High–Speed Rail in Canada

Insights from a corridorwide survey & a financial analysis

TRAM TRANSPORTATION RESEARCH AT MCGILL

McGill

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Territorial Acknowledgment

We would like to acknowledge that McGill University is located on unceded Indigenous lands. Tiohtià:ke/Montréal has long served as a site of meeting and exchange amongst Indigenous peoples, including the Kanien'kehaì:ka of the Haudenosaunee Confederacy, Huron/Wendat, Abenaki, and Anishinaabeg, among others. TRAM recognizes and respects these nations as the traditional stewards of the lands and waters. We respect the continued relationship these diverse Indigenous peoples have with the territory upon which we now gather.

Research Acknowledgment

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I.1 Introduction

In February 2025, the Government of Canada announced plans for the development of a high-speed rail (HSR) network which will span approximately 1,000 km along the Toronto-Québec City corridor. The HSR, officially named "Alto", has planned stops in Toronto (TOR), Peterborough (PET), Ottawa-Gatineau (OTT), Montréal (MTL), Laval, Trois-Rivières (TRV), and Québec City (QBC).

The HSR network is anticipated to bring a wide range of benefits including creating jobs, boosting the economy, reducing greenhouse gas emissions, increasing tourism revenue, alleviating congestion, and saving travel time. With dedicated passenger tracks and estimated speeds of up to 300 km/h, the system is expected to offer shorter and more predictable journeys without delays caused by freight traffic, reducing current travel times by half, with the Montréal–Toronto trip estimated to take about three hours.

To gauge public attitudes, perceptions, and expectations of the Alto network, a survey was conducted in October 2025 across all cities along the planned route. The survey was repeated in March 2026 to increase sample size. The survey collected data on current travel patterns, anticipated use and expectations of the new high-speed service, and the perceived benefits and concerns of the HSR network. This report presents the key findings of the survey, offering insights into how residents view the Alto project, their hopes and expectations, and what barriers they foresee. The findings will help transport providers and decision-makers better understand service demand and potential markets, with the goal of improving mobility options for Canadians.

Illustrative map of the Toronto-Québec High-Speed Rail

I.2 Recruitment and Validation Methods

2.1 Recruitment

Recruitment was conducted in October 2025, targeting individuals aged 18 years and older. Digital flyers, in English and French were promoted via paid advertisements on Facebook and Instagram, targeting users within each region.

In keeping with best practices for survey recruitment, incentives were employed to encourage participation. The following prizes were advertised to respondents and distributed based on a draw:
1 x iPad Air 11-inch (M3) (128 GB)
1 x AirPods 4
1 x Soundcore Earbuds P20i
3 x Fujifilm Instax Mini 12
3 x Anker Soundcore 2 Speaker
1 x Bose Soundlink Speaker
3 x Anker Powerbank (10,000 mAh)
2 x Anker Open-Ear Headphones
2 x Anker Noise Cancelling Headphones
5 x $50 Gift Cards
5 x $10 Gift Cards

In March 2026, an additional sample was sourced from Léger, a Canadian market research company.

2.2 Data Validation

Following data collection, a thorough data-cleaning procedure was applied to the data. The cleaning process was subdivided into several sequential steps, each of which constituted a filter, reducing the number of valid responses and ensuring their validity. What follows is a description of each step of the cleaning process, which were applied sequentially in the following order:

1. Incomplete answers: All surveys that were not answered to completion were dropped.
2. Multiple IP addresses: If more than two surveys were submitted from the same IP address, all observations from this IP were dropped.
3. Repeated e-mail addresses: If the same e-mail was submitted for more than one survey, all observations from this address were dropped.
4. Age above 90: If a respondent reported being over 90 years old at the time of the survey, their response was dropped.
5. Weekly travel: If a person indicated that they make more than 40 round trips to different destinations per week, their response was dropped.
6. Invalid home location: If a respondent's home location was either not provided, outside of the Census Metropolitan Area (CMA) boundaries, or located in an invalid location (e.g., on water or on a bridge), the observation was dropped.
7. Answer speed: Surveys in the top 5% of speed of completion were dropped. It must be noted that different groups of respondents, depending on their answers, got different sets of questions. Each of these groups were cleaned according to their own respective top 5% speed.

