

**ALTO HSR Citizen Research Initiative**

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**Those Who Forget History:**  
*Canada's 1995 HSR Feasibility Study  
and What Alto Has Yet to Answer*

*A Comparative Analysis*

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March 2026

# Executive Summary

In August 1995, the governments of Canada, Ontario, and Québec published the Quebec–Windsor High Speed Rail Feasibility Study, a 121-page technical report produced by a Steering Committee of deputy ministers, supported by more than 20 specialized consulting firms. The study took three years, assembled the largest corridor travel database ever compiled in Canada at that time, and subjected every major assumption to extensive sensitivity analysis.

Its central conclusion was unambiguous: HSR in the Quebec–Windsor corridor is technically feasible but financially viable only under a narrow set of optimistic assumptions, requires 70–75% public funding, and the private sector alone cannot finance it. The Steering Committee’s final recommendation was that governments should not proceed to implementation unless the private sector agreed to underwrite at least 50% of the next study phase and take on all construction and operating risk.

Thirty years later, the Alto project covers much of the same corridor under broadly similar market conditions. A Design-Build-Finance-Operate-Maintain (DBFOM) contract was signed with the Cadence consortium in March 2025, and C\$3.9 billion in government funds has been committed to a co-development phase. These are real structural advances beyond 1995. However, this paper asks a pointed question: which of the 1995 study’s identified pitfalls have been resolved, and which remain open? Our review finds that most of the fundamental problems identified in 1995, cost uncertainty, ridership risk, the undisclosed public funding share within an C\$80–120B estimate, winter engineering challenges, labour constraints, land acquisition, and the absence of North American HSR experience, are either unresolved or, in several cases, substantially worse.

## 1. The 1995 Study: Scope and Context

The 1995 Quebec–Windsor HSR Feasibility Study (hereafter “the 1995 Report”) was a joint federal–provincial initiative funded equally by Transport Canada, the Ministry of Transportation of Ontario, and the Ministère des Transports du Québec. Its mandate was explicit: determine whether governments should initiate and/or support HSR in the Quebec–Windsor corridor.

The study examined two technology families across eight scenarios:

- 200–250 km/h tilting technology (represented by the ABB X-2000, the Swedish tilt train)
- 300 km/h non-tilting technology (represented by the GEC-Alsthom TGV-Atlantique)

Corridor segments analysed included the full Quebec–Windsor corridor (~1,200 km), Montréal–Toronto (~610 km), and Quebec–Toronto (~800 km). Routes through Dorval airport and through Mirabel were compared. The study involved three independent ridership forecasting firms reconciled into a single composite forecast, financial modelling by Banque Nationale de Paris, and a cost–benefit analysis using standard federal discount rates.

Crucially, the study did not define final routes. It used “representative routes”—illustrative alignments designed to yield credible cost and revenue estimates, with the explicit caveat that ~120% accuracy was the best achievable at this stage. This is directly comparable to Alto’s current position, where study corridors of 10 km width have been defined but no final alignment has been chosen.

## 2. Pitfalls and Problems Identified in 1995

### 2.1 Capital Cost Uncertainty and Overrun Risk

The 1995 Report estimated total system costs (excluding inflation and financing) of C\$9.5 billion for the 200 km/h system and C\$10.5 billion for the 300 km/h system across the full Quebec–Windsor corridor, or approximately C\$5.4–6.1 billion for the Montreal–Toronto segment alone. These were 1993 dollars. When inflation (at 3% per year) and financing costs during construction were added, the full corridor total rose to C\$16.5–18.3 billion, a 75% increase over the constant-dollar figure.

The study identified a formal margin of error of  $\pm 20\%$  on all capital cost estimates and listed specific risk factors that could push costs beyond that range:

- Use of existing railway right-of-way in urban zones was assumed, but rationalization of CN and CP operations might not occur, requiring additional cost.
- Level crossings assumed for the 200 km/h system, if regulators required full grade separation, a \$500 million cost penalty would apply.
- Contaminated soils along rail rights-of-way were not studied in detail; discovery of large quantities would increase removal and disposal costs substantially.
- Environmental assessment outcomes could dictate additional mitigation measures beyond those budgeted.
- Construction schedule overruns were explicitly acknowledged: “Many very large civil engineering projects overrun the anticipated construction schedule, increasing financing costs.” A one-year delay alone would reduce the public sector IRR from 7.13% to 2.67%.

