

**ECONOMIC ANALYSIS — SUBMISSION TO PUBLIC CONSULTATION**

# What High-Speed Rail Really Costs: International Evidence and Its Implications for ALTO's \$60–120 Billion Estimate

*Reviewed by Steven Moore | ALTO HSR Citizens Research Initiative | April 24, 2026*

<b>Reviewed by</b>	Steven Moore — ALTO HSR Citizens Research Initiative
<b>Date</b>	March 2026
<b>Submitted to</b>	ALTO High-Speed Rail Public Consultation, April 2026

## THE IRON LAW OF MEGAPROJECTS

Professor Bent Flyvbjerg (Oxford) calls it the “Iron Law”: megaprojects are delivered over budget, over time, and under benefits, over and over again. Fewer than 1% of megaprojects are completed on time, on budget, and deliver the benefits promised. His database, the world’s largest, covering more than 16,000 projects across 136 countries, reveals that nine out of ten megaprojects run over budget. Rail projects are among the worst performers, with an average cost overrun of 44.7% and ridership shortfalls averaging 51.4%. This is not a new phenomenon: the pattern has held for the 70+ years for which comparable data exist.

## Section 1 — The Pattern Is Universal

---

Every major high-speed rail project in history has exceeded its initial budget. The European Court of Auditors’ landmark 2018 audit of EU-funded high-speed rail found aggregate cost overruns of €25.1 billion, a 78% overrun at the line level, across the lines examined. Construction delays of more than a decade affected half the lines studied. Four of the ten lines cost more than €100 million per minute of travel time saved.

The reasons are consistent: optimism bias in early estimates, political pressure to lowball costs to gain approval, scope changes once construction begins, land acquisition complications, environmental mitigation requirements, and inflation over multi-decade build timelines. As McKinsey’s research notes, project managers competing for funding tend to present costs at the floor of what’s plausible, a dynamic Flyvbjerg calls “strategic misrepresentation.”

## Section 2 — What Happened Elsewhere

Project	Length	Initial Estimate	Latest / Final Cost	Overrun
California HSR (SF–Los Angeles)	~800 km	US\$33B (2008)	US\$106–128B (2024)	+220–290%
UK HS2 (London–Birmingham, Phase 1 only)	~225 km	£37.5B (2009, whole network)	£81–100B+ (2025, Phase 1 only)	+134–170%
Japan Shinkansen (Tokyo–Osaka)	515 km	¥200B (1958)	¥380B (1964)	+90%
Channel Tunnel (UK–France)	50 km	£4.65B (1985)	£9.5B (1994)	+80%
Stuttgart 21 (Germany, station + tunnel)	N/A	€2.5B (1995)	€8B+ (2025)	+220%
Stuttgart–Munich HSR (Germany)	~156 km	€2.6B (initial)	€14.8B (2022)	+469%
Jakarta–Bandung HSR (Indonesia)	~140 km	US\$5.5B (2016)	US\$7.3B (2023)	+33%
EU HSR average (2018 Court of Auditors)	Various	€32.1B (combined)	€57.2B (combined)	+78%
Canada — ALTO HSR (Toronto–Quebec City)	~1,000 km	C\$6–12B (2021 HFR) / C\$60–90B (2024 HSR)	C\$80–120B (2025, various)	?

If ALTO follows the historical average for rail megaprojects (44.7% overrun), the \$60–90 billion estimate lands at \$87–130 billion. At the California HSR or HS2 rate of escalation (134–290%), the figure could exceed \$150 billion.

## Section 3 — Where the Hidden Costs Appear

### 3.1 Land acquisition and expropriation

Land costs are among the most unpredictable elements of any rail megaproject. HS2 spent £3.6 billion on land alone as of mid-2025 with the project only partially complete. California HSR saw property relocation costs far exceed initial expectations. Japan’s original Shinkansen faced significant land acquisition challenges in densely populated areas. In each case, initial estimates underpriced the difficulty and expense of assembling a continuous right-of-way through settled landscapes.

