

The Wrong Answer to the Right Question

The corridor's mobility needs are real. ALTO is the wrong instrument to meet them.

The Windsor–Toronto–Ottawa–Montréal corridor has genuine, urgent intercity mobility needs. This chapter does not dispute the need. It disputes the approach — on grounds that are methodological before they are political. ALTO's deficiencies follow from its founding design choices; refinement of those choices cannot produce an acceptable outcome. A different answer requires a different starting point.

2.1 The Corridor's Intercity Mobility Needs

The Windsor–Toronto–Ottawa–Montréal corridor is Canada's most intensively used intercity rail corridor and one of the most economically productive land corridors in North America. It connects the country's two largest metropolitan areas — Greater Toronto and Greater Montréal — to the national capital, Ontario's industrial southwestern cities, and the communities of Eastern Ontario and Western Québec between them. The corridor supports approximately half of Canada's GDP.

Despite this economic weight, intercity rail service on the corridor ranks among the worst-performing in any comparable advanced economy. VIA Rail trains share the CN Kingston Subdivision with CN Rail freight under freight-priority terms: when a freight train and a VIA train require the same track, the freight train proceeds and the VIA train waits in a siding. The consequences are severe and well-documented.

<64%

VIA Rail corridor on-time performance in 2023 — worse than Air Canada's 63%, which ranked last among North America's ten largest airlines

4h+

Scheduled Toronto–Montréal journey time — more than double the competitive air travel time including check-in

~50%

Share of Canada's GDP generated in the corridor — the economic concentration the current rail failure fails to serve

Scheduled journey times are padded by hours to absorb the siding delays that are structurally inevitable on a mixed corridor. On-time performance fell below 64 percent in 2023. On the CN-dispatched Kingston Subdivision segments east of Toronto, performance deteriorates further as freight congestion compounds. The resulting service is not competitive with air or automobile.

The four-hour-plus Toronto–Montréal time offers minimal competitive advantage over driving and is no match for air. Frequency is constrained by the same mixed-traffic bottlenecks: VIA cannot run hourly or better service without displacing freight movements that contractually and legally take priority. The result is a rail system that is nominally present but functionally marginal — serving a loyal but limited ridership base while the overwhelming majority of corridor trips move by air or private vehicle.

The question this report addresses is not whether the corridor needs better intercity rail. It does. The question is what form of investment actually delivers it — at what cost, on what timeline, with what risk profile.

2.2 Analysing the Pivot: How the Specification Escalated

ALTO's structural cost and ambition problems did not emerge from a conventional technical process. The evidence now available from ATI disclosures — principally A-2024-00002 for the VIA HFR governance record and A-2024-00887 for the PSPC evaluation record — documents a procurement in which the specification escalated mid-process. Understanding how that escalation occurred is essential to understanding why ALTO costs what it does. It should be said at the outset that the fairness of the procurement is not what is in question here. BDO Canada LLP, engaged as independent fairness monitor from January 2022, gave an unqualified assurance in its Final Report of 20 May 2025 that the process it observed, through to the conclusion of the Pre-Development Agreement closing, was carried out in a fair, open and transparent manner, and recorded no fairness concerns at any phase. The criticism in this chapter is not that the rules were broken. It is that a process run properly within its own terms produced a specification no one had put to Parliament.

Between 2021 and 2024, a 177 km/h upgrade along a largely existing, disused rail corridor became a 300 km/h dedicated high-speed railway. The transformation was not announced, debated, or put to Parliament. The escalation was invited by the procurement itself. The Request for Proposals launched on 13 October 2023 required every bidder to develop two solutions with respect to speed: one reaching a maximum of 200 km/h, and a second incorporating high-speed segments, which Transport Canada described as a more ambitious option. A Privy Council Office briefing note of 20 February 2025, released under A-2025-00015, records that as the procurement progressed all three shortlisted consortia presented designs more ambitious than the high-frequency concept, favouring new alignments on largely new rights-of-way above 250 km/h. The escalation therefore did not originate with any single bidder. What has not been placed before the public is the comparison the RFP was structured to produce: the same note attributes the conclusion that the proposals would deliver greater benefits than the high-frequency concept to an analysis by a third party that it does not identify, and that analysis has not appeared in any release to date. This section traces the transformation: from the HFR project that entered the RFP, through the procurement structure, to the FES commitment and the rebranding that followed. Understanding how the pivot happened is a precondition for understanding why the structural problems documented in section 2.3 are not incidental but inevitable.

2.2.1 VIA HFR: The Project That Was

To understand the escalation, it is necessary to understand what was being replaced. VIA Rail's High Frequency Rail proposal — the direct predecessor to ALTO — was a fundamentally different project in kind, not merely in degree. HFR was a dedicated-track plan: rather than adding capacity to the CN Kingston Subdivision that VIA continues to share with freight today, HFR proposed routing passenger trains onto a separate, more direct alignment through Peterborough, Havelock, Tweed, and Smiths Falls — largely reviving a long-disused CP right-of-way — specifically to get away from the freight-priority conflicts that slow VIA's existing lakeshore service. The specification targeted 177 km/h maximum speed on a corridor intended to be mostly dedicated and, over time, mostly electrified, and was designed to be built incrementally — delivering reliability and frequency improvements segment by segment rather than as a single all-or-nothing commitment.

The federal government established VIA HFR as a standalone Crown corporation in 2021 and directed it to develop the HFR business case and conduct a competitive procurement. The 2021 business case, later released under ATI (Federal JPO 2021, A-2024-00002), projected approximately 13.5 million annual passengers under the 177 km/h specification — a figure consistent with the ridership envelope of the ALTO HSR Citizen Research Initiative (the Initiative)'s upper bound and with the stated-preference research subsequently conducted by McGill's TRAM group. Capital cost under the HFR specification was materially lower than what ALTO now proposes: the EcoTrain feasibility study's 200 km/h pricing corridor implies a full-triangle cost roughly one-quarter to one-third of ALTO's current reference-class central estimate.

This baseline matters because it establishes the counterfactual. The public was presented with a process that began as an HFR procurement and ended as an ALTO commitment. The gap between those two things — in cost, in specification, in ecological impact, in community disruption — was never placed before Parliament or the public as a discrete choice. It emerged from the procurement process itself, from the interaction between an RFP that did not fix an alignment, an extended bilateral co-development structure, and a speed requirement that invited a high-speed second solution from every bidder.