The report’s sensitivity analysis showed that a 20% increase in capital costs would eliminate private sector viability in all but the best scenario (Montreal–Toronto 300 km/h via Dorval), and would cause the public sector IRR to fall below 4% in all full-corridor scenarios.

### 2.2 Ridership and Revenue Uncertainty

The 1995 Report used three independent forecasting firms with three different methodologies but common input assumptions. Their results ranged from 10% to 30% variance. Even after reconciliation, the Banque Nationale de Paris, the project’s financial advisors, stated that “none of the forecasts would be adequate to secure project financing from financial institutions.”

Key ridership risks identified included:

- Competitive airline response: The study assumed long-run fares would remain stable. It acknowledged that airlines’ short-term competitive response could be “very aggressive,” and that this scenario was not fully modelled.
- Automobile diversion: Forecasters estimated 32–47% of ridership would divert from cars. The report acknowledged that Canadians’ strong attachment to automobiles created fundamental uncertainty in this assumption.

- Induced demand: 18–23% of forecasted ridership was classified as “induced”, trips that would not occur without HSR. The report acknowledged this was speculative.
- Business vs. leisure mix: ~60% of ridership was forecast as non-business, but business ridership generated ~50% of revenues. Any shift in this mix would disproportionately affect the financial case.
- A 10% reduction in revenues would reduce the public sector IRR from 7.13% to 5.27% in the best scenario, and cause the private sector IRR to fall below the 12% hurdle rate in all scenarios.

### 2.3 Private Sector Financing Was Deemed Impossible

The 1995 Report was unequivocal: “A wholly-owned private sector option is neither viable nor financeable, as the private sector’s cost of funds would significantly exceed the HSR project’s financial returns, regardless of the considered scenario.”

In the best-case scenario (Montreal–Toronto, 300 km/h, via Dorval), the maximum private sector share of capital costs was 28.6%, with the remainder (71–74%) falling to the public sector. The study’s final condition for proceeding stated: “In view of the fiscal situation of governments and because, according to the study, 70% to 75% of the cost would have to be paid by the public sector, governments should indicate whether or not they are prepared to proceed.”

The Steering Committee set a non-negotiable precondition: the private sector must underwrite at least 50% of the next study phase and agree to take on ALL construction and operating risk if the project proceeds to implementation. This condition was never met and the project was shelved. Thirty years later, a DBFOM (Design-Build-Finance-Operate-Maintain) contract has been signed with the Cadence consortium, which represents a structural evolution. However, the C\$3.9 billion co-development phase is government-funded; the public/private split of C\$80–120B in capital costs has not been disclosed; and no independent financial model or business case has been published. The 1995 condition was precise: private money at risk before governments commit. That threshold has not been demonstrably met.

### 2.4 Canadian Winter Conditions: A Unique Engineering Challenge

The 1995 Report identified Canadian winter operations as a distinctive and unresolved technical risk with no equivalent in European or Japanese HSR experience:

- Existing HSR systems were designed for moderate climates. They would need “some modifications” for Canadian conditions, and current European R&D “does not address some specific needs of a Canadian HSR.”
- Track and roadbed maintenance requirements for reliable year-round HSR operation in freeze-thaw cycles were the “largest uncertainty” in operating cost estimates. The study noted that only the test of time would permit complete knowledge of true maintenance costs.
- Specific engineering concerns included effects of ice and snowfall on track infrastructure, wet snow accumulation, ice formation on overhead contact systems, and protection of the track from drifting snow.

- The report identified that the 200 km/h scenario would be more vulnerable to winter-related track degradation than the 300 km/h scenario, due to differences in track geometry tolerances.
- ABB and Bombardier committed to meeting North American vehicle standards, but the regulatory framework for Canadian HSR operation would require development from scratch.