Out of 12,428 initial responses, the cleaning and validation process yielded 8,276 complete and valid responses. The resulting sample sizes by region are presented in the table below.

Complete and valid responses per region

Region	Valid responses
Toronto	1,957
Montréal	2,756
Ottawa-Gatineau	1,309
Québec City	1,305
Trois-Rivières	469
Peterborough	480
Total	8,276

I.3 Prospective Ridership

Prospective ridership was estimated using revealed preference (RP) and stated preference (SP) data. Participants were asked about previous travel within the past 12 months, as well as their likelihood to travel to major HSR destinations if the service were available today. After validating the RP trips against VIA Rail ridership statistics and adjusting for the SP-RP gap, these findings were translated into a direct measurement of prospective HSR demand. The total population from the 2021 Census was 13.1 million. Total ridership is projected to be 8.98 million along the Toronto–Québec City HSR corridor as of 2025, meaning one out of three people along the corridor indicated they would take the HSR at least once per year.

Using city-level population projections from Ontario and Québec, future ridership was adjusted for population growth. By 2035, when the HSR is expected to begin operation, ridership could reach 9.43 million, rising to 10.48 million by 2050 after 15 years of service, serving a large share of the population in their long-distance travel. Comparable projects under development, such as the California HSR, are forecasted to reach 11.8 million annual riders by 2030.

The Toronto–Montréal and Montréal–Québec City segments are expected to be the busiest. Québec City would be more often a destination rather than an origin. Ottawa–Gatineau is projected to experience the fastest growth in boardings between 2035 and 2050, followed by Toronto. The Montréal region is expected to see moderate growth while maintaining a large ridership base.

1 out of 3 people along the corridor would take the HSR at least once a year.

Prospective **Daily Boarding** along the HSR Corridor (one-way)

	TOR	PET	OTT	MTL	TRV	QBC	Total Boarding
TOR		886	1,202	1,656	357	852	**4,952**
PET	181		36	27	9	16	**269**
OTT	697	79		799	89	328	**1,993**
MTL	978	75	1,147		526	1,254	**3,979**
TRV	22	3	19	109		81	**232**
QBC	154	61	169	362	131		**877**
Total Alighting	2,032	1,104	2,572	2,953	1,112	2,531	**12,303**

Prospective **Annual Ridership** along the HSR Corridor (one-way) **(x1,000)**

	TOR	PET	OTT	MTL	TRV	QBC	Total Boarding
TOR		323	439	604	130	311	**1,807**
PET	66		13	10	3	6	**98**
OTT	254	29		292	33	120	**727**
MTL	357	27	419		192	458	**1,453**
TRV	8	1	7	40		29	**85**
QBC	56	22	62	132	48		**320**
Total Alighting	742	403	939	1,078	406	924	**4,491**

Future Ridership Projection with Population Growth (one-way)

CMA	2035	2040	2050
TOR	1,890,113	1,978,749	2,188,837
PET	107,106	112,001	121,542
OTT	834,088	892,274	1,011,636
MTL	1,457,980	1,468,185	1,471,835
TRV	87,085	87,873	89,059
QBC	336,433	344,651	357,930
Corridor	4,712,806	4,883,734	5,240,838

I.4 Willingness to Pay

When asked about the willingness-to-pay (WTP) for specific destinations, participants are, on average, willing to pay about C$25 more for HSR service compared with the current VIA Rail fare. The willingness-to-pay values are closely related to travel distance, which exhibits an approximately linear relationship across origin–destination pairs. As shown in the table below, longer intercity trips such as Toronto–Québec City and Toronto–Montréal correspond to the highest WTP values, while shorter-distance pairs such as Toronto–Peterborough and Montréal–Trois-Rivières show substantially lower WTP.

