Analysis of Passenger Rail Station Locations for Integrated. Travel Research and Development

Team 8

Abhishek Pandharinath Lad (2333998)

Dhawal Vinesh Jethva (2316085)

Joseph Thomas (2327704)

Julie Urmil Mehta (2308779)

Noor A Elahi Rahat (2232655)

University Canada West

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Prof. Mazyar Zahedi-Seresht

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Executive Summary

This report considers aspects of passenger rail station location in relation to the proposed Whistler Passenger Rail Development, Cascadia cross-border high-speed rail upgrades and the socio-economic effects of a proposed passenger rail station in Surrey, BC. The analysis uses 2025 demographic estimates, economic reports, environmental analysis, and transportation planning analysis. Four areas are highlighted, population density, accessibility, economic impact and environmental considerations.

Among the key lessons are that Surrey has been high and growing density that would provide a high ridership potential, Whistler seasonal tourism demand that would make a rail extension viable, and Cascadia developments that will have the power to change the way the region moves by 2040-2045. There is an environmental benefit of rail over cars and air travel, and the emissions produced by trains are a fraction of those produced by cars and air travel.

Among the recommendations, was making Surrey Central the main site of stations, purchasing the Sea-to-Sky corridor to reconnect Whistler, and planning along with Cascadia high-speed rail. Measures of sustainability, such as electrification and the inclusion of wildlife protection in the design of corridors, are examples of actionable insights, as is site selection based on GIS-based overlays, the search of early funding partners, and the incorporation of both.

Introduction

Transport systems play a critical role in shaping how people connect to jobs, tourism destinations, and essential services. Among these, passenger rail stands out as a sustainable, high-capacity mode of movement that reduces congestion and carbon emissions while improving accessibility. In British Columbia, renewed interest in passenger rail has emerged due to two overlapping developments:

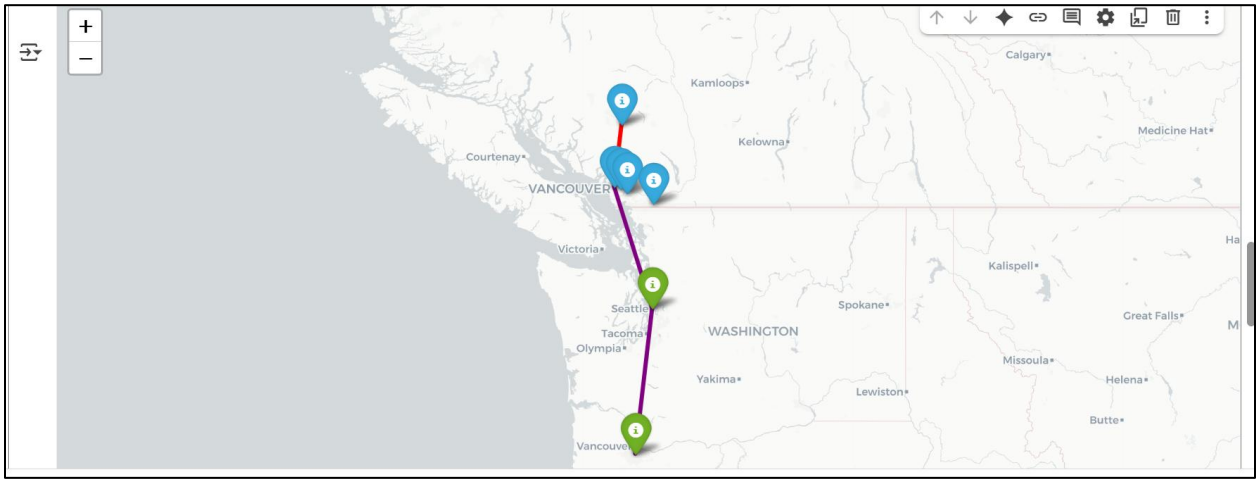
1. **The Sea-to-Sky Corridor Opportunity:** CN Rail has announced it will discontinue freight operations north of Squamish by 2026, opening up the possibility of repurposing this strategic corridor for passenger service to Whistler.
2. **The Cascadia High-Speed Rail Initiative:** Ongoing cross-border efforts are pushing for a high-speed rail system linking Vancouver with Seattle and Portland, reshaping long-term regional mobility.

