vehicles and buses each contributing the least, estimated under 5 metric tonnes.

Discussion

AADT and Total Traffic Volume

From our AADT data analysis, we found that Highway 2 had a higher AADT and total traffic volume from 2013 to 2022 in comparison to Highway 2A. We attribute this to the direct nature of the Highway, as it is one straight, high-speed, multi-lane road connecting the major cities of Calgary and Edmonton as a north-south highway; it's a primary transportation route and is a part of the CANAMEX corridor, connecting Canada to Mexico through the United States. Highway 2 tends to have better infrastructure, including wider lanes, more frequent passing lanes, and better signage compared to Highway 2A, and economic activity along Highway 2 is often higher than along Highway 2A, leading to increased commercial traffic. Major industrial areas, business centers, and distribution hubs are often located along or near Highway 2, contributing to its higher traffic volume, and This makes it a more attractive option for drivers, especially those traveling longer distances or with larger vehicles. Highway 2A, on the other hand, is often a secondary route or serves more localized traffic, going through smaller towns, has less lanes and is less direct; drivers often prefer the most direct route to save time and distance. Highway 2A may have more intersections, traffic lights, and access points compared to Highway 2, which can slow down traffic flow and discourage through-travelers from using it as their primary route, resulting in Highway 2 as the busier route.

For Highway 2 specifically, when breaking the AADT data municipality by municipality, from 2013 to 2022 the City of Calgary contained almost double the average annual daily traffic as the next largest municipality, Edmonton. We attribute this to Calgary having a greater population than Edmonton and being the financial/business hub of the province, attracting large volumes of people in comparison to the governmental hub of Edmonton. This is valuable knowledge, as it shows that within Calgary, numerous crossing stations are needed, and the infrastructure for these stations will need to be larger than in the other municipalities to be able to withstand the higher volume of commuters who would switch from passenger vehicle to rail. For total traffic volume by year, Highway 2 has a huge amount; as of 2022, approximately 497,884 total vehicles were on the highway in the Calgary-Edmonton corridor. This solidifies that traffic congestion and commute time are huge problems along this highway, and that passenger rail along this corridor would speed up commute time and decongest the highway.

For Highway 2A, when examining the AADT data for each municipality, somewhat surprisingly the Foothills County had the highest AADT throughout 2013 to 2022. We think this could be due to its proximity to the City of Calgary, and that it connects Calgary to the surrounding smaller communities and suburbs; Calgary has a greater population than Edmonton, with a large number of people commuting into the city for work everyday and then back out into the suburbs. From this, we know that it is necessary to account for a greater influx of people in the Foothills County for passenger rail, and more frequent crossing stations and greater infrastructure would be beneficial in this specific region. Although significantly less than Highway 2, Highway 2A has a large amount of total traffic volume per year, with a number of approximately 57264 vehicles in 2022; implementing passenger rail would be greatly beneficial to combat the vehicle congestion and commute time along this highway.

In addition to our results, a separate scientific study conducted in 2021 provided a gravity model analysis for ridership of regional rail in the Calgary-Edmonton Corridor using the existing Canadian Pacific Railway right-of-way, and estimated regional rail ridership to “be in the region of 5.3 million passengers per year, but is expected to be significantly larger due to Calgary acting as the finance and business hub and Edmonton as the government hub” (Arduin & Fryer, 2021). The author also discusses specific geographical areas along the corridor other than Calgary and Edmonton that will attract significant volumes of visitors; the communities Nisku and Leduc were portrayed as having a minor share of ridership, but “in reality would be much larger to the services provided by the premium outlet mall and international airport”(Arduin & Fryer, 2021).

Therefore, placing our AADT findings in context of Integrated Travel’s “Rail for All: Connecting Communities” project, implementing passenger rail in the Calgary-Edmonton corridor will greatly decrease private passenger vehicle traffic and congestion on Highway 2 and 2A and subsequently reduce commute times for Albertans. As a result of fewer people having to rely solely on the highway for transportation, the urge for lane expansions along the highway will diminish. This commonly favored strategy of adding additional lanes to alleviate roadway congestion has counterintuitively produced the opposite effects. According to a study conducted by Susan Handy of the National Center for Sustainable Transportation in 2015, the introduction of more roadway capacity merely attracts more vehicles to the road, ultimately failing to reduce congestion. The appropriate techniques to properly address the volume of traffic is by establishing legitimate alternative modes of transportation to connect this densely populated region. A reduction in vehicles will also contribute towards a decreasing level of roadway accidents, particularly those related to weather, driver fatigue, and unsafe driving habits. Passenger rail service offers a reliable, safer mode of transportation that can effectively reduce congestion and promote sustainable transit solutions.