The results also suggest that popularity and travel purpose play a role in willingness to pay. For instance, trips involving Trois-Rivières show notably lower WTP values despite comparable distances, which may reflect lower perceived travel demand or fewer major trip purposes associated with this destination.

Willingness to pay reflects passengers' preference and perceived value of the service, and it is typically lower than the maximum fare they would be willing to pay. Monetary costs of competing modes should be considered in determining the fare structure, such as airfares and driving costs, to ensure that HSR fares remain attractive while supporting financial sustainability. Fare and subsidy policies could therefore be designed in accordance with WTP levels, such as offer targeted discounts or subsidies to balance demand, improve accessibility, and maintain revenue efficiency across the HSR corridor.

Willingness-to-pay indicated for each OD pair (Unit in C$)

	TOR	PET	OTT	MTL	TRV	QBC
TOR		43	79	96	81	110
PET	31		49	66	62	83
OTT	84	56		56	65	85
MTL	89	72	55		42	58
TRV	86	62	63	41		39
QBC	108	82	81	60	40	

+C$25

than VIA Rail fare

Canadians are willing to pay about C$25 more for HSR service compared with the current VIA Rail fare.

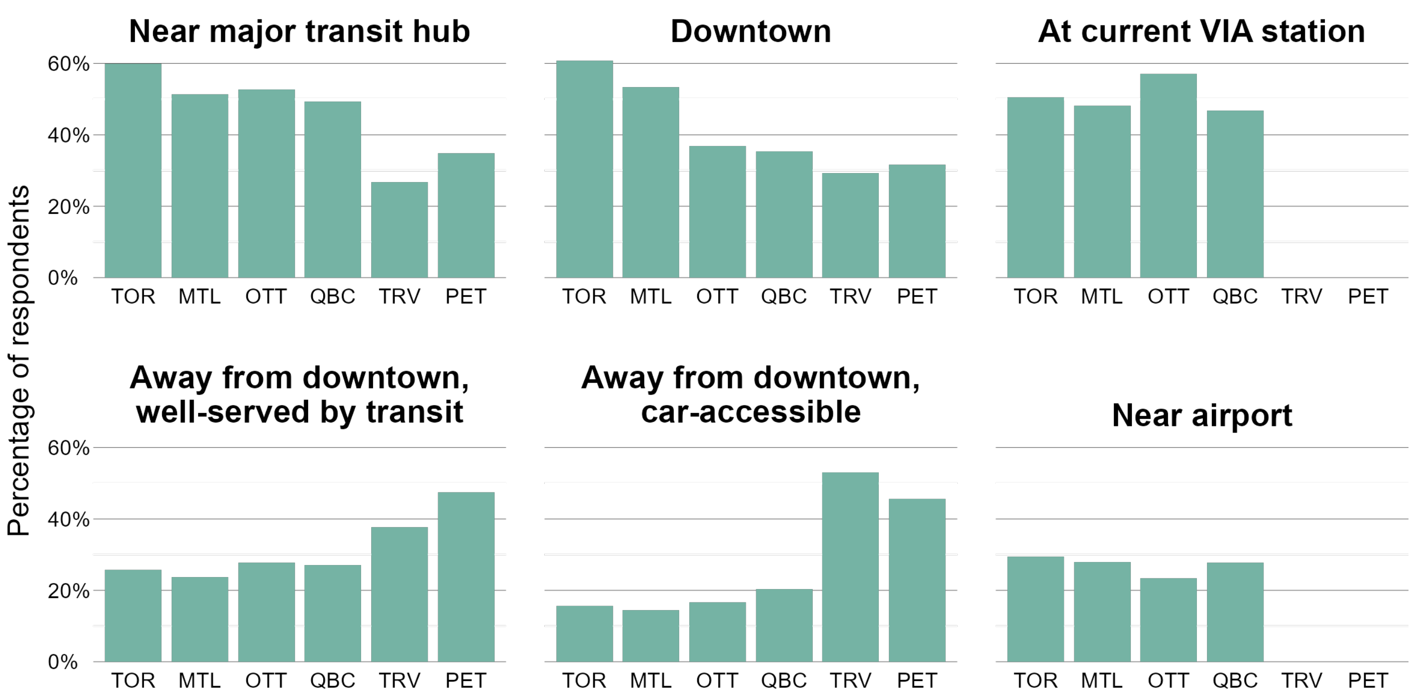
I.5 Station Location Preference

Canadians show a similar level of preference for the HSR stations to be located in the downtown area and near major transit hubs. The survey results reveal distinct preference patterns for station locations across city sizes. In larger metropolitan areas such as Toronto and Montréal, respondents show a strong preference for Downtown locations and multimodal connectivity in station location.