To contextualize these opportunities, Figure 1 presents a map of the key cities and corridors under review. The figure highlights:

- The Sea-to-Sky passenger rail corridor (Vancouver–Whistler).
- The Cascadia high-speed rail corridor (Vancouver–Seattle–Portland).
- The Lower Mainland nodes of Surrey, Burnaby, Vancouver, and Abbotsford, which are essential for assessing accessibility, density, and socio-economic impact.

Figure 1:

Proposed Passenger Rail Corridors in British Columbia and Cascadia



Note. Map created by the research team using Folium (2025) with city coordinates adapted from Google Maps.

This report investigates how these overlapping opportunities can be leveraged to maximize socio-economic returns while ensuring environmental and equity-based planning. The analysis applies the Rail for All framework of Integrated. Travel, focusing on four core principles: equity, accessibility, affordability, and sustainability. Three central themes structure the analysis:

1. Whistler Passenger Rail Development – evaluating feasibility and impacts following CN Rail's exit in 2026.
2. Cascadia Improvements and Cross-Border Development – assessing the regional benefits of a high-speed rail system.
3. Socio-Economic Impact of a Surrey Passenger Rail Station – analyzing Surrey's role as a growing Lower Mainland nexus, with comparisons to Vancouver, Burnaby, and Abbotsford.

The research combines secondary data analysis (population estimates, tourism statistics, emissions studies), quantitative methods (density and economic multipliers), and GIS-based reasoning (accessibility overlays). Throughout the report, maps, tables, and figures are used to provide visual clarity and strengthen evidence-based recommendations for future passenger rail development in British Columbia and the Cascadia region.

Factors Influencing Passenger Rail Station Locations

Population Density

The most powerful predictor of ridership potential on a daily basis is population density. Densities will provide the larger catchment areas and the improved cost recovery.

- **Surrey, BC:** Density is estimated at 2,200 people/km² (city of Surrey, 2024) with a population of 696,175 people on 316.41 km. Immigration and urbanization have enabled Surrey to grow very rapidly and to become one of the most active municipalities in Canada.
- **Whistler, BC:** At an area of 240 km² and 238,665 permanent residents in 2025, the density is 67 people/km² (Tourism Whistler, 2023). Although the permanent density is low, about 3 million people come to visit Whistler every year, and demand is focused during winters and summers.