THE 177 KM/H BASELINE

VIA HFR's 2021 specification: 177 km/h maximum speed · dedicated passenger track via Peterborough–Havelock–Smiths Falls, reviving a disused CP right-of-way to avoid the CN Kingston Subdivision · incremental build · ~\$8–12B estimated capital (EcoTrain 200 km/h corridor) · ~13.5M annual passengers projected (Federal JPO 2021) · no greenfield corridor through ecologically sensitive terrain · no novel expropriation exposure in Eastern Ontario communities.

2.2.2 An Unresolved Alignment at RFP Launch

The RFP went to market in October 2023 without a resolved corridor alignment. CODIR meeting records confirm that alignment was still being determined at the executive level in October 2023, at Board level in February 2024, and at CODIR level again in March 2024 — seven months after the RFP launched. In March 2024, the executive team was still comparing the original 2021 HFR base case against a high-speed rail alternative.

The procurement was designed as a co-development model. The fairness monitor's Final Report records mandatory consultation sessions running from 13 October 2023 to 21 June 2024, attended by every bidder: ten executive check-ins, twelve bi-weekly check-ins, five subject-specific meetings, five legal and commercial confidential meetings and four technical confidential meetings — thirty-six sessions in all, between the procuring authority and each bidder over eight and a half months. The practical consequence of an RFP that did not fix an alignment, combined with an extended bilateral consultation structure, is that the resulting specification reflects the bidders' technical proposals as well as the government's original one. On the PCO record, all three bidders proposed a more ambitious design; the procurement became, in part, a competition about what the project should be.

PRIMARY EVIDENCE

CODIR agenda, October 19, 2023: "Choosing an alignment" listed as a 10-minute item — one month after RFP launch (A-2024-00002). CODIR agenda, March 14, 2024: "Business case and financial model: base case (2021 alignment) vs HSR" (A-2024-00002). Board agenda, February 28, 2024: "Preliminary Alignment Review" — alignment reviewed at governance level while bidders were preparing proposals (A-2024-00002).

2.2.3 The Consortium That Won

The Cadence consortium — CDPQ Infra, AtkinsRéalis, Keolis, SYSTRA Canada, SNCF Voyageurs, Air Canada — brings substantial experience in dedicated, higher-speed rail. CDPQ Infra built the REM, a fully dedicated automated light rail network in Montréal. SYSTRA Canada's parent SYSTRA SA designs TGV-class infrastructure. SNCF Voyageurs operates the French TGV network. Keolis operates passenger rail and transit networks internationally. AtkinsRéalis brings major civil infrastructure engineering capability.

A PSPC memorandum to the Deputy Minister of 12 December 2024, released under A-2024-00887, records that the Preferred Bidder's total score was well above the other teams, in large part because of a very competitive commercial package, and that PSPC asked subject-matter experts and evaluators to confirm the low commercial bid would not put delivery at risk. The memorandum states they were told it was not a concern, and that two further series of SME reviews confirmed the same. Two features of the structure are worth noting alongside that record. The co-development phase is a planning and design exercise rather than construction financing, so a low co-development price does not imply a low overall project cost. And a specification a consortium has built before is, other things equal, cheaper for it to design. We draw no conclusion about how Cadence arrived at its price, which is not on the public record.

The Preferred Bidder, subsequently announced as Cadence, scored 107 of 120 on the anonymized evaluation. The bid documents that would explain that margin remain withheld.

2.2.4 A Pre-Commitment That Made Reframing Necessary

The government committed \$3.9 billion in co-development funding at the 2024 Fall Economic Statement before the Business Case was finalized and before alignment was resolved. The May 2024 Board package explicitly designated the Business Case a "Draft Business Case & Options Analysis Report (without alignment)" for July 2024 delivery to Transport

Canada — months after the FES commitment was being prepared. The same package describes VIA HFR's internal role as supporting "a successful Cabinet discussion."

The slide titled "Level of Ambition Supported by Business Case" — the document in which the specification escalation was presumably framed — is withheld in full under ss. 21(1)(a) and 21(1)(b). Its continued non-disclosure is one of the most significant gaps in the public record. Once the FES commitment was public, the government faced a binary: acknowledge that the winning bidder's implied specification was materially different from the original HFR project, or reframe the project as something more ambitious. The second option was politically available because the specification had never been formally published in a way that created a clear before-and-after contrast.

ENGAGEMENT AND THE ELECTORAL CALENDAR

The May 2024 Board package documents community engagement activities continuing "until election is called" — the project was being managed on an electoral calendar. The November 2024 Board rebranding presentation confirms that by late 2024, "high frequency" was considered a political liability in Ontario. The name "Alto" was chosen on the basis of public opinion research showing it resonated better with 18–34-year-olds and worked bilingually. The rebranding was the public-facing completion of a process that had already been determined internally by the procurement outcome.

2.2.5 Selling the Reframed Project: Rebranding and Public Advertising

Once the specification had escalated and the FES commitment was public, the government faced a communications problem: a project that had entered procurement as VIA HFR — a 177 km/h upgrade of a largely disused rail corridor — was now being advanced as something closer to a European-style high-speed rail network. The solution was a coordinated rebranding exercise, documented in ATI disclosures, that was as much a public persuasion campaign as a corporate identity change.

The November 2024 Board rebranding presentation is the most direct evidence of the process. It records that the name "VIA HFR" had become a liability — "high frequency" tested poorly with Ontario audiences, who associated it with commuter service rather than national infrastructure. Market research identified an 18–34-year-old target demographic for whom the French word *alto* — meaning high, elevated, ambitious — resonated bilingually and connoted scale. On the material released, the rebranding was not a neutral administrative update: the research recorded in the Board presentation is directed at how the project would be perceived, and the change was made in advance of a federal election in which the project was expected to feature.

The advertising spend that followed reflected this intent. Transport Canada and the Alto project office placed promotional content in national and regional media, including digital advertising campaigns that promoted the project's economic and environmental benefits to general audiences rather than to consultation participants. The campaigns ran while access-to-information requests for the project's business case and alignment documentation remained outstanding — a juxtaposition that the Initiative documented: the public was being marketed a project whose foundational analytical documents were simultaneously withheld from the public record.

The rebranding gave an infrastructure procurement the apparatus of a consumer brand. The public was being marketed a project whose cost, route, and specification were not yet public.