**ALTO’s CEO confirms on public record: land costs are inside the estimate, and the ticket price is unknown**

On CBC Ottawa Morning on March 25, 2026, ALTO CEO Martin Imbleau was asked directly whether the \$60–90 billion figure includes land acquisition costs. He confirmed it does: the working estimate encompasses land. He also confirmed that expropriation of “thousands of properties” will “probably start in 2027.” This confirmation closes a significant gap in public understanding: previous government communications had not clearly stated whether land was inside or outside the headline cost figure, and some government officials had implied the \$60–90 billion referred to construction only.

In the same interview, Imbleau was asked directly how much a ticket would cost. He replied: “We don’t know for sure... I don’t know yet.” When asked specifically about Montréal to Ottawa pricing, he repeated: “I don’t know.” He simultaneously asserted that operations will be profitable: “When you look at the forecast and the operation cost that we have a feeling with today, definitely it’s going to be profitable from an operation standpoint. No doubt.” Revenue equals ticket price multiplied by riders. ALTO’s CEO does not know the ticket price. The demand model has not been published. A profitability claim made without knowing either of these inputs is not a financial projection — it is an assertion.

*Source: CBC Ottawa Morning, March 25, 2026. [cbc.ca/listen/live-radio/1-100-ottawa-morning/clip/16205093](https://www.cbc.ca/listen/live-radio/1-100-ottawa-morning/clip/16205093)*

### **3.2 Environmental mitigation and compliance**

Environmental requirements consistently add billions that early estimates don’t fully anticipate. HS2’s costs escalated partly because political pressure during parliamentary approval forced the tunnel through the Chilterns to be lengthened. California HSR added \$5 billion just to reroute tracks away from the Cesar Chavez National Monument and tunnel near Burbank airport. For ALTO, proposed corridors through the Frontenac Arch UNESCO Biosphere Reserve, Rideau Canal World Heritage Site, Eastern Ontario wetlands, and the Napanee Limestone Plain karst aquifer would trigger mitigation requirements that have not yet been costed.

### **3.3 Stakeholder compensation and community disruption**

Beyond direct land purchase, projects incur costs for noise mitigation, property value depreciation claims, agricultural disruption, construction access agreements, heritage protection, community infrastructure relocation (roads, utilities, water systems), and ongoing monitoring programs. These are categories that ALTO’s \$60–90 billion estimate, described by Transport Canada as an “early capital costs estimate,” has not detailed.

### **3.4 Scope changes and design immaturity**

HS2’s 2025 reset was blunt: the UK Transport Secretary called the situation “an appalling mess,” with “billions of pounds of taxpayers’ money wasted by constant scope changes, ineffective contracts and bad management.” The project’s new CEO found it was only about one-third complete despite being planned to be three-quarters done. California HSR’s state auditor found that the authority “had not acquired sufficient land, had not determined how it would relocate utility systems, and had not obtained agreements with external stakeholders” when construction began. Construction must not start before designs are sufficiently mature.

### **3.5 Inflation over multi-decade timelines**

ALTO’s own timeline projects completion around 2043, approximately 20 years from planning start. Over such timescales, construction-cost inflation compounds dramatically. California HSR’s escalation from \$33 billion to \$106+ billion is partly due to a 17-year build timeline. Grade separation costs alone, estimated at \$3.2–8.4 billion for the crossing count documented in Transport Canada’s 2023 parliamentary briefing, represent a substantial uncoded line item that has never been broken out in ALTO’s published estimates.

### **CANADIAN PRECEDENT**

Canada's Trans Mountain Pipeline Expansion was estimated at \$5.4 billion in 2013 and delivered at \$34 billion in 2024: a 530% overrun. Ontario's Metrolinx Ontario Line has nearly doubled from its original \$10.9 billion estimate. Transport Action Canada has noted that the escalation from the original High Frequency Rail concept (under \$5 billion, or under \$10 billion in today's dollars) to the current \$60–120 billion HSR proposal reflects not just inflation but a fundamental change in project scope that has not been subjected to a publicly released cost-benefit comparison.