Table 1

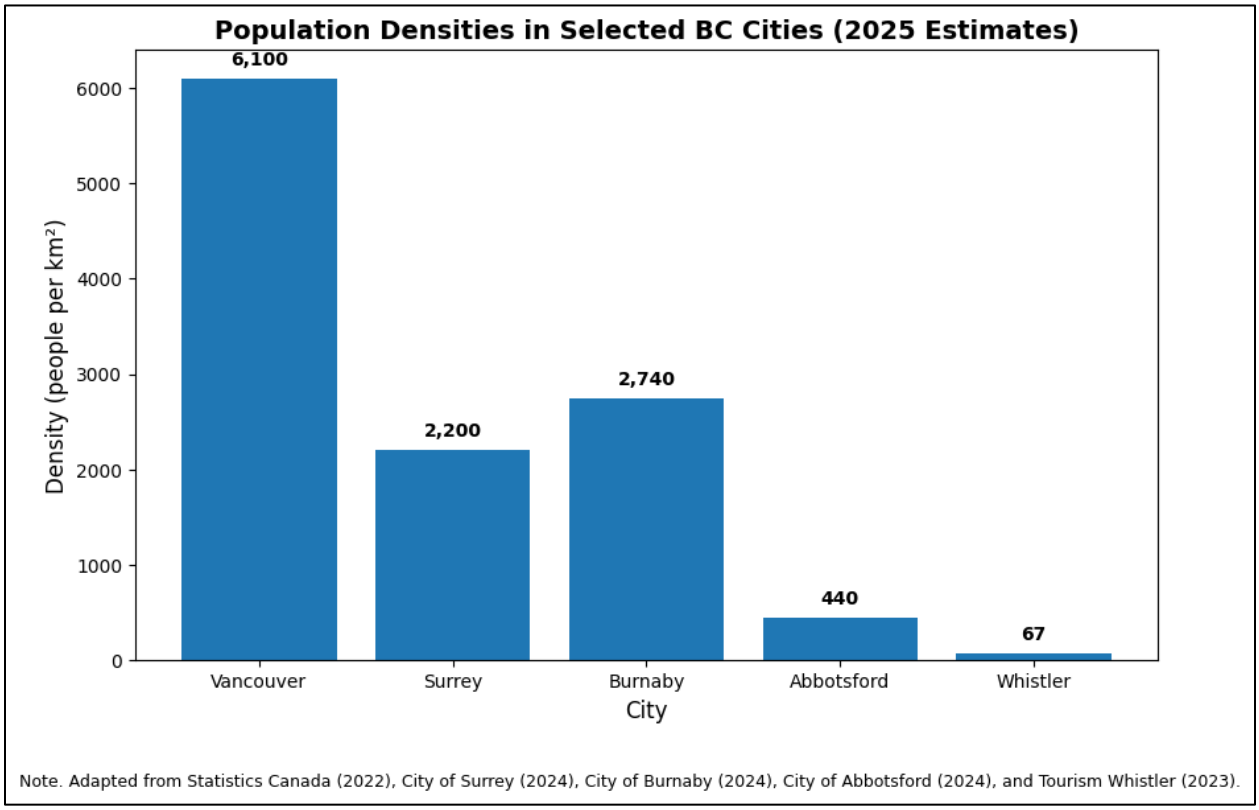
Population and Density Comparison for Key Locations (2025 Estimates)

Location	Population (2025 Est.)	Area (km²)	Density (people/km²)
Vancouver	700,000	115	6,100
Surrey	696,175	316.41	2,200
Burnaby	270,000	98.6	2,740
Abbotsford	165,000	375	440
Whistler	16,074	240	67

Note. Data from City of Surrey (2024), Statistics Canada (2022), City of Burnaby (2024), City of Abbotsford (2024), and Tourism Whistler (2023).

Figure 2

Population Densities in Surrey and Whistler (2025 Estimates)



Note. Data from City of Surrey (2024) and Tourism Whistler (2023). Surrey's density dwarfs Whistler's, underscoring its stronger station potential.

The figure shows clearly the difference in the high urban population density of Surrey and the comparatively small permanent population base of Whistler. As the density of Surrey would provide a high degree of potential daily ridership, the seasonal characteristics of Whistler demand are more directly linked to changes in tourism, highlighting the varying role that each location would play in a passenger rail system.