The broader pattern is well-documented in the megaproject literature. Flyvbjerg notes that large projects routinely shift from technical to political justification once the numbers become difficult to defend: benefit claims migrate from the quantified to the rhetorical, and the project's identity is increasingly defined by what it represents rather than what it delivers. The Alto rebranding, the advertising campaign, and the continued withholding of the business case are, in our view, consistent with this pattern.

DOCUMENTED REBRANDING ELEMENTS

November 2024 Board presentation: name research, bilingual resonance testing, 18–34 demographic targeting (ATI release A-2024-00002) · "High frequency" tested as political liability in Ontario · "Alto" selected for ambition connotation and bilingual functionality · National digital advertising campaign promoting economic and emissions benefits · Promotional spend concurrent with withholding of business case, alignment, and BCR documentation from ATI requesters.

2.3 The ALTO Project: Structural Problems

The Cadence consortium won a co-development mandate, not a construction contract. But with the mandate secured on a specification materially more ambitious than the original HFR project, the consortium and its government partners faced an immediate task: to build the analytical case for it. The rebranding was the public-facing move. The analytical heavy lifting was the harder task.

That task required a business case capable of supporting a dedicated high-speed corridor at 300 km/h, a ridership forecast large enough to generate plausible revenue, a route that could be presented as technically superior to the existing CN alignment, and a community engagement process that would absorb the friction of a greenfield corridor bisecting Eastern Ontario. Each of these is an independent problem. Together they form a set of structural challenges that the ALTO project has not resolved — and that, on the evidence now available, may not be resolvable within the specification as committed.

The following subsections examine each challenge in turn: the route selection problem, the business case, the cost escalation risk, the demand forecast risk, and the lock-in dynamic embedded in the Ottawa–Montréal first segment. The pattern that emerges is not one of isolated analytical failures but of a project whose founding commitments — made in the procurement, confirmed in the rebranding, and locked in by the FES announcement — have systematically constrained the analytical space available to the people now tasked with justifying them.

2.3.1 The Route Selection Problem

ALTO's route traverses some of Eastern Ontario's most ecologically and geologically sensitive terrain. The proposed greenfield corridor crosses the Frontenac Arch Biosphere Reserve — a UNESCO-designated reserve and one of the most significant ecological corridors in Canada — as well as the Napanee Limestone Plain, habitat for the Grey Ratsnake, Eastern Loggerhead Shrike, and multiple bat species at risk under the Species at Risk Act. The corridor also crosses extensive Leda clay deposits in the Ottawa Valley south of Ottawa, with known engineering hazards at 300 km/h operating speeds.

These routing choices reflect a fundamental design decision: to build a new greenfield corridor optimised for 300 km/h regardless of the terrain, rather than to follow the alignment of existing disturbed infrastructure. The consequence is a project with substantially higher environmental risk, higher expropriation exposure, higher construction cost, and lower social licence than a route that remains alongside existing infrastructure.

CONSULTATION RECORD

The Initiative's Participant Experience Survey (n = 354 after data integrity filtering) documented that only 2 percent of respondents received direct ALTO notification, and 88 percent found the information provided inadequate. Stakeholder compilation from over 40 organizations active in the corridor shows near-universal concern about the greenfield routing, the expropriation process, and the ecological impacts. The Community Friction Index reached 54 post-consultation — a figure that reflects genuine and well-founded community opposition to the corridor design.

Corridor selection is not merely a technical or environmental question — it is the primary driver of community friction and political risk. ALTO's greenfield routing bisects farms, properties, and municipalities that have no existing relationship with heavy infrastructure. Each novel severance is experienced by affected landowners and communities not as an abstraction but as a direct threat to property, livelihood, and landscape. The Initiative's Community Friction Index, which

scores corridors on a 0–100 scale across five components — land use conflict, municipal aggravation, expropriation exposure, ecological sensitivity, and public mobilisation — reached 54 for the ALTO corridor post-consultation, placing it in the high-friction tier. High CFI scores are not merely a political inconvenience; the Initiative's ECI–CFI bivariate cost model demonstrates that community friction is a statistically significant predictor of capital cost escalation (adjusted $R^2 = 0.882$; unadjusted $R^2 = 0.897$, $n = 16$), because high-friction corridors generate legal challenges, redesign requirements, mitigation commitments, and construction delays that inflate outturn costs well above initial estimates. ALTO's routing choices have therefore not only produced an opposition-mobilisation problem — they have embedded a cost-escalation risk that the published business case does not appear to account for at reference-class magnitude.

A corridor through the Frontenac Arch and the Napanee Limestone Plain carries ecological and community exposure that mitigation is unlikely to resolve — and that the Initiative's Community Friction Index predicts will cost materially more than the published estimate accounts for.

2.3.2 The Business Case Problem

The only published economic appraisal of this corridor remains the December 2021 VIA HFR Business Case Update for the predecessor project. Its Table 14 reports an indicative benefit-cost ratio of approximately 0.13 over a 30-year evaluation period, rising to approximately 0.4 on an expanded basis that adds the resource correction and agglomeration benefits the document itself describes as relatively new to Canadian economic appraisal. A separate net present value analysis in the same document puts the 30-year NPV at –\$21.1 billion. These are the government's own figures, produced by its own consultants and released under access to information. A BCR of 1.0 is the break-even point at which discounted benefits equal discounted costs; on the headline indicative figure the project returns about thirteen cents of quantified value for every dollar invested. The document notes twice that the ratio would require revision on an evaluation period other than 30 years.

The Initiative has produced an independent reference-class BCR analysis, grounding each input in the empirical distribution of outcomes from comparable megaprojects rather than in the project-specific estimates the proponent's consultants prepared. The results are materially worse than the government's published figures.

Table 2.1 — Published appraisal and Initiative reference-class BCR analysis, re-run at an 8% test rate

Scenario	Capex Assumption	BCR at 8%	Notes
Published (Dec 2021 HFR appraisal)	PV \$25.7–34.8B incremental cost (2020 CAD)	~0.13 (~0.40 expanded)	Government's own figures, 30-year evaluation period; inside-view estimate
Initiative reference-class central	~\$143B	~0.03–0.11	Anchored to actual megaproject outcome distributions
Break-even	—	1.0	The point at which discounted benefits equal discounted costs

The 2021 appraisal's incremental cost is a present value over 30 years in 2020 dollars and is not comparable line-for-line with ALTO's later \$60–90B capex range (2024 dollars), of which \$75B is the arithmetic midpoint rather than a figure ALTO has published. The Initiative row applies reference-class corrections to the current scope.