In mid-sized cities, including Ottawa–Gatineau and Québec City, preferences shift towards the current VIA station and locations near major transit hubs, which reflects the potential of integrating new HSR services with existing intercity rail infrastructure and established travel nodes.

In smaller cities such as Peterborough and Trois-Rivières, car accessibility is a major consideration for many respondents. Preferred locations are away from downtown but car accessible, such as near highways or park-and-ride facilities. Transit-accessible sites away from downtown are also somewhat preferred.

Across most cities, stations near major transit hubs receive preference levels comparable to downtown locations, indicating that well-connected intermodal transfer points can serve as effective alternatives to central city stations. Providing ample parking near these stations is essential for business-class users, and in cities like Montréal and Toronto, where downtown parking is limited, direct and timely transit connections will be critical to ensure accessibility and attractiveness.

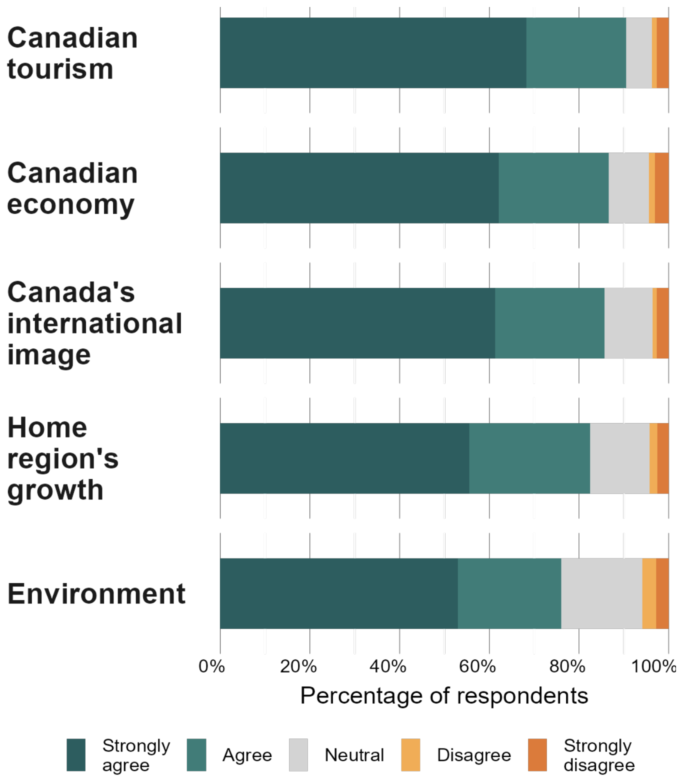


Station location preference by region along the HSR corridor

I.6 Perceived Benefits of the HSR

When asked about the potential benefits of the proposed HSR, residents along the Toronto–Quebec City corridor expressed overwhelmingly positive perceptions. Over 85% of respondents believe that HSR would generate substantial benefits for Canada's international image, economy, and tourism, as well as contribute positively to the environment and the economic growth of regions along the corridor.