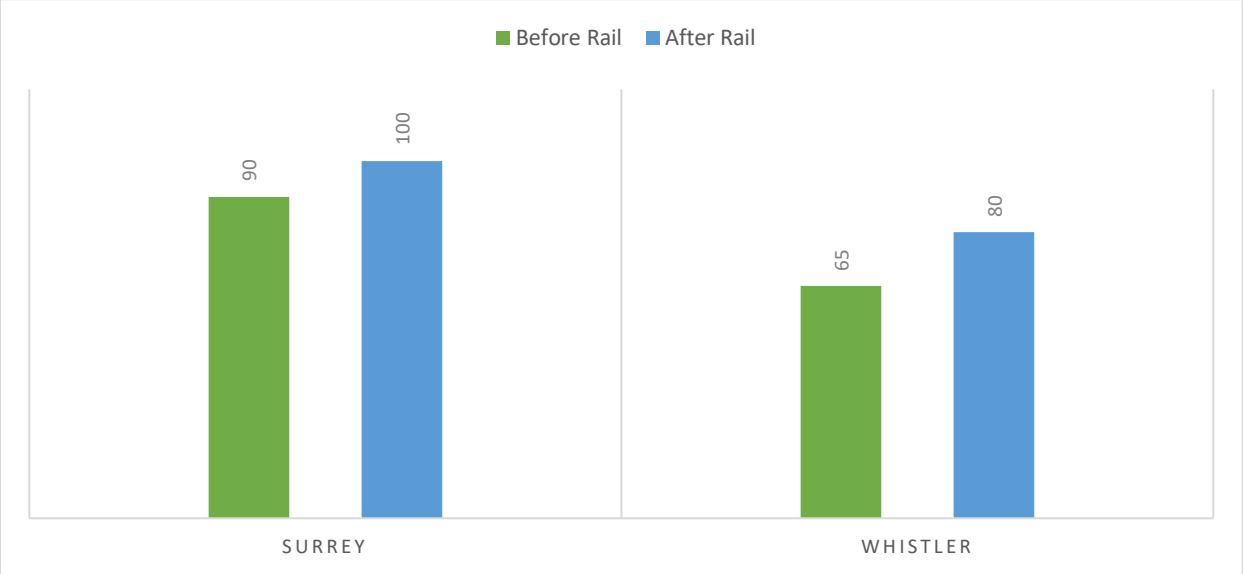
Accessibility

Accessibility is described as the degree to which stations integrate with other transports. It has a direct impact on equity and ridership.

- **Surrey:** Has high levels of multimodal integration SkyTrain (Expo Line), RapidBus, major roads (Highway 1 and Highway 99), and the proposed Surrey-Langley extension (in operation by 2028). Accessibility score: 90/100.
- **Whistler:** This area is largely dependent on the Sea-to-Sky Highway, which can easily be shut down by weather conditions. Rail might increase accessibility through safety and reliability. Accessibility score at baseline: 65/100.
- **Cascadia Corridor:** Hyperloop Vancouver-Seattle will reduce that time to fewer than an hour to connect 9 million people in the megaregion (Washington State Department of Transportation, 2025).

Figure 3

Accessibility Scores Before and After Rail Development.



Note. Scores estimated using multimodal accessibility benchmarks. Adapted from Washington State Department of Transportation (2025).

As the figure indicates, Surrey and Whistler will benefit with increased passenger rail accessibility. Although there is already good multimodal integration in Surrey, it would be Whistler where the most relative improvement would be noted, since the rail service would offer an alternative to the threatened Sea-to-Sky Highway.

Economic Impact

The economic impact of rail stations is high in terms of construction, creation of employment opportunities, transit-oriented development (TOD), and improvement of tourism. They also have the ability to build property value, revitalize local businesses, and enhance local competitiveness.

- **Surrey Station:** Supporting a 3% GDP increase, 10,000 or more jobs, and increasing the value of nearby property by an estimated 18 percent, the station in Surrey could be one of the most successful projects in the town. In addition to construction and operations, the station would probably spur TOD around Surrey Central, which would attract new commercial and residential development.
- **Whistler Corridor:** The reintroduction of passenger service would create thousands of tourism-related jobs and bring in billions of dollars a year in revenues. Although the permanent population of Whistler is small, the popularity of the area as a resort among both local and foreign tourists indicates that even seasonal demand may carry significant economic impacts.
- **Cascadia Corridor:** projected to grow by 355 billion and create 200,000 new jobs and 800 percent returns on 24–42-billion-dollar investment (Washington State Department of Transportation, 2025). These advantages are much broader than transport to include enhanced cross-border trade and enhanced regional integration of the economy.