Greenhouse Gas Emissions

Our greenhouse gas emissions data directly reflect the high volume and AADT findings discussed above; Highway 2A has less total GHG emissions between 2015 and 2022 in comparison to Highway 2, due to less traffic numbers and volume. One element that is especially interesting is that from 2019 to 2020, AADT and traffic volume on both highways substantially decreased, and total GHGs from 2019 to 2020 also decreased accordingly on both highways. When examining Figure 6, the trends in GHG emissions by vehicle type, from 2019 to 2020, we noticed that there was a proportionate reduction of emissions across all vehicle types, including recreational vehicles, single-unit trucks, and tractor-trailers, reflecting the overall decrease in traffic.

Overall, from our findings, it is evident that Highway 2 and 2A have considerable contributions to GHG emissions and subsequently the surrounding environment, with passenger vehicles emitting the majority of them by far. By implementing passenger rail on pre-existing Canadian Pacific Railway right-of-ways in the Calgary-Edmonton corridor, it will greatly reduce vehicle greenhouse gas emissions in the corridor which currently stand at 12,897.7 MT. This implementation coupled with project plans to adapt sustainable technologies such as rolling stock for batteries and hydrogen fuel cells with the infrastructure will greatly reduce the carbon footprint

of the Calgary-Edmonton corridor and lower pollution to improve the environment of surrounding communities.

Although the federal government has established a comprehensive action plan for clean on-road transportation, a reliance solely on electric and hydrogen powered vehicles will not be a viable solution. The expansion and maintenance demands of green vehicles are comparable to those of gas-powered ones, leading to continued greenhouse gas emissions generated during highway construction projects. Introducing a rail service would alleviate traffic pressure on highways, with tracks necessitating far less frequent per capita maintenance than roads. Additionally, rail stations infrastructure would be subject to a slower rate of wear and tear solely from human activity.

Future Projections

Alberta is experiencing a period of rapid population growth, in a recent study released by Statistics Canada (2023), the first three quarters of the past year saw an increase of 157, 976 new people living in the province. Not only is this the first time that this value has surpassed 100, 000, but it is also over three times larger than the latest pre-pandemic total from 2019. A Population Projection Analysis released by the Alberta Treasury and Finance Board (2019), expects the province's population in 2046 to reach an estimated 6.6 million people, with 80% of Albertans living along the Edmonton-Calgary Corridor. The current population within this corridor already exceeds the population of Ontarians inside the greenbelt four years after GO Transit began servicing the Greater Toronto Area with a passenger rail service (Statistics Canada, 2015). With the rapid urbanization set to continue within this region, establishing transportation infrastructure to fit the current and growing demographics are vital for sustainable growth and strength within the province. The establishment of rail service stations in the future would also allow for communities to once again be built around these services, with a renewed focus on connectivity and accessibility.

Comparative Analysis

GO Transit, the regional passenger rail line located in Southern Ontario, serves as a vital piece of transportation catering primarily to the Greater Toronto Area. Conceived in the late 1960s, the project was designed to address the region's rapid growth and escalating highway congestion by providing an alternative that would "get commuters out of their cars" (GO Transit, n.d.). Within its first year with a population smaller than the current Calgary to Edmonton Corridor, the train service transported approximately 2.5 million total riders (GO Transit, n.d.). Currently spanning more than 11,000 square km across the region, their transportation services serve in excess of 70 million people per year (GO Transit, n.d.). GO Transit emerged during a period when the rapid regional population outpaced the capacity of highways to meet transportation needs alone, a point that Highway 2 and 2A have since outgrown as well. The GO Transit in its current form owes its existence to the much smaller single-line trains that operated along Lakeshore East and West a little more than 50 years ago. Similarly, the Calgary-Edmonton Corridor will not experience the development of an expansive transit system to match the projected population growth of 2050 without a comparable precursor.

One notable difference that is unique to Alberta when compared to the region of Southern Ontario is the geographical positioning of Calgary and Edmonton being located at opposite ends of the train line. According to the GO Transit website, “at least 91 per cent of our train ridership is to and from Union Station in downtown Toronto”. This occurs for two primary reasons, Toronto’s status as the largest city in the region and the strategic placement of Union Station at the center of the transit system. This requires all trains to pass through it before departing on a separate line. Given that Calgary and Edmonton would be situated at both ends, boasting similar populations, and both offering a unique array of interest and attractions, the distribution of movement along the line should be considerably more balanced, while also providing greater access to the cities and towns that lie between them.