Public sentiment strongly supports the view that HSR would be a transformative project for Canada. Respondents recognize it not only as a faster, more convenient and more sustainable mode of travel, but also as an important national infrastructure investment that could enhance regional connectivity and competitiveness. The high level of agreement observed across all surveyed regions demonstrates that the public perceives HSR as a project that aligns with both local and national development goals.



Perceived **benefits** of the HSR
(The HSR is good for..)

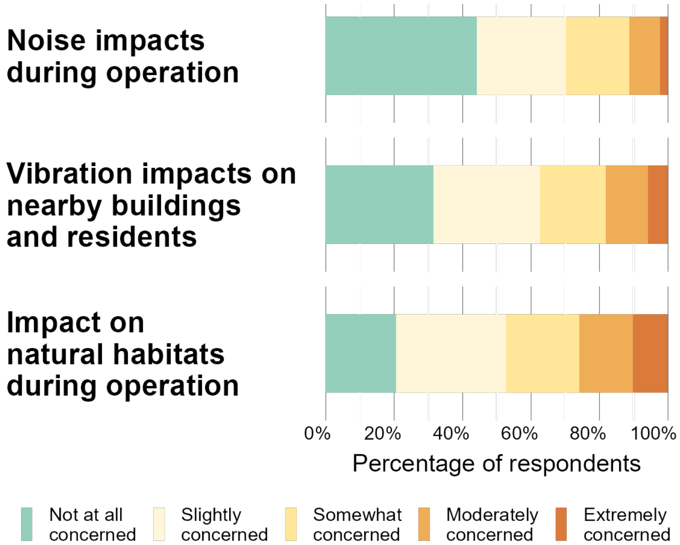
Over 85% of respondents believe that HSR would generate substantial benefits for Canada's international image, economy, and tourism, as well as contribute positively to the environment and the economic growth of regions along the corridor.

I.7 Perceived Concerns About the HSR

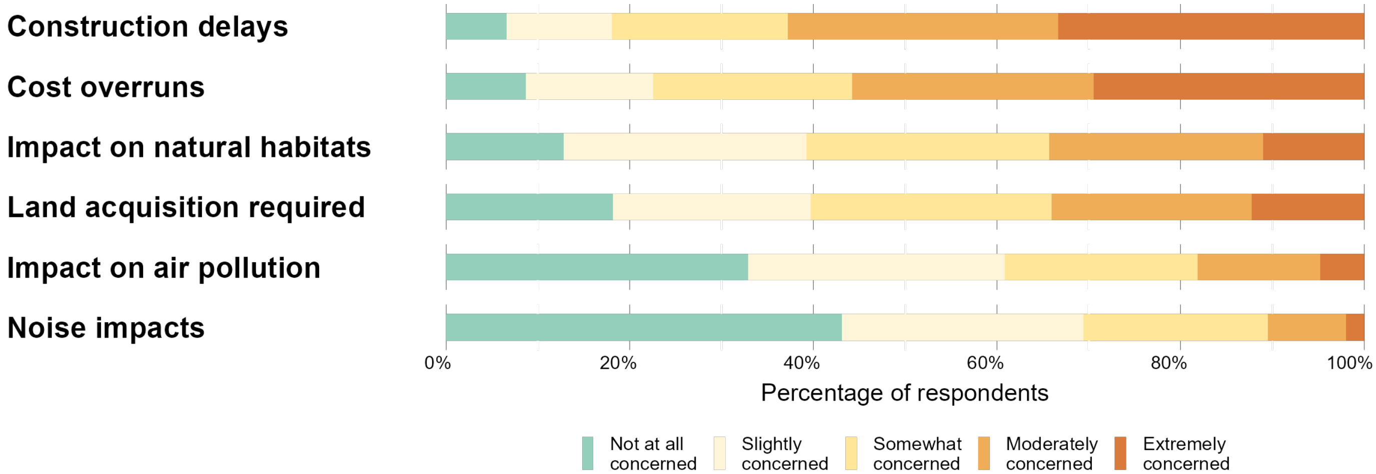
Respondents expressed several concerns about the construction phase of the HSR project. More than 75% of participants indicated being at least somewhat concerned about potential construction delays and cost overruns, which shows a widespread awareness of challenges commonly faced by large-scale infrastructure projects. These concerns suggest that transparency and efficiency during project implementation will be important to sustain the public confidence.