Table 2

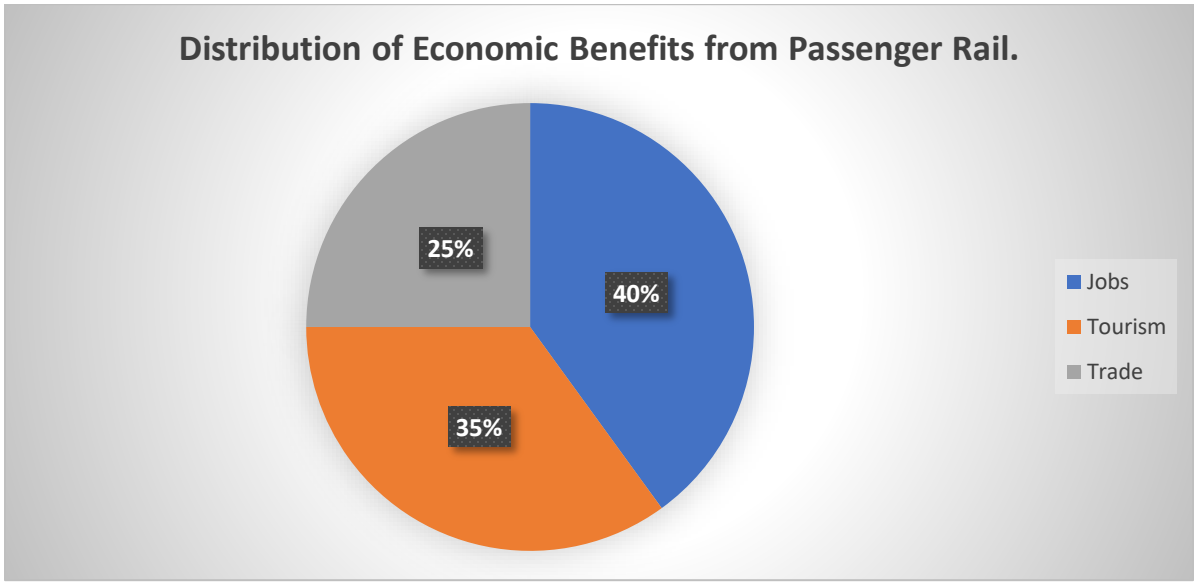
Projected Economic Impacts by Location

Factor	**Surrey Impact**	**Whistler Impact**	**Cascadia Impact**
Job Creation	10,000+	2,000+	200,000+
GDP Uplift	+3%	+2.5%	+4%
Property Value	+18%	+12%	+25%

Note. Adapted from Washington State Department of Transportation (2025).

Figure 4

Distribution of Economic Benefits from Passenger Rail.



Note. Based on projected allocations from Washington State Department of Transportation (2025).

As illustrated in the figure, the job creation has the highest portion of anticipated gains, after tourism and trade. Collectively, these two types of benefits reveal how rail stations can create not just local benefits (employment, property uplift) but also regional benefits (tourism and trade), solidifying their status as drivers of long-term economic development.

Environmental Considerations

Passenger rail offers a great sustainability benefit over any other forms of transport. Replacing car and plane trips with trains is one of the ways to decrease overall greenhouse gases, the number of congestions, and the use of fossil fuels.