The corridor's economic case fails on the government's own numbers. Reference-class analysis suggests those numbers are themselves optimistic. The gap between the published ratio and break-even is not a rounding error.

2.3.3 The Cost Escalation Problem

ALTO's published capex range of \$60–90 billion (2024 dollars) is an inside-view estimate — a projection prepared by the project's proponent and consultants, using project-specific assumptions rather than the empirical distribution of outcomes from comparable projects. The megaproject literature documents a pervasive and systematic bias toward

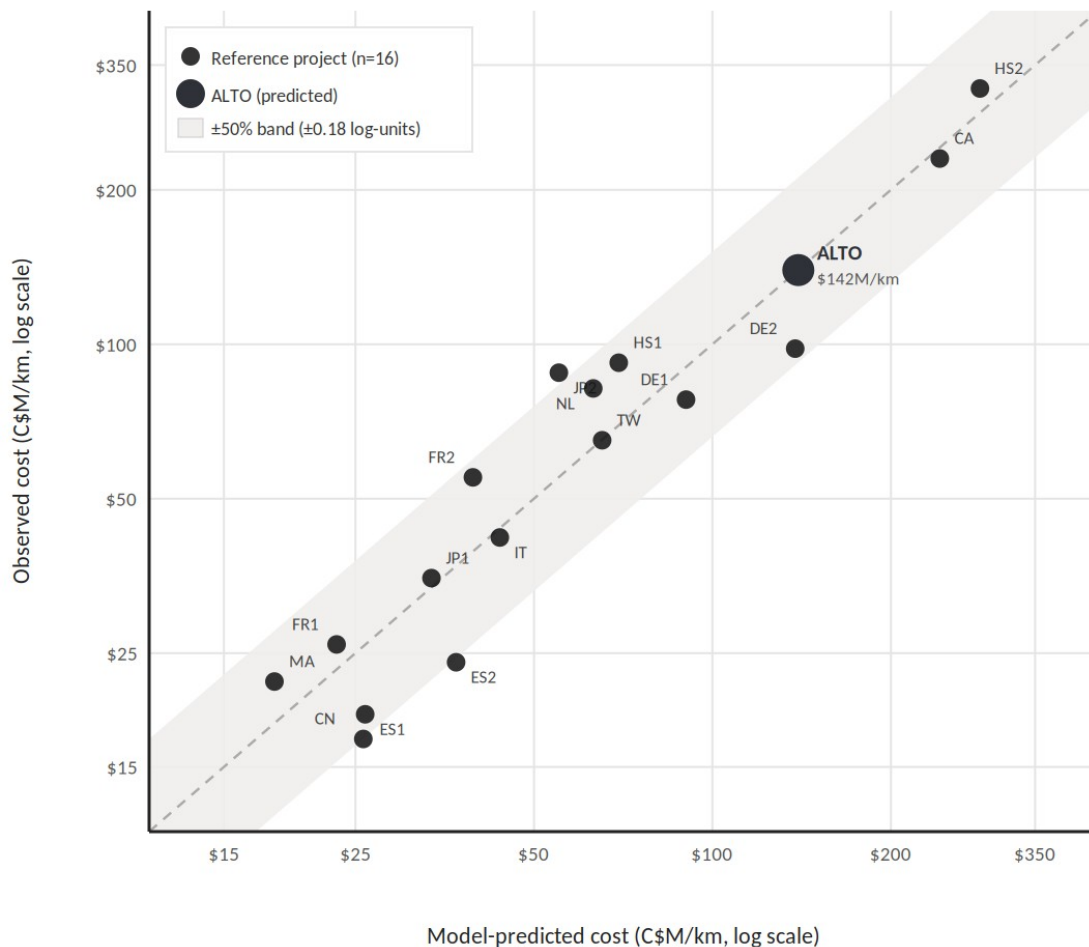
underestimation in exactly these conditions: complexity is underestimated, risk is underappreciated, and the baseline scenario systematically excludes fat-tail outcomes that are, in practice, common.

The Initiative's dual-regime cost model — a separate two-equation model, distinct from the ECI-CFI regression above, anchored to an international reference class of comparable rail corridor projects and calibrated to $R^2 = 0.90$ for the greenfield regime and 0.86 for the urban regime — yields a reference-class central capex for ALTO of approximately \$143 billion, with a P95 escalation scenario approaching \$200 billion or more when cold-climate uplift and Canadian P3 escalation factors are applied.

COLD-CLIMATE RISK

ALTO's greenfield corridor crosses terrain with documented cold-climate engineering hazards: Leda clay deposits susceptible to frost and settlement, karst hydrogeology in the Napanee Limestone Plain, and seasonal freeze-thaw cycles incompatible with the tight geometry tolerances required for 300 km/h operations. International comparators — including the Harbin–Dalian HSR in China and Canada's own cold-climate rail record — document cost and performance penalties at these speeds in these conditions that ALTO's published estimates do not appear to incorporate at reference-class magnitude.

Figure 2.1 — Bivariate model fit: observed vs. predicted cost per kilometre



Each point is one of the 16 reference projects; the dashed line marks perfect prediction (45°); the grey band is ±0.18 log-units (approximately ±50%). ALTO is shown at its predicted value of \$142M/km and plots on the 45° line by construction. Abbreviations: CN China HSR · MA Morocco Al Boraq · ES1 Spain AVE Seville · JP1 Japan Tokaido · ES2 Spain AVE Barcelona · FR1 France TGV Paris–Lyon · JP2 Japan Hokkaido · IT Italy Rome–Naples · TW Taiwan HSR · FR2 France TGV SEA · NL Netherlands HSL-Zuid · HS1 UK HS1 (CTRL) · DE1 Germany Cologne–Frankfurt · DE2 Germany Stuttgart–Ulm · CA California HSR · HS2 UK HS2.

A Class 5 estimate with a $\pm 50\%$ accuracy band is a planning figure, not a cost commitment. A \$60–90B range drawn from the least precise estimation tier in quantity surveying defers the cost question rather than answering it.