In comparison, concerns related to environmental impacts are relatively moderate. Approximately one-third (33%) of respondents reported being not at all concerned about the air pollution impacts of HSR construction, and 43% were unconcerned about the noise impacts. Concerns over impact on natural habitats and land acquisition process were slightly higher, with around 35% of respondents being moderately or extremely concerned.

Perceived environmental concerns during the operation phase of the HSR generally mirror the patterns observed for construction concerns. Respondents expressed relatively low levels of concern regarding natural habitat disturbance (10% of respondents were extremely concerned) and noise impacts (2% of respondents were extremely concerned). Vibration impacts were also regarded as minor concerns. The relatively low intensity of operational concerns may reflect the general expectation that HSR corridors will be located away from residential areas, thereby direct exposure to noise and vibration effects are reduced.



Perceived **operation concerns** of the HSR



Perceived **construction concerns** of the HSR

II. Financial Analysis

Using the prospective ridership (Section I.3) and willingness-to-pay (Section I.4) results, we conducted a financial accounting analysis to assess the project's feasibility and to examine costs and revenues. The system we evaluated consists of two types of service, the first service (regular line) is the full-line length of 1,000 kilometres serving six regions Toronto, Peterborough, Ottawa, Montréal, Trois-Rivières, and Québec City with an expected end-to-end travel time of 5 hours and 42 minutes. The second service (express line) is a non-stop service running between Toronto and Montréal, spanning 538 kilometres. This design substantially reduces travel time along the corridor; the express service shortens the Toronto–Montréal travel time from 5 hours and 30 minutes to approximately 2 hours and 36 minutes one way compared to VIA's existing service. The analysis presumes an average operating speed of 200 km/h on the regular line and 250 km/h on the express line. We also assume a 30-minute layover time at both ends of the routes for both services.

Ridership and Fleet Size

Using the projected ridership based on the survey data in section I.3, the total number of one-way riders in a day is expected to be 12,303*. This corresponds to a total daily ridership of 24,606* trips when accounting for return journeys. Since the survey did not include international tourists, we assume 10 percent of total ridership will come from international tourists. With this addition, the **projected ridership** for the first year of operation is **27,339 passengers per day***.

Assuming that peak days (Friday and Sunday) reach 120 percent of regular-day ridership, and that induced demand of 6.8 percent per year will occur from Year 1 to Year 6, 0.8 percent per year from Year 7 to Year 11, and 1 percent per year from Year 12 to Year 50, based on past experience, the **projected daily ridership for Year 50** is **58,275 riders*** for a **regular day** and **69,930 riders*** on a **peak day**. Our calculations use the expected demand in Year 50 and an approximate headway of 43 minutes for the regular line and 40 minutes for the express line with departures between 6 am to 9 pm. The system is assumed to operate with two coupled eight-car trainsets, with each trainset designed to accommodate 650 passengers (1,300 passengers per departure).

To meet the demand in Year 50, the system will require a total of 40 coupled trainsets, equivalent to 80 eight-car trainsets. These calculations account for an additional 5 percent of trainsets for emergencies. At a cost of **C$60 million per eight-car trainset,** the **total procurement cost** is approximately **C$4.8 billion***.

To meet the demand in Year 50, the system will require a total of 40 coupled trainsets*, equivalent to 80 eight-car trainsets.