Proposed Opportunities for Rail Stations

Throughout the route on the Canadian Pacific Rail from Aldersyde to Edmonton, numerous cities and towns offer strategic locations for train stations. These stations would not only facilitate provincial connectivity, but also provide seamless access to urban centers and local communities upon arrival.

Beginning in Aldersyde, this station will function as a central hub to service both Okotoks and High River, offering a more convenient commuting option compared to driving to South Calgary. Situated at the intersection of two highways linking the two towns, this location would provide ample parking space for passengers. As demand in Okotoks grows, the Aldersyde Train Station could be added as an available stop on the Okotoks on-demand bus service.

As the rail enters Calgary, three stops should be established within the city: one at Anderson Station in the South, another beneath the Calgary Tower in downtown, and a third situated near the airport. Anderson Station serves as an existing transit hub, providing a range of bus and LRT services. Additionally, passengers can find entertainment and leisure at the nearby mall while awaiting or embarking from the passenger rail. The Calgary Tower Station holds significance as a former site of the Via Rail station, which was operational until the 1980s. Beyond its historical value, this station provides convenient access to the heart of the city, connecting passengers to bus and LRT lines. Moreover, it is located just a ten-minute walk away from the Stampede grounds and the Saddledome, adding to its accessibility and appeal for travelers. This station would also offer convenient access to and from Calgary International Airport, as the city currently operates a bus service from the airport, with one of the stops located in front of the tower. The final station within the city would be located at the Calgary International Airport, positioned at the rail intersection with either Airport Trail NE or Country Hills Boulevard NE. The specific location will depend on factors such as future airport transportation development, the potential extension of the Blue LRT line, and the construction of the Green LRT line. Given these uncertainties, while integrating this stop in the future is necessary, it is essential to first ensure greater surrounding development before its establishment.

Continuing north to Airdrie, the South Transit Terminal serves as an existing bus station situated adjacent to the CP Rail. This terminal offers services connecting to various other parts of the city, CrossIron Mills mall, and Northern Calgary.

Olds located approximately halfway between Calgary and Red Deer presents an opportunity not only for the town's residents, but also those in the surrounding area. Parking lots located along the tracks at the intersection of 49 Avenue and 50 St, or next to the Shopper Drug Mart on 50 Avenue could potentially serve as smaller demand stations. Minor infrastructure would be required in these locations, as a reduced number of train cars would service the stop, compared to the entire train.

Arriving in Red Deer, the intersection of the CP Rail and 32 Street, adjacent to Red Deer College, emerges as a prime location for a station. This site offers ample potential for the city's ongoing growth and development. Additionally, with two buses already servicing the college across the overpass, minor adjustments could be made to ensure seamless connectivity for passengers to the rest of the city.

Similar to Olds, Lacombe would function as another town serving not only its residents, but also the surrounding populations. This station would also offer reduced service for a few of the train cars and would be situated on the tracks in front of Len Thompson's Trout Pond, famed for housing the World's Largest Fishing Lure.

In the Leduc and Nisku area two stations would be established. The first station would be situated at the intersection of 47 Street and 50th Avenue, adjacent to the Alberta Legacy Development Society/Leduc Heritage Grain Elevator. Beyond its historical significance, the station's downtown location would effectively connect passengers to and service the needs of the community. The second station would be located along Airport Road, ideally in a collaborative effort with Park'N Fly Edmonton International Airport Parking providing the optimal location for a station.

The journey will conclude at Strathcona Junction in Edmonton, where passengers will have access to both local and express bus options. The express buses will connect to the Capital and Valley LRT lines, enhancing connectivity across the city. Additionally, this station would also be adjacent to the original CP Rail Train Station, which was built in 1907. The rich history coupled with comprehensive transportation services make this the perfect terminus for the line.

Conclusion

Our study provides specific, data-driven insight into the AADT vehicle patterns and greenhouse gas emissions from the Calgary-Edmonton corridor on Highway 2 and 2A. From these results, we found that by implementing a "rail for all" approach on this corridor, it would decrease the current heavy vehicle traffic along Highway 2 and 2A and subsequent GHG emissions. Identifying crossing locations that coincide with the existing Canadian Pacific Railway system is crucial for establishing an inclusive "rail for all" system. Locations that prioritize pedestrian friendliness, accessibility to public transportation, ample space vehicle parking, and surrounding amenities are all given high priority. This approach ensures that passengers can seamlessly connect not only across

the province, but within the cities and towns they are traveling to, promoting continuous and convenient transportation options for Alberta.