## **Section 4 – What This Means for Eastern Ontario**

---

Jerome Gessaroli (Macdonald-Laurier Institute, Globe and Mail) calculated that ALTO implies capital costs of \$250–375 million per minute of travel time saved. The EU average, itself considered excessive by the European Court of Auditors, is roughly \$146 million per minute saved. ALTO's per-kilometre cost of \$60–90 million also substantially exceeds the European average of roughly \$40 million per kilometre.

If the international pattern holds, ALTO's final cost will be substantially higher than its current estimate. Those additional costs will manifest as wider land acquisition zones, more expropriation, more environmental mitigation, and more impact on the communities, farmland, wetlands, and protected areas in the proposed corridors. Communities being asked to accept a rail line through their region deserve to know not just the stated budget, but the realistic all-in cost based on how every comparable project in history has actually unfolded.

## Section 5 — Formal Requests

---

1	<p><b>Apply reference-class forecasting to ALTO's cost and ridership projections</b></p> <p>ALTO must publish a reference-class forecast of total project cost and ridership, applying Flyvbjerg's methodology (44.7% average rail overrun; 51.4% average ridership shortfall) to its current estimates. This is the standard required for major infrastructure projects in the UK under HM Treasury Green Book guidance. A promoter-class estimate alone is insufficient for public accountability.</p>
2	<p><b>Break out grade separation costs as a separate line item</b></p> <p>ALTO must publish grade separation costs as a separate and explicit line item in its capital cost estimate, including: the number of crossings proposed on each corridor option; the crossing treatment hierarchy (which roads receive structures vs. which are closed); and the cost per structure by type. This \$3–8 billion cost category has never been publicly disclosed.</p>
3	<p><b>Publish the cost of environmental mitigation for the Frontenac Arch and Napanee Plain</b></p> <p>ALTO must publish a preliminary estimate of environmental mitigation costs for proposed corridors through the Frontenac Arch UNESCO Biosphere Reserve, Napanee Limestone Plain karst aquifer, Rideau Canal World Heritage Site, and Eastern Ontario wetland complexes. These costs are absent from all published materials.</p>
4	<p><b>Commission an independent value-for-money review</b></p> <p>An independent value-for-money review of the ALTO project, applying Flyvbjerg's reference-class methodology, must be commissioned and publicly released before any route selection is finalised. The review must compare the realistic probability-weighted cost range against the realistic probability-weighted ridership and revenue range.</p>
5	<p><b>Publish the cost-benefit comparison between ALTO and the original HFR concept</b></p> <p>Transport Action Canada has noted that the escalation from under \$5 billion (HFR, 2016) to \$60–120 billion (HSR, 2024) reflects a fundamental change in scope. ALTO must publish a formal cost-benefit comparison between the full HSR specification and the original HFR specification, showing what additional transportation benefit is produced per additional dollar of capital cost.</p>

## Key Sources

---

- Flyvbjerg, B. (2014). "What You Should Know About Megaprojects and Why." *Project Management Journal*, 45(2). (44.7% average rail overrun; 51.4% average ridership shortfall; Iron Law.)
- Flyvbjerg, B. and Gardner, D. (2023). *How Big Things Get Done*. Currency/Random House.
- European Court of Auditors (2018). "A European high-speed rail network: not a reality but an ineffective patchwork." Special Report No. 19/2018. (€25.1B aggregate overrun; 78% at line level.)
- UK Government (2025). HS2 6-monthly report to Parliament: July 2025. (£3.6B land costs to date; Phase 1 one-third complete.)
- Gessaroli, J. (2026). "Canada's next budget bomb is the Alto high-speed rail project." *Globe and Mail*. (\$250–375M per minute of travel time saved.)
- Transport Action Canada (2025). "Cadence wins \$3.9B High Speed Rail development contract." (Escalation from HFR \$5B to HSR \$60–120B.)
- Transport Canada (2025–26). *High-Speed Rail — Main Estimates*.
- California High-Speed Rail Authority. *Cost estimate evolution*. (US\$33B → US\$106–128B.)
- Trans Mountain Pipeline Expansion: \$5.4B (2013) → \$34B (2024): 530% overrun. (Government of Canada.)
- Winch, G. et al. (2025). "So, What Went Wrong with HS2?" *Productivity Institute Insights Paper*.