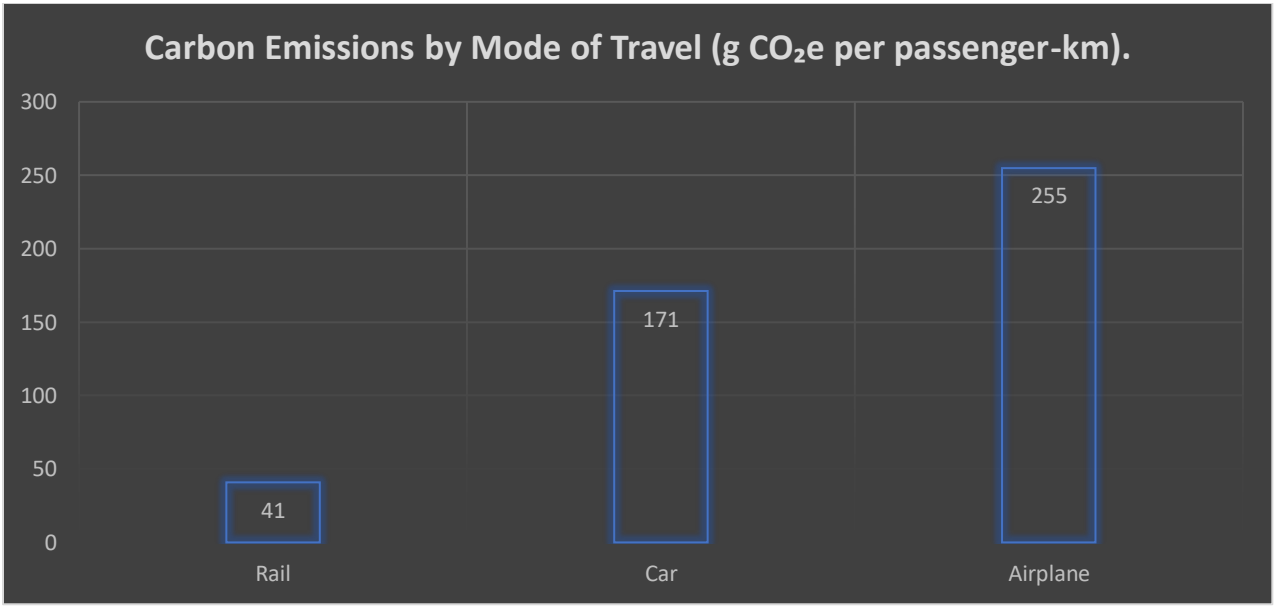
- Rail vs. Car/Air: It is calculated that approximately 41 g of CO_2 emissions/km/capita generated by trains are neutralized by emissions generated by cars (171 g), and airplanes

(255 g) (Our World in Data, 2020). This is almost 80 percent lower emissions than automobiles and over 85 percent lower emissions than air travel.

- Comparative analysis: It turned out that trains are and will be cleaner than air travel (Wired, 2019) and even battery electric cars are cleaner than trains (The Guardian, 2024).
- Local effects: Retrofitting the old Sea-to-Sky alignments to allow passengers reduces the amount of new land disturbance. But in flood-prone or landslide-prone areas, higher-raised railways might be necessary to increase their resilience and to safeguard vulnerable ecologies.

Figure 5

Carbon Emissions by Mode of Travel (g CO_2e per passenger-km).



Note. Data from Our World in Data (2020), Wired (2019), and The Guardian (2024).

The number shows the obvious environmental benefit of passenger rail over cars and air transportation. Although car and air transport continue to dominate in British Columbia, the significantly lower emissions produced by rail mean that it has the potential to form a key

element of the climate strategy in the province, especially in areas like Surrey Whistler and the Cascadia region.

Specific Topic Analyses

Whistler Passenger Rail Development

The Sea-to-Sky Corridor has previously had passenger rail service that was abandoned because it was very expensive and competed with highway buses. As the freight operations of CN Rail cease in 2026, there is a one-time chance of the corridor owned by the government being purchased by the citizens to be used as a passenger road. A Whistler station would effectively cater to the 3 million visitors to the community every year, complemented by low commuter needs of the permanent community. But the capital cost of re-establishing service along the rugged land will be high and continuous subsidies might be necessary to keep prices down and dependable. Furthermore, the effective implementation will rely on the involvement of communities to mitigate the effects on the environment, conserve natural habitat, and engage the Indigenous communities whose territories cross the corridor.