## 2.5 Environmental and Land Acquisition Concerns

The 1995 Report identified a range of environmental and land impacts that would require resolution in the implementation phase:

- Agricultural land losses: Crop losses on high-quality agricultural land (Classes 1 and 2) were estimated at C\$111–130 million (1993\$) over the project life, with the greatest impact between Montreal and Quebec City and between Toronto and Windsor.
- Barrier effects: The report explicitly acknowledged that “a new HSR corridor would create a new barrier, particularly in inhabited areas,” with negative impacts on terrestrial fauna movement, surface and ground water, and aquatic and terrestrial habitat integrity.
- Noise and vibration: Aerodynamic noise becomes dominant above 200 km/h. The report budgeted mitigation costs but acknowledged that areas adjacent to new routes would be most sensitive, and that overnight light freight service could cause additional disturbances.
- Contaminated soils: Present along many existing railway rights-of-way but not studied in detail.
- Environmental assessment: A joint federal–provincial EA was deemed necessary in each province before construction could begin. The report identified this process as a risk factor for both schedule and cost.

## 2.6 Labour Constraints

The 1995 Report devoted significant attention to Canadian railway labour practices as an impediment to cost-effective HSR operations:

- Pay system: Canadian railway employees were paid on a mileage-based system—complex, costly, and incompatible with HSR economics. Applied to an HSR operation, it would be “prohibitively costly.”
- Train crew size: In 1995, VIA Rail trains operated with four-person crews (two engineers, one conductor, one assistant conductor). The study assumed this would be negotiated down to two-person crews, but this had not yet occurred.
- Union multiplicity: Ten different unions represented CN, CP, and VIA employees. The report identified the “multiplicity of unions” as a potential impediment to flexible work rules.
- Wage levels: Canadian rail workers were among the highest-paid transportation employees, more generously compensated than Amtrak workers.

The study’s operating cost estimates assumed all these constraints would be resolved through collective bargaining before HSR launch. an assumption characterized as optimistic even in 1995.

## 2.7 Legislative and Regulatory Gaps

The 1995 Report found no fundamental legislative barriers to HSR, but identified a series of regulatory gaps that would require resolution:

- Canadian HSR would require new performance-based safety standards, since existing regulations were designed for conventional railway speeds.
- A joint federal–provincial environmental assessment process would need to be designed from scratch.
- The National Transportation Act, the Railway Safety Act, and other federal statutes would apply, but their application to HSR operations in Canada had never been tested.
- Technology suppliers would need to obtain North American regulatory approval for rolling stock that had only been certified in Europe.
- Land acquisition and expropriation powers were available under the Railway Act, but the report noted these mechanisms could involve lengthy hearings in agricultural and developed urban areas.

## 2.8 Discount Rate and Financial Sensitivity

The 1995 Report identified the discount rate as the single most important variable in the cost–benefit analysis. The federal government’s standard rate was 10%. The study’s consultants argued for 7% (approximating the real borrowing rate). The three governments agreed on 8% as a compromise.

- At 8% discount rate: all scenarios except the 200 km/h full corridor were economically viable.
- At 10% discount rate (federal standard): only the Montreal–Toronto 300 km/h via Dorval scenario remained viable.
- At 10% combined with a cost increase or revenue decrease: ALL scenarios became unviable, including the best case.

The report concluded: “If the 10% discount rate is combined with either an increase in costs or a decrease in revenues, then all scenarios are no longer viable, including the MOT-D-300 scenario.”

### Explainer: What Is a Discount Rate and Why Does It Matter?

A discount rate is essentially the answer to this question: *how much is a dollar in the future worth to us today?*

If someone offers you \$100 now or \$100 in ten years, you take it now — because you could invest that money and it would grow. The discount rate is the percentage used to “shrink” future money back to today’s value.

#### Why it matters for infrastructure projects

A railway does not pay for itself immediately. You spend billions building it, then collect ticket revenue over 30–50 years. To decide whether that is worthwhile, you must compare those future revenues against today’s construction costs. The discount rate is what translates future dollars into present-day dollars.

- **High discount rate** = future money is worth very little today → the project looks bad, because revenues arrive slowly and far in the future.
- **Low discount rate** = future money holds more of its value → the project looks better.

### The 1995 situation

The federal government's standard rate was 10%. At that rate, when future ticket revenues were discounted back to present value, almost every HSR scenario came up short. The only exception was Montréal–Toronto at 300 km/h — but even that worked only if you agreed to use a slightly lower rate, around 9%. The private financing advisors (Banque Nationale de Paris) wanted a higher rate to account for risk. The entire question of whether the project was financially viable came down to a single percentage-point argument between the government's accountants and the private bankers.