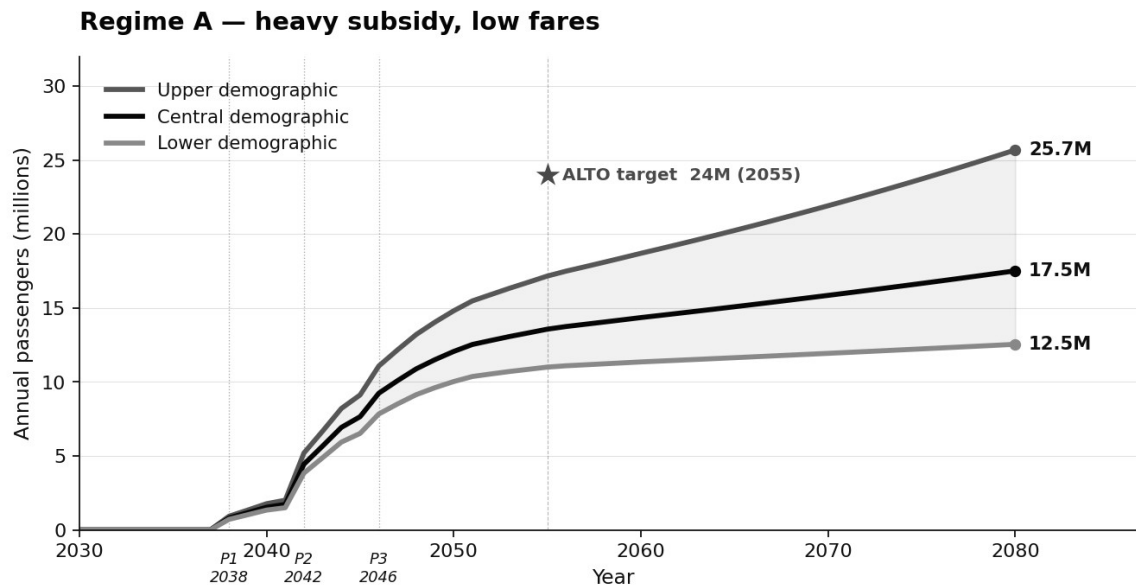
2.3.4 The Demand Forecast Problem

ALTO's business case projects 24 million passengers annually by 2055. No North American corridor of comparable characteristics — car-dependent, dispersed urban geography, no established high-speed rail service — has achieved ridership at this magnitude. Reference-class forecasting research documents that demand forecasts for major transport infrastructure projects are optimistic by a median of approximately 51 percent for rail projects. Applying the empirical bias correction to ALTO's headline figures yields opening-year ridership that would materially alter the revenue side of the business case.

The demand risk is compounded by timeline. ALTO's earliest plausible opening date — even under optimistic construction assumptions — is the early 2040s. Forecasting travel behaviour two decades forward in a market undergoing structural change (remote work normalization, air capacity evolution, autonomous vehicle maturation) introduces uncertainty that project-specific models are poorly equipped to capture.

Once the demand forecast problem is recognised as a structural issue rather than a calibration one, the analytical task changes. The question is not how to adjust ALTO's 24-million projection to be more defensible — it is what an independent, methodology-disclosed forecast actually produces. The Initiative's ridership envelope — built bottom-up from corridor population, per-capita trip generation, VIA Rail-calibrated modal-share machinery, and three-phase opening mechanics, with results reported across lower, central, and upper demographic trajectories — produces annual ridership of 3.7 to 17.2 million by 2055, with a central case of 9.2 million. ALTO's published 24-million-by-2055 target sits 40 percent above the Initiative's upper bound for that year. Figures 2.2a–2.2c show the year-by-year trajectory across 2035–2080 under three fare and subsidy regimes (Regime A: heavy subsidy, low fares; Regime B: moderate subsidy, air parity; Regime C: minimal subsidy, P3 yield management). The ALTO 24-million target is marked on each chart as a reference; in no regime and under no demographic trajectory does the Initiative's envelope reach it by 2055.

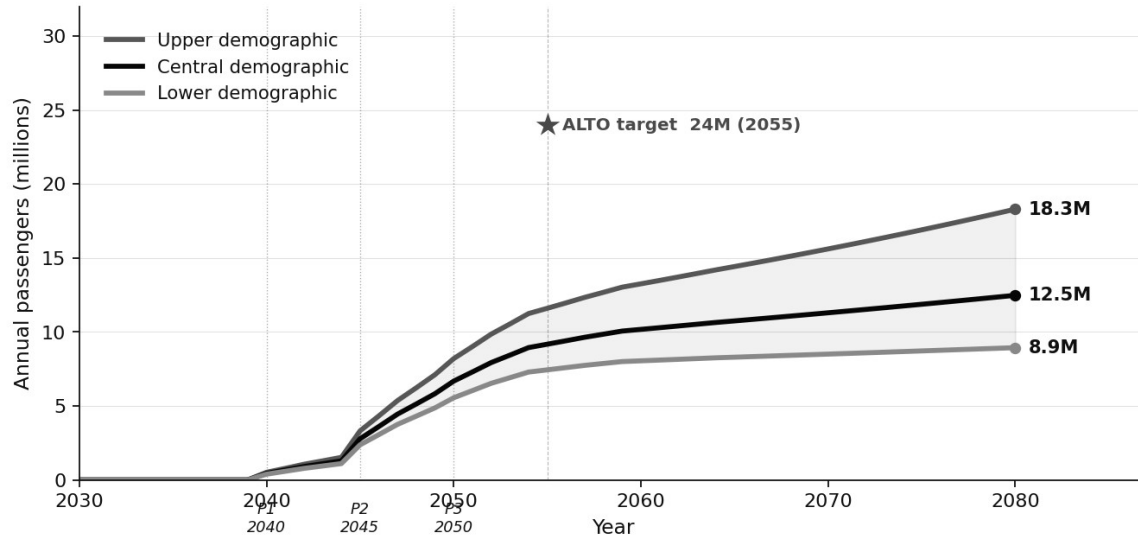
Figure 2.2a — Regime A: Heavy Subsidy (fares at VIA-equivalent levels, annual subsidy \$2.5–4.5B)



Phase openings: 2038 / 2042 / 2046. Aggregate modal share 38–42%. Even under the most favourable subsidy regime, the 2055 upper bound of 17.2M sits 28% below the ALTO 24M target.