This introduction of frequent inter-city public transport in combination with passenger rail will have extensive benefits in numerous ministries within Alberta's provincial government, including:

1. **Advanced Education.** Accessible and affordable passenger rail provides post-secondary opportunities to low-income Albertans living in rural and indigenous communities.
2. **Affordability and Utilities.** This project allows Albertans without a vehicle to be able to travel to an adjacent community for groceries and services and offers residents the opportunity to remove the need for a second vehicle and its subsequent costs of insurance, fuel, and maintenance. All of these factors make it easier for Albertans to identify lower cost housing and alleviate housing costs, food costs, and insurance expenses.
3. **Arts, Culture, and Status of Women.** Passenger rail makes it easier for Albertans and visitors to access and attend cultural events and institutions to promote and support the participation of women in Alberta's economy.
4. **Children and Family Services.** This project increases and improves access for youth struggling with mental illness to wellness centers and supportive resources, whilst providing greater access to affordable daycare for parents working outside of their local municipality.
5. **Education.** Similar to above, passenger rail offers greater choice to specialty education in Alberta, greater educational support for children with complex and specified needs, and greater access to Albertan youth seeking apprenticeship experience within skilled trades.
6. **Energy and Minerals.** "Rail for All" offers large emitters the opportunity to obtain Carbon Offsets and invest in Alberta towards a net-zero province in the socio-environmental context of resource scarcity and global climate change.
7. **Environment and Protected Areas.** The project works with numerous stakeholders of government, industry, and First Nations groups to reduce passenger vehicle impacts on the environment and offers Albertans an opportunity to develop and improve land-use plans for counties and municipalities by moving hundreds of cars from the roadways and decreasing the need for private automobiles and subsequent road infrastructure, and therefore creating the opportunity to reclaim greenspaces and prioritize urban green equity and holistic public health and improving the walkability of communities serviced by frequent passenger rail and inter-city bus services.
8. **Forestry and Parks.** Similarly, this project will increase Albertans' and visitors' access to Provincial and Regional parks and enable the expansion of bike and walking paths to transportation hubs.
9. **Health.** Passenger rail balances and redistributes patient loads at Alberta hospitals, improves access to diagnostic lab services, Urgent, and Emergency care, offers better care to seniors and may allow a senior to stay within their local community, improves access and affordability of healthcare services to rural and indigenous communities, and improves health workforce planning by offering greater accessibility to healthcare practitioners within a larger regional area.
10. **Immigration and Multiculturalism.** This rail project would improve access to settlement services including English language training and provide immigrants increased access to tourism and hospitality jobs.

11. Infrastructure. “Rail for All” would increase the utilization of schools and hospitals in Alberta by providing greater accessibility and offering students and patients the option to attend regional service providers. It will also decrease the wear and maintenance on public roadways along the traffic-heavy roadways of Highway 2 and 2A by switching private vehicle trips to passenger rail.
12. Jobs, Economy, and Trade. The project will increase the attractiveness and connectivity of Alberta and all communities by removing barriers to growth caused by the lack of frequent inter-city mobility services.
13. Justice. The project will improve access to courts services and therefore improve community justice and support services to help those released from incarceration.
14. Mental Health and Addiction. This rail project will improve access to support resources and recovery community centers and decrease transportation costs to and from mental health appointments.
15. Municipal Affairs. “Rail for All” will improve equity between urban and rural communities to government services and employment opportunities.
16. Ministry of Public Safety and Emergency Services. It will offer safe transportation of mental health and addiction patients to appropriate health services.
17. Seniors, Community, and Social Services. This specific rail project will attract Transit Oriented Design, provide disabled residents equitable access to public services, and provide lower cost transportation to low-income Albertans.
18. Technology and Innovation. This project improves attractiveness to large corporations seeking a net-zero workplace by decreasing the reliance on passenger vehicles while decreasing the carbon footprint.
19. Tourism and Sport. It will provide greater access to world class community recreation centers and access to Alberta Tourism locations for both residents and visitors; more specifically, it will offer tourism trains into Alberta and to Banff and Jasper national Parks, decreasing environmental impacts of private passenger vehicles to the parks.
20. Transportation and Economic Corridors. This project offers an inter-city transportation alternative to 10% of Albertans without access to a private vehicle and/or without a drivers license and increases employment opportunities within rural Alberta and offers rural Albertans improved access to jobs outside their local communities. It offers a cost-sharing arrangement with the municipalities served by improved busing and the re-introduction of a frequent-running, affordable regional passenger “heavy” rail network and will therefore funnel regional rail passengers into public transit and connect regional communities in the Calgary-Edmonton corridor.

Aside from policy makers, stakeholder partnerships are key to the success of this project; Our findings support the “rail for all” approach and show the reduced environmental impact, increased transport efficiency, increased community equity benefits, and increasing regional connectivity in Alberta that will arise from the Connecting Communities project.

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