### Relevance to Alto today

Alto has not published its discount rate assumption, sensitivity analysis, or the range of scenarios at different rates. Given that the project is larger, longer in timeline, and more complex than anything in the 1995 study, this is a significant gap. The same one-percentage-point difference that killed the 1995 case could easily appear again — and we have no way to evaluate it from public materials.

## 2.9 No North American HSR Experience

Perhaps the most fundamental caveat in the 1995 Report was the absence of any comparable reference point: Canada would be building the first HSR system in North America. This created uncertainty across virtually every category of analysis:

- Ridership models were based on European and Japanese HSR experience in fundamentally different urban contexts.
- Construction costs could not be validated against local precedent.
- Maintenance cost estimates for Canadian winter conditions were speculative.
- Regulatory frameworks did not exist.
- Canadian capital markets had no comparable project against which to benchmark risk.

The report noted: “The lack of experience with HSR in North America and particularly in Canadian climatic conditions creates uncertainty in the ridership and revenues, in the construction and maintenance of such a high quality roadbed and in operations in our winter conditions.”

## 3. Comparison: 1995 Findings vs. 2026 Alto Reality

Issue identified in 1995	Status under Alto 2026
Capital cost uncertainty $\pm 20\%$ ; full corridor C\$10.5B (1993\$), rising to C\$18.3B with inflation and financing	Alto official estimate C\$80–120B (2024\$); the co-development phase alone costs C\$3.9B in public funds. No contingency range publicly disclosed. Gessaroli (Globe & Mail, Jan 2026): C\$250–375M per minute of travel time saved vs. EU average of $\sim$ C\$146M.
Private sector cannot finance project alone; 70–75% must come from government	A Design-Build-Finance-Operate-Maintain (DBFOM) contract was signed with the Cadence consortium (CDPQ Infra, AtkinsRéalis, Keolis, SYSTRA, SNCF Voyageurs, Air Canada) in

Issue identified in 1995	Status under Alto 2026
	<p>March 2025. However, the C\$3.9B co-development phase — the “next study phase” the 1995 committee required private-sector underwriting for — is government-funded. The ultimate public/private capital split has not been disclosed. No financial model or independent business case has been published.</p> <p><b>AtkinsRéalis (formerly known as SNC-Lavalin Group Inc.)</b> is responsible for Ottawa’s delayed Confederation Line LRT expansion; CDPQ Infra is responsible for the cancelled REM de l’Est.</p> <p><b>Air Canada’s</b> inclusion creates a direct conflict of interest as a competitor to the service being designed.</p> <p>A separate concern is that if the new HSR service displaces VIA Rail’s Windsor–Quebec City revenue under a private operating structure, it could undermine VIA’s ability to cross-subsidize passenger rail services elsewhere in Canada. Alto’s own project timeline was briefly published in its Business Case Summary then quietly withdrawn.</p>
Ridership forecasts not sufficient to secure bank financing without additional audits	No public ridership forecast released. McGill survey (2025): over 50% of corridor residents would not use the train regularly, citing ticket price.
Winter engineering: freeze–thaw maintenance costs are the “largest uncertainty” in operating costs	No winter operations analysis publicly released by Alto. NRC Canada (Roghani 2021): eastern Ontario track roughness peaks in April due to freeze–thaw cycling. The eastern Ontario corridor’s transitional climate creates worse freeze–thaw outcomes than consistently cold winters farther north.
Agricultural and land barrier effects: C\$111–130M in crop losses; barrier to terrestrial fauna	OFA/UPA joint resolution (Feb 28, 2026): demands suspension; C\$51B agricultural sector at risk. Ontario Farmland Trust: land “rarely returns to its original productivity.” 600–1,180 road crossings require bridging or dead-ending.
Labour constraints: mileage-based pay, 10 unions, crew size issues – costs assumed to be negotiated down	VIA Rail privatization (1995) transferred operational complexity to CN. No Alto labour framework publicly disclosed.
Environmental assessment process not yet designed; must be joint federal–provincial	Bill C-15 — currently before the Senate — would reduce EA oversight and eliminate public hearing rights during expropriation, reducing scrutiny rather than resolving the underlying gaps. Impact Assessment Act gaps remain.