Figure 2.2b — Regime B: Moderate Subsidy (fares at air parity, annual subsidy \$1.5–2.5B)

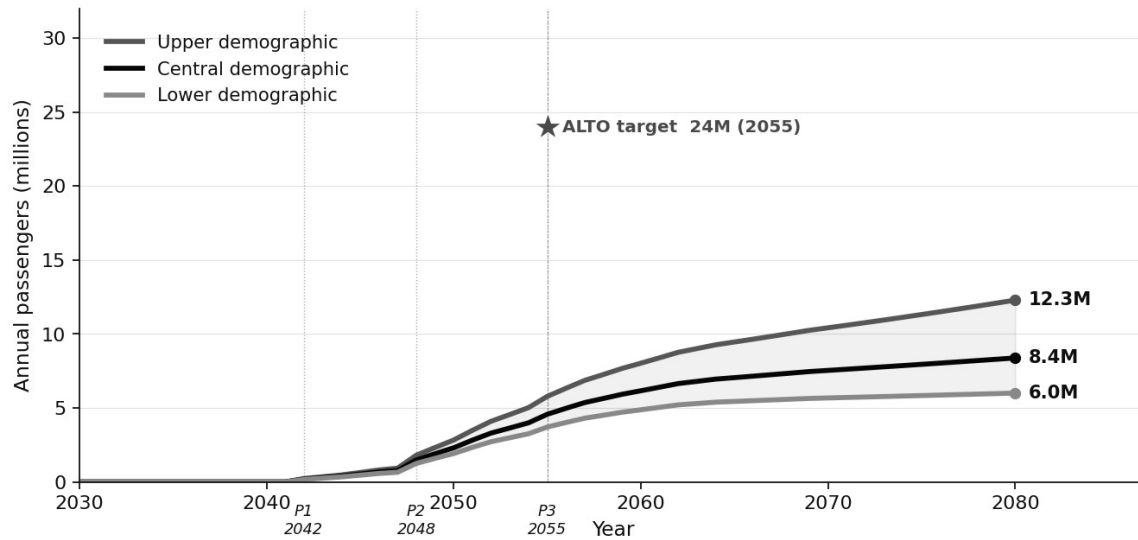
Regime B — moderate subsidy, parity with air



Phase openings: 2040 / 2045 / 2050. Aggregate modal share 28–32%. The canonical published-business-case configuration. 2055 central case: 9.2M — the ALTO target sits above the entire envelope by a factor of 2.6 to 6.5.

Figure 2.2c — Regime C: Minimal Subsidy / P3 Yield Management (fares above air parity, annual subsidy \$0.5–1.5B)

Regime C — minimal subsidy, P3 yield management



Phase openings: 2042 / 2048 / 2055. Aggregate modal share 20–23%. Most consistent with the Cadence consortium's announced commercial structure. 2055 readings: 3.7–5.8M across all demographic trajectories.

Table 2.2 — Published and Modelled Ridership Forecasts for the ALTO Corridor

Source	Method	By 2050	By 2055	Notes
ALTO public targets	Not disclosed	—	24M (2055)	Outlier against every independent forecast built from a disclosed methodology.
ALTO Corporate Plan (Treasury Board)	Not disclosed (incl. Local Services)	—	17M (2059)	Internal figure ~30% below public communications; closer to Initiative upper bound.
McGill TRAM (El-Geneidy et al., 2026)	Stated-preference (n ≈ 8,300)	10.5M	—	Does not apply phasing ramp. ~Year 50: ~19.7M. Consistent with Initiative upper case at maturity.

Source	Method	By 2050	By 2055	Notes
Munk School GEPL (U. of Toronto)	Disclosed logit with induced demand	~16–17M (corridor scaled)	~18–19M (yr 30)	Closest analytical analogue to Initiative envelope. Consistent with the Initiative's upper case.
C.D. Howe Institute (Jones & Fariha, 2025)	Scenario analysis	12–21M (HSR range)	—	Brackets the Initiative's central-to-upper. Does not separate opening years from mature state.
Federal JPO 2021 (ATI release Nov 2025)	Business case (HFR 177 km/h spec)	~13.5M/yr	—	Predecessor specification; consistent with the Initiative's upper envelope.
Flyvbjerg –65% adjustment	Empirical mean rail forecast overstatement	—	8.4M (from 24M)	Applying documented 65% optimism-bias correction to ALTO's 24M headline.
Initiative envelope (this report)	Modal-shift × population × regime	1.9 / 6.7 / 14.8 (L / C / U)	3.7 / 9.2 / 17.2 (L / C / U)	Bottom-up from VIA-calibrated modal-share machinery, post-2024 demographics, and three- phase ramp.

Every forecast built from a disclosed methodology — TRAM, Munk GEPL, federal JPO — sits within or close to the Initiative's envelope. ALTO's 24M-by-2055 target is 40 percent above the Initiative's upper bound for that year and is an outlier in the published literature. L = Lower; C = Central; U = Upper.

2.4 Why ALTO Cannot Be Fixed

Section 2.3 establishes why ALTO cannot deliver what the corridor needs. It documents structural problems intrinsic to the project as designed: a route through ecologically and geologically sensitive terrain that was never selected on technical merit, a business case that falls far short of break-even, a cost estimate that reference-class analysis suggests is roughly half the probable outturn, and a demand forecast that no independently conducted study has corroborated. The picture is of a project whose problems are not incidental but foundational.

The instinct to fix this from within is understandable. The FES commitment is public, the co-development contract is signed, the rebranding is complete, and the political cost of acknowledging a fundamental error is high. But the subsections below establish why that instinct leads nowhere productive. ALTO's deficiencies are not the product of bad execution or inadequate contingency planning — they are the product of founding choices that cannot be corrected without changing what the project is. A route correction does not solve the business case problem. A revised demand forecast does not solve the cost escalation problem. More rigorous project management does not solve the lock-in dynamic. And no amount of analytical refinement can undo the fact that the project was committed before its business case was complete, on the basis of a specification that was determined by procurement rather than by public need.

The corridor's mobility problem is not one of insufficient speed. It is one of structural priority conflict. Passenger trains wait in sidings because freight trains have the right of way. Solving the wrong problem at enormous cost — and then discovering the problem cannot be fixed — does not constitute an adequate response to the real need.