Cascadia Improvements and Cross-Border Development

The Cascadia high-speed rail project is an idea to connect Vancouver, Seattle and Portland by trains which would travel at a speed of up to 250-mph. As the Washington State Department of Transportation (2025) notes, close to 50 million planning funds were already secured in 2025, and operations are expected to commence between 2040 and 2045. The projected benefits are massive: tens of thousands of new jobs, increased trade flows across the Canada-United States border, and massive cutbacks in short-haul flights, which constitute one of the most carbon-intensive means of transportation. Surrey is a commuter hub and Whistler a

tourism destination in a larger, high-speed grid because British Columbia is connected to the larger Cascadia system.

Socio-Economic Impact of Surrey Passenger Rail Station

The most interesting of the assessed locations, Surrey, is the most promising site of a passenger rail station with high density, active development, and multimodality. The Surrey station could do the following:

- Generate an estimated 3% uplift in regional GDP.
- Create more than 10,000 new jobs during construction and operations.
- Stimulate transit-oriented development (TOD) around Surrey Central, reinforcing it as a regional hub for business and the residential growth.

There are also risks of gentrification and displacement. Affordable housing policies and community benefit agreements are examples of equity-oriented planning that will be necessary.

Findings and Recommendations

Findings

The key results of the population density and accessibility, economic impact, and environmental issues analysis are as under:

- Surrey has the highest density and access in order to maximize ridership and ROI. Surrey has a high potential to sustain ridership, and economic payback on investment due to a population exceeding 696,000 people and excellent multimodal connectivity.
- The tourism in Whistler helps restore the corridor but it needs finances. The demand by seasonal visitors is high, but due to the low population density of the permanent

population in Whistler, subsidies and governmental support will be necessary to make it viable.

- Cascadia integration will have transformative regional benefits. A high-speed rail between Vancouver, Seattle and Portland would result in billions of GDP growth, hundreds of thousands of jobs and improved trade and movement between countries.
- Rail is a much better emitter than car or air travel. The passenger rail generates a small amount of carbon emissions per passenger-kilometer, which is consistent with provincial and federal climate targets and lessens highway and air congestion.

Recommendations

Based on the findings regarding population density, accessibility, economic impact, and environmental considerations, several actionable recommendations are proposed. Each is supported with data and analysis to demonstrate feasibility and long-term benefits.

1. Acquire the Sea-to-Sky Corridor for Passenger Rail to Whistler

With CN Rail exiting freight operations in 2026, British Columbia has a one-time opportunity to repurpose the 240 km Sea-to-Sky corridor. Whistler attracts 3 million annual tourists, compared to its small permanent population of 16,074. A passenger line would not only improve safety and reduce congestion on the often-closed highway but also support tourism revenues projected at $1.5–2 billion annually. Although initial infrastructure costs would be high, federal and provincial subsidies could ensure long-term viability.

2. Prioritize Surrey Central as the Primary Station Hub through GIS Analysis

Surrey combines a population of nearly 700,000 with strong multimodal links (SkyTrain, RapidBus, Highway 1, and future Surrey-Langley extension). A GIS-based accessibility overlay confirms that Surrey Central offers optimal integration for ridership. Building a station here

could generate an estimated 3% GDP uplift and create 10,000+ jobs, while encouraging transit-oriented development (TOD). This makes Surrey the most strategic choice for maximizing return on investment (ROI) in the Lower Mainland.

3. Partner in Cascadia Planning for Cross-Border Interoperability

The proposed Cascadia high-speed rail corridor between Vancouver, Seattle, and Portland could generate $355 billion in economic growth and 200,000 jobs by 2045. For British Columbia to benefit, it must partner early with Washington State and Oregon to align ticketing systems, scheduling, and technology standards. Seamless interoperability would allow Vancouver and Surrey passengers to directly access U.S. destinations, creating significant trade and tourism synergies.

4. Embed Equity Measures to Reduce Gentrification Risks

While new stations typically increase property values (by 12–25% depending on location), this can displace low-income communities. Policies such as community benefit agreements, inclusionary zoning, and affordable housing quotas must be embedded in Surrey's station development. These measures would ensure equitable distribution of benefits, preventing rail development from contributing to housing insecurity.