Issue identified in 1995	Status under Alto 2026
No North American HSR experience; all cost/ridership benchmarks from Europe/Japan	Still true in 2026. No HSR operates in North America. HS2 (UK) now provides the most comparable large-scale cautionary precedent: £37.5B → £100B+, scope halved.
Mirabel Airport parallel: expropriation of agricultural land with subsequent abandonment	Mirabel families face second expropriation for Alto corridor. Globe & Mail (Feb 25, 2026): Alto CEO Imbleau says once route is set, it “becomes a transaction on the compensation.”
Routing through Dorval clearly superior to Mirabel for both financial and cost–benefit outcomes	Alto’s corridor passes near Mirabel. The 1995 lesson on routing through existing urban infrastructure (Dorval) vs. greenfield exurban routes appears not to have been applied.

## 4. New Risks Not Present in 1995

Several categories of risk that did not exist in 1995, or were negligible at that time, now apply to the Alto project:

### 4.1 Frontenac Arch Biosphere Reserve and Species at Risk

The corridor passes through the Frontenac Arch, designated a UNESCO Biosphere Reserve and identified as a Key Biodiversity Area (WCS Canada, January 2025) under the Kunming-Montreal Global Biodiversity Framework. This area supports over 50 Species at Risk, including the grey ratsnake, Blanding’s turtle, and wood turtle. The 1995 study examined only the Toronto–Windsor and Montreal–Quebec segments in detail; the eastern Ontario terrain was not analyzed.

The Frontenac Arch also sits on a karst geology system with soluble limestone, sinkholes, and fractured bedrock aquifers feeding the Rideau, Napanee, and Salmon rivers. De-icing chemicals at HSR concentrations pose direct contamination risk to these karst aquifers. None of this was in scope in 1995.

### 4.2 Leda Clay in the Ottawa–Montreal Segment

The Ottawa–Montreal corridor traverses extensive deposits of glaciomarine Leda clay (quick clay), which is subject to liquefaction, settlement, and seismic amplification. HSR geometric tolerances require track smoothness far tighter than conventional rail. Leda clay’s sensitivity to vibration and loading makes it a uniquely problematic substrate for HSR. This risk was not identified in the 1995 study.

### 4.3 HS2 as a Cautionary Precedent

In 1995, no comparable megaproject overrun existed to benchmark against. Today, the UK’s HS2 programme—the closest international comparator by corridor length, institutional complexity, and greenfield construction requirements—provides a stark precedent: original estimate £33–36B, current estimate £100B+, with the Birmingham–Manchester and Birmingham–Leeds legs cancelled entirely. The Stewart Review (2023) identified systematic underestimation of ground conditions, utility relocation, and urban interface costs.

Flyvbjerg’s Oxford Global Projects database (258 rail megaprojects) finds an average cost overrun of 44.7% and a ridership shortfall in 50%+ of projects. Applied to Alto’s C\$80–120B official estimate, a 45% overrun produces C\$116–174B; at HS2/California rates, C\$150B+.

#### 4.4 Bill C-15 and Expropriation Acceleration

Bill C-15, currently before the Senate, would give Alto accelerated expropriation powers and eliminate public hearing rights during land acquisition. This has been framed as a solution to the 1995 Report’s concern about “lengthy hearings.” In practice, if passed, it would remove one of the key accountability mechanisms the 1995 study identified as necessary to manage public risk—without resolving the underlying land-use and community impacts.

#### 4.5 Municipal and Agricultural Opposition at Scale

The 1995 study noted land acquisition risks abstractly. By early 2026, at least eight eastern Ontario municipalities have passed formal resolutions opposing Alto routing through their communities. The OFA and UPA issued a joint resolution demanding suspension. The Rideau Waterway Land Trust, with 25 properties in the study corridor, has formally opposed the route. Expropriation lawyer Ajay Gajaria (Aird & Berlis) characterized this as “the largest value of expropriations in modern Canadian history.”