2.4.1 The Project That Cannot Be Compared

ALTO's business case treats the project as unique — a singular initiative whose characteristics are sufficiently distinctive that general patterns from comparable projects do not apply. This is the "uniqueness trap" identified in the megaproject literature: the belief that a project's particular combination of features exempts it from the distributional patterns that afflict other projects. ALTO exhibits this pattern explicitly: its published documentation consistently characterises the corridor as having no international comparator, its demand forecasts rely on project-specific models rather than

reference-class distributions, and its cost estimates use a Class 5 inside-view methodology rather than the empirical distribution of outcomes on comparable completed projects. The trap licenses exactly the kind of forecasting that produced an indicative BCR of 0.13 on the government's own numbers — 0.4 on the expanded basis — and a reference-class central of 0.03–0.11 on the Initiative's.

The outside view — reference-class forecasting, which anchors every estimate to the empirical distribution of outcomes on comparable completed projects — is the methodological antidote. Applied to ALTO, it produces the cost and BCR figures documented in section 2.3: a reference-class central capex of approximately \$143 billion, a P95 approaching \$200 billion, and a BCR that falls well short of break-even under any scenario that does not simultaneously assume the most favourable cost, demand, and operating parameters. The uniqueness trap is not an abstract methodological failing — it is the specific mechanism by which ALTO's analytical case was constructed and the specific mechanism that makes independent correction necessary.

2.4.2 The Business Case That Won By Being Wrong

Flyvbjerg's analysis of megaproject selection introduces the "survival of the unfittest" dynamic: in competitive project selection, the proposal with the most optimistic projections tends to win, because optimism produces better headline BCR figures than realism. A proponent who corrects their demand forecasts downward and their cost forecasts upward will produce a more accurate but less competitive case for funding. The result is systematic selection bias toward projects whose business cases are least reliable. This corridor is a near-textbook expression of this dynamic: the published indicative BCR of approximately 0.13 — 0.4 on the expanded basis — already falls far short of break-even, yet the programme was advanced as the basis for a \$3.9 billion federal commitment. A proponent who had applied reference-class forecasting to its own cost and demand assumptions would have produced a BCR of 0.03–0.11 — a figure that could not have survived political scrutiny. The optimistic projection did not survive scrutiny either, but by the time the Initiative's reference-class analysis was available, the commitment had already been made.

THE SELECTION DYNAMIC IN PRACTICE

The published indicative BCR of ~0.13 (~0.4 expanded) was produced by the project's own consultants in December 2021, drawing its social discount rate and value of time from Metrolinx and MTQ guidance. The Initiative's reference-class BCR of ~0.03–0.11 re-runs the same appraisal at an 8% test rate with reference-class corrections applied to cost and demand. The gap between the published figures and 0.03–0.11 is the gap between a business case written to support a decision already made and an analysis designed to inform one.

2.4.3 The Segment That Makes Stopping Impossible

ALTO's announced first segment — the roughly 200-kilometre Ottawa–Montréal link, targeted for construction in 2029 — is not the strongest market in the corridor. It is the weakest. Road accounts for approximately 98 percent of Ottawa–Montréal travel; point-to-point air traffic on the pair is negligible. The modal-shift task on this segment is car diversion, and car diversion responds to frequency, fare, and reliability far more than to top speed beyond roughly 200 km/h. There is no surviving air market for the 300 km/h premium to capture.

Yet the segment is being built to the full 300 km/h specification — the network's most expensive engineering tier — on the corridor link where the speed premium delivers the least incremental benefit. The EcoTrain feasibility study priced the Montréal–Ottawa–Toronto section at approximately \$9.1 billion for a 200 km/h specification versus \$11 billion for 300 km/h (2009 dollars), a premium that purchases fifteen to twenty-five minutes of journey-time saving against a mode the lower-cost tier already beats city-centre to city-centre. The network-standard argument — that through-trains require consistent geometry — is the strongest reply, but it is undercut by ALTO's own routing: an indirect alignment via Ottawa and Peterborough already discards much of the end-to-end time saving the 300 km/h premium is meant to deliver.

The first segment is not viable as a standalone asset. Its economics can be rescued only by building toward Toronto, which locks the public into a corridor-wide trajectory it has not yet agreed to fund.

The sequencing logic is therefore not primarily technical. Independent corridor analysis attributes approximately 57 percent of corridor ridership to the Toronto–Montréal market — none of which is reachable until the Ottawa–Toronto

segments are built. The Ottawa–Montréal flow alone cannot carry the corridor's economics, so the pressure to build toward Toronto arises from the sequence itself, independent of what the public decides about full-corridor funding. This is the lock-in mechanism Flyvbjerg identifies as common to stranded megaprojects: each increment is justified by the costs already committed, and stopping becomes more expensive than continuing before the corridor-wide price has been placed before decision-makers for approval.

The HS2 precedent sharpens the risk. HS2's eastern leg to Leeds was cut in 2021; the northern phase to Manchester was cancelled outright in October 2023. What remains is a London–Birmingham line at an estimated cost of £88–103 billion — well over double the original estimate for substantially less than half the original network. But HS2, even truncated, stranded into its strongest market: London–Birmingham is the most congested long-distance corridor in Britain, and the asset retains genuine function. ALTO's sequence inverts this. Should costs escalate and later segments be deferred, ALTO would strand into its weakest market — a high-cost line on the thin, car-dominated Ottawa–Montréal pair, with the Toronto–Montréal market that was meant to justify the enterprise never connected. The very feature that generates lock-in pressure — the first segment's inability to pay on its own — is the feature that makes the stranded outcome most damaging.

UNANSWERED QUESTIONS

The payment mechanism in the eventual concession — availability-payment versus demand-risk — determines who bears stranding risk and has not been disclosed. An availability-payment structure places demand risk on the public, generating payment obligations even if the network is half-built or under-used. This allocation is a material question for accountability and an appropriate subject for access-to-information inquiry. The Co-Development Phase Charter and Ministerial Letter of Expectations, deferred under the phased PDA close, may contain relevant commitments. The fairness monitor's Final Report records that PWGSC did not object to a phased close, which allowed certain decisions and documents to be finalised after the official close date, and states that this arose from timeline pressures on the contracting authority rather than from any concern related to the preferred bidder. The Pre-Development Agreement was executed on 19 March 2025.