Construction Costs

The construction cost is assumed to be C$70 million per kilometre, which includes track construction, station construction, and utilities, with an additional C$5 billion allocated for land acquisition based on similar North American case studies. **The total capital cost** is estimated at **C$79.8 billion***, inclusive of vehicle procurement. This estimation aligns with the federal government announcement of investing C$60–90 billion in the HSR project.

The total capital cost is estimated at C$79.8 billion*, inclusive of vehicle procurement.

PPP Model and Land Value Capture

To support feasibility, **a public–private partnership model** could be adopted in which the **federal government** finances **one-third** of the total cost (C$26.6 billion*), and private investors finance the remaining two-thirds, repaid at an annual interest rate of approximately 8 percent.

Land value capture is expected to generate land and real estate development gains equivalent to roughly 15 percent of the total cost (C$12 billion). Under this framework, the **net capital cost**, i.e. the amount to be borrowed, is approximately **C$41.23 billion***, which is a manageable level over a 50-year term.

Land value capture is expected to generate land and real estate development gains equivalent to roughly 15 percent of the total cost (C$12 billion*).

Fare and Revenue

The standard fare is set at 1.2 times the survey-based willingness to pay (section I.4) to account for inflation as the line is expected to operate in the near future, and the premium fare is set at twice the standard fare. Each eight-car HSR trainset has a designed capacity of 650 passengers, with two cars allocated to premium class and six cars to standard class. Premium-class cars contain 70 seats each, arranged in 17.5 rows with four seats per row, while standard-class cars contain 85 seats each, arranged in 17 rows with five seats per row. Under these assumptions and the projected ridership, with a 1 percent annual increase in ticket prices, the **average projected yearly revenue** is around **C$2.77 billion*** for the 50 years.

Assessment of annual HSR demand, revenue, and subsidy needs
(The table is displaying selected results at 5-year intervals)

Year	Annual Demand (pax/year)	Revenue ($C/year)	Subsidy ($C/year)
1	10.55 million	C$1.26 billion	C$2.54 billion
5	13.72 million	C$1.70 billion	C$2.10 billion
10	15.13 million	C$1.97 billion	C$1.83 billion
15	15.87 million	C$2.17 billion	C$1.64 billion
20	16.68 million	C$2.40 billion	C$1.42 billion
25	17.53 million	C$2.65 billion	C$1.18 billion
30	18.43 million	C$2.93 billion	C$0.91 billion
35	19.37 million	C$3.23 billion	C$0.61 billion
40	20.35 million	C$3.57 billion	C$0.28 billion
45	21.39 million	C$3.95 billion	- C$0.08 billion
50	22.48 million	C$4.36 billion	- C$0.49 billion
Total by end of Year 50	880.46 million* passengers	C$138.26 billion*	C$53.19 billion*

These calculations assume the PPP Model proposed of one-third of the total cost being paid by the government and 15 percent of the total cost being covered by land value capture.

Loan Payment

With a loan of C$41.23 billion directed toward the capital cost and an annual interest rate of 8 percent, the required annual repayment over 50 years is approximately C$3.66 billion* to the developer. The annual operating cost is estimated at C$84,000 per kilometre following similar case studies in North America, with a 1 percent annual increase, the average operating cost per year is C$166.56 million*. After accounting for annual revenue and deducting capital repayment and operating costs, the projected subsidies required each year is around C$1.28 billion*. The system becomes self-sustaining starting Year 44 onwards, with full cost recovery from farebox revenue and land value capture. Over the 43-year period, **the government will need to pay C$54.89 billion*** to the developer for capital and operation costs, **in addition to an initial investment of C$26.6 billion***. The government can start collecting back these C$81.49 billion* after year 43 from the revenues of the HSR.

The success of the HSR relies on C$12 billion* of land value capture.

*These results rely on ALTO's announced information, survey data, and stated assumptions. They should be interpreted with caution as results may change with updated inputs. Further financing models will be evaluated to explore alternative financial scenarios as more information becomes available.

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