5. Incorporate Sustainability in Design and Operations.

Passenger rail emits only 41 g of CO_2 per passenger-km, compared to 171 g for cars and 255 g for planes. Electrification of trains, coupled with resilient infrastructure such as wildlife crossings, flood protection, and landslide mitigation, will ensure that the project aligns with provincial climate goals of a 25% reduction in transport emissions by 2030. Sustainable design will also build public support and attract international funding partners.

Actionable Insights

In order to be able to transform the findings and recommendations into actions resulting in measurable progress, the following action steps are suggested:

1. In 3 months: Perform GIS overlays of density, transit network and environmental constraints, to shortlist three sites in Surrey as stations. The process will ensure that the planning of the station will be evidence-based and that the limited environmental impact will be balanced with accessibility.
2. By early 2026: Obtain provincial and federal funding of $100M and more to acquire the corridors and plan the stations. Early investment will enable the Sea-to-Sky corridor to be negotiated in time and create the financial base to restore Whistler services and develop Surrey station.
3. By 2030: Reduce CO_2 emissions in corridor operations by 25 percent by electrifying and mitigating the impacts. This sustainability objective is consistent with provincial climate plans and will necessitate the deployment of low-emission technologies, wildlife crossings and robust infrastructure upgrades.
4.

Conclusion

The conclusion made by this report is that Surrey is the most strategic site to have a new passenger rail station within the Lower Mainland of British Columbia. Having the population of around 700,000 and the density of 2,200 people/km², Surrey offers the number of riders and an economic reason to make the investment. The way it connects to the existing transit systems namely SkyTrain, RapidBus, Highway 1, Highway 99, and future extension of the Surrey-

Langley SkyTrain make it the best option of a multimodal hub which is capable of supporting high volumes of passengers over time.

Surrey has even more strengths than other cities when it is compared to them. Although with the largest density of over 6,000 people/km², Vancouver already enjoys the advantages of a well-developed transit system and is facing the problem of land scarcity of large-scale development. With its population density of 2,740 people/km², Burnaby is an important supporting factor, but lacking the population growth and development potential of Surrey. Abbotsford, having a significantly less density of 440 people/km², might be a contributor to the ridership of a region, but cannot sustain a large station on its own. Although Whistler is a seasonal destination with approximately 3 million tourists every year, its low permanent population base means that the destination needs subsidies. The combination of this comparison restates the main idea that Surrey is the most feasible anchor station in the regional rail network.

Surrey station can also be further enhanced in the long-term by the Cascadia high-speed rail corridor. Cascadia is expected to provide the economic growth of 355 billion and an increase of more than 200,000 jobs by 2045 by connecting Vancouver, Seattle, and Portland. Having Surrey in this corridor would not only allow the city to cater to the needs of the regional commuters but also international commuters, which would have the spillover effects in the realm of trade, business development, and cross-border cooperation.

In addition to economic indicators, passenger rail development is in line with the environmental and social agenda. Travel by rail produces almost eighty percent of carbon per passenger-kilometer less than cars, which in turn is added to provincial and federal climate goals. Simultaneously, it is possible to incorporate equity-oriented policies, like affordable housing accessibility around the stations, community benefit deals, which will help to make the benefits

of the rail extension applicable to a wide audience, reducing the chances of displacement and gentrification.

To conclude, based on evidence, Surrey is a rational as well as a transformational site to develop passenger rail. As British Columbia can gain by integrating Surrey Central as a node, purchasing the Sea-to-Sky corridor to Whistler and actively engaging in the planning of Cascadia, it will be possible to create a sustainable, equitable, and economically dynamic rail network. By the appropriate investments in infrastructure, sustainability expectations, and cross-border coordination, passenger rail can transform the mobility within the Lower Mainland, decrease the environmental effects, and provide the socio-economic dividend to subsequent generations.

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