2.4.4 The Alternative That Is Being Foreclosed

One dimension of ALTO's cost that its business case does not capture is the cost of foreclosure: the permanent loss of the alternative option that ALTO displaces. If ALTO proceeds along its greenfield corridor through Eastern Ontario, the 401-adjacent alignment that HPR proposes for its passenger spine becomes progressively unavailable. The MTO Highway 401 eight-lane widening is already consuming the corridor margin that HPR would use for co-constructed rail structures. Several sections are already effectively foreclosed.

The Initiative has quantified the corridor foreclosure cost across three additive components: land-value escalation (the premium that applies when rail-compatible land must be acquired after development pressure has increased values); construction-cost premium (the additional cost of building rail infrastructure after the widening crews have demobilized); and the NPV of benefit foregone through delay (the present value of mobility and emissions benefits not realized during the decades between a timely HPR build and a foreclosed-corridor alternative). The aggregate foreclosure cost is material and is not reflected in any comparison that treats the two proposals as independent choices at a single point in time.

This chapter has traced a single continuous argument from four directions. The corridor has real and urgent mobility needs — that is 2.1, and it is not in dispute. Those needs were met by a procurement that turned a 177 km/h upgrade of a largely disused rail corridor into a 300 km/h greenfield megaproject — a high-speed option the RFP itself required, answered the same way by all three bidders, on the strength of an analysis that has never been released — that is 2.2. The resulting project exhibits structural problems that are intrinsic to its design: a route that generates community friction and cost escalation, a business case that falls far short of break-even, a cost estimate that reference-class analysis suggests is roughly double the published figure, and a demand forecast that no independent study has corroborated — that is 2.3. And the project cannot be rescued by refinement, because its deficiencies are not implementation failures but founding choices, compounded by sunk costs, lock-in dynamics, and a foreclosure of the alternative that is already underway — that is 2.4.

The following chapters develop the alternative. Chapter 3 establishes the HPR concept and the design philosophy that produces a different answer to the same question. Chapter 4 addresses route, geometry and capital cost. Chapters 5 through 8 work through environmental and community impact, ridership, operating economics, and the financial appraisal. The comparison is not between a finished project and a sketch — it is between two approaches to a real

problem, one of which has been analytically stress-tested and one of which has not. The corridor's mobility needs will not be met by the project that currently holds the federal commitment. They can be met — at a fraction of the cost, on a shorter timeline, with materially lower risk — by the approach this report develops.

The wrong answer to the right question is not a partial solution. It is an obstacle to the right one. Every year of ALTO's co-development phase is a year in which the 401-adjacent corridor margin closes, the co-construction window narrows, and the alternative becomes harder and more expensive to build. The cost of delay is not neutral. It falls on the corridor communities that need better rail, and it falls on the public that will ultimately pay for whatever is built.

CHAPTER 2 — KEY FINDINGS

The argument in four parts

2.1 — THE MOBILITY NEED IS REAL

The corridor has demonstrably poor intercity rail service. VIA Rail's on-time performance fell below 64% in 2023. The need for better intercity rail is not in dispute — what is in dispute is whether ALTO addresses it.

2.2 — THE ANALYSIS BEHIND THE HIGH-SPEED CHOICE IS UNRELEASED

The RFP required every bidder to develop a high-speed option, and the PCO briefing note of 20 February 2025 records that all three proposed one. The same note attributes the conclusion that those proposals would deliver greater benefits to a third-party analysis it does not identify. That analysis has not appeared in any release to date.

2.3 — THE ROUTE SELECTION PROBLEM

ALTO's greenfield corridor crosses the Frontenac Arch Biosphere Reserve, the Napanee Limestone Plain, and Leda clay deposits south of Ottawa. Community Friction Index: 54. High CFI scores are statistically significant predictors of capital cost escalation (ECI-CFI model, adjusted $R^2 = 0.882$).

2.3 — THE COST ESCALATION PROBLEM

Published capex \$60–90B (Class 5 estimate, inside-view). Initiative reference-class central: ~\$143B. P95 scenario approaches \$200B with cold-climate uplift and P3 escalation. The $\pm 50\%$ accuracy band on a Class 5 estimate makes the \$60–90B range a planning figure, not a cost commitment.

2.4 — THE OTTAWA-MONTRÉAL FIRST SEGMENT IS A SUNK-COST MECHANISM

Road accounts for ~98% of Ottawa-Montréal travel. The segment cannot pay on its own. Its economics require building toward Toronto — locking the public into a corridor-wide commitment it has not yet agreed to fund, on terms negotiated before the full-corridor price was public.

2.4 — THE FORECLOSURE COST IS ALREADY ACCRUING

The MTO 401 widening is progressively consuming the 401-adjacent margin that HPR requires. Several sections are already foreclosed. The co-construction window — the period during

2.2 — THE PROJECT WAS TRANSFORMED IN PROCUREMENT

VIA HFR entered the RFP as a 177 km/h upgrade of a largely disused rail corridor. It emerged as a 300 km/h greenfield megaproject. The RFP required every bidder to develop a high-speed second solution, the alignment was still unresolved at launch, and the co-development structure ran to 36 bilateral sessions. All three bidders proposed a more ambitious design. The rebranding to Alto followed.

2.2 — THE \$3.9B FES COMMITMENT PRECEDED THE BUSINESS CASE

The government committed co-development funding before the business case was finalised and before the alignment was resolved. The “Level of Ambition Supported by Business Case” slide — the document in which the specification escalation was framed — remains withheld in full.

2.3 — THE BUSINESS CASE PROBLEM

The published December 2021 appraisal gives an indicative BCR of ~0.13 (~0.40 expanded) over 30 years; 1.0 is break-even. Initiative reference-class analysis yields ~0.03–0.11. The corridor falls far short of break-even on the government's own numbers.

2.3 — THE DEMAND FORECAST PROBLEM

ALTO projects 24M passengers by 2055. No independent study with a disclosed methodology corroborates this figure. Initiative envelope central case: 9.2M. Flyvbjerg –65% correction: 8.4M. The 24M target sits 40% above the Initiative's upper bound.

2.4 — ALTO CANNOT BE FIXED FROM WITHIN

The project's deficiencies are not implementation failures — they are founding choices. Route correction does not solve the business case. Revised forecasts do not solve cost escalation. Refinement cannot undo a commitment made before the business case was complete.

which HPR structures could be built alongside the widening at shared civil cost — closes section by section. Every year of ALTO co-development is a year of HPR foreclosure.