### 5. What the 1995 Steering Committee Actually Recommended

The 1995 Steering Committee’s final recommendation is worth quoting in its entirety, because it sets a precise threshold—one that was not met in 1995 and that Alto has not demonstrably met in 2026:

*The Steering Committee recommends that any future work should only consider very fast technologies. The following conditions must be satisfied before any further work is undertaken:*

- *The initiative for the next stage lies with the private sector, who should underwrite at least 50% of the next phase.*
- *The private sector must agree to take on all project risks (construction risks and management of a high-speed rail operation) if the project goes ahead to implementation.*
- *In view of the fiscal situation of governments and because 70–75% of the cost would have to be paid by the public sector, governments should indicate whether or not they are prepared to proceed.*
- *Governments should take into account the rate of return of the project.*

— 1995 Quebec–Windsor HSR Feasibility Study, Final Report, August 1995

None of these conditions were met in 1995. The private sector did not come forward. Governments did not publicly commit to covering 70–75% of costs. The project was shelved.

In February 2025, the government announced a Design-Build-Finance-Operate-Maintain (DBFOM) contract with the Cadence consortium (CDPQ Infra, AtkinsRéalis, Keolis, SYSTRA, SNCF Voyageurs, Air Canada), and the pre-development agreement was signed in March 2025. This represents meaningful progress beyond 1995. However, the C\$3.9 billion co-development phase, the “next study phase” the 1995 Steering Committee required the private sector to underwrite at least 50% of, is being funded by government, not Cadence. The ultimate public/private split of the

C\$80–120B construction cost has not been disclosed. No independent business case, financial model, or ridership forecast has been published. Alto’s own project timeline was briefly published in its Business Case Summary, then quietly withdrawn. The Parliamentary Budget Officer has not been asked to independently assess the project. The conditions the 1995 Steering Committee set as prerequisites for even proceeding to the next study phase have still not been demonstrably met.

## 6. Questions the 1995 Study Demanded—That Alto Has Not Answered

The following questions were explicitly identified in 1995 as prerequisites for proceeding. They remain unanswered in Alto’s public consultation materials as of March 2026:

- **Q1:** What is the capital cost estimate with contingency ranges, expressed in 2024 dollars?
- **Q2:** What is the independent ridership forecast, and what assumptions underlie it?
- **Q3:** What is the financial model, and what share of capital costs will the public sector bear?
- **Q4:** What is the environmental assessment methodology for karst geology, Leda clay, and Species at Risk?
- **Q5:** What is the winter operations and maintenance cost model specific to the Quebec–Windsor/eastern Ontario corridor?
- **Q6:** What is the labour relations and collective agreement strategy for an entirely new crown corporation?
- **Q7:** Have all possible routes been evaluated on a full lifecycle cost basis, including the winter operations?
- **Q8:** Has the Parliamentary Budget Officer been asked to independently assess the cost and business case?
- **Q9:** What is the plan for VIA Rail service continuity in communities that lose access when HSR bypasses them?
- **Q10:** How does the project account for the Mirabel precedent, given that communities along the corridor are already raising it?

## 7. Conclusions

The 1995 Quebec–Windsor HSR Feasibility Study was Canada’s most thorough examination of HSR viability to date. It consumed three years of work, employed more than twenty specialized consulting firms, and subjected every assumption to rigorous sensitivity analysis. Its conclusion—that HSR is technically feasible but financially viable only under optimistic assumptions, requires 70–75% public funding, and cannot be financed by the private sector alone—was reached honestly and documented in detail.

The project was shelved because the conditions the Steering Committee set were not met. Those conditions were prudent. Thirty years of international HSR history—particularly HS2, California High-Speed Rail, and the Flyvbjerg/Oxford Global Projects database—have validated the committee’s caution.

Alto’s current public consultation asks Canadians to comment on corridor locations before a business case, financial model, ridership forecast, or environmental assessment has been

completed or published. This is precisely the sequence the 1995 Steering Committee warned against: “Accelerating construction locks in commitments before routes, costs and risks are understood” (Gessaroli, *Globe & Mail*, January 13, 2026).

The risks identified in 1995 have not been resolved. In several respects—Frontenac Arch KBA designation, Leda clay risk, HS2 precedent, the proposed expropriation acceleration under Bill C-15 (currently before the Senate), and the absence of any published business case—the situation in 2026 is more concerning than it was when the earlier study was shelved.

## 8. Key Sources

### Primary Source

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