What High-Speed Rail Really Costs

Every major high-speed rail project in history has exceeded its initial budget.
Here's what the international evidence says — and what it means for Alto's $60–120 billion estimate.

Reviewed by Steven Moore, March 2026

The pattern is universal

Oxford professor **Bent Flyvbjerg** has spent decades studying megaproject performance. His database, the world's largest, covering more than 16,000 projects across 136 countries, reveals a stark finding: **nine out of ten megaprojects run over budget**. Rail projects are among the worst offenders, with an average cost overrun of 44.7% and ridership shortfalls averaging 51.4%. These patterns hold across countries, decades, and political systems.

The European Court of Auditors reached similar conclusions in a landmark 2018 audit of EU-funded high-speed rail. Aggregate cost overruns across the lines they examined were **€25.1 billion, a 78% overrun at the line level**. 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 IRON LAW OF MEGAPROJECTS**
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> Professor Flyvbjerg 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. This is not a new phenomenon: the pattern has held for the 70+ years for which comparable data exist.

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."

What happened elsewhere

The table below compares initial budget estimates with actual or current projected costs for major high-speed rail projects around the world. Every single project on this list exceeded its original estimate, most by enormous margins.

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%**
Sydney Metro (Australia)	~66 km	AU$11.5B	AU$20B+	**+74%**
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)**	**?**

Note: Overrun percentages are approximate, calculated in real (inflation-adjusted) terms where possible. Different sources report slightly different figures depending on their base year and scope definition.

Where the hidden costs appear

Initial estimates for high-speed rail projects typically cover core construction, tracks, stations, rolling stock, and systems. But real-world costs consistently balloon due to categories that early budgets undercount or omit entirely. Understanding these categories matters for communities along the Alto corridor, because these are the costs that ultimately drive land acquisition, expropriation, and disruption to local communities.

Land acquisition and expropriation

Land costs are among the most unpredictable elements of any rail megaproject. The UK's HS2 spent **£3.6 billion on land alone** as of mid-2025 and the project is 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 between Tokyo and Osaka. In each case, initial estimates underpriced the difficulty and expense of assembling a continuous right-of-way through settled landscapes.

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 the parliamentary approval process 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 Biosphere Reserve, Rideau Canal UNESCO site, and Eastern Ontario wetlands would trigger mitigation requirements that have not yet been costed.

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, and community infrastructure relocation (roads, utilities, water systems). HS2's community compensation programmes and environmental offsetting added significantly to Phase 1 costs. These are categories that Alto's $60–90 billion estimate, described by Transport Canada as an "early capital costs estimate", has not detailed.

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 own new CEO found it was only about **one-third complete despite being planned to be three-quarters done**. A core finding was that construction had started before designs were sufficiently mature. California HSR has faced similar problems, with the state auditor finding 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.

Inflation over multi-decade timelines

High-speed rail projects routinely take 15–25 years from planning to operation. Alto's own timeline, before it was withdrawn from public view, projected completion around 2043, roughly 20 years from the start of planning. 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 that has exposed the budget to years of material, labour, and regulatory cost increases.

CANADIAN PRECEDENT

Canada's most recent comparable experience is the Trans Mountain Pipeline Expansion, which was estimated at **$5.4 billion in 2013** and delivered at **$34 billion in 2024,** a 530% overrun. Ontario's Metrolinx has seen the Ontario Line nearly double from its original $10.9 billion estimate. If Alto follows the historical pattern for rail megaprojects, an average 45% overrun, the $60–90 billion estimate would land at **$87–130 billion**. At the California or HS2 rate of escalation, the figure could exceed $150 billion.

What this means for Alto

Alto's current public estimate of $60–90 billion (2024 dollars) already makes it the most expensive infrastructure project in Canadian history by a wide margin. Some sources, including Wikipedia's analysis of available data, place the range at $80–120 billion. Here's how that stacks up against international benchmarks:

Jerome Gessaroli, a senior fellow at the Macdonald-Laurier Institute, writing in the 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.

Transport Action Canada has pointed out that the original "high-frequency rail" concept studied in 2016, 170 km/h trains on dedicated tracks, was estimated at less than $5 billion (under $10 billion in today's dollars). The escalation from that figure to the current $60–120 billion reflects not just inflation but a fundamental change in project scope that has not been subjected to a publicly released cost-benefit comparison.

THE QUESTION FOR EASTERN ONTARIO

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.

Sources and further reading

1. Flyvbjerg, B. (2014). "What You Should Know About Megaprojects and Why: An Overview." *Project Management Journal*, 45(2). arxiv.org/pdf/1409.0003
2. Flyvbjerg, B. & Gardner, D. (2023). *How Big Things Get Done.* Currency/Random House.
3. European Court of Auditors (2018). "A European high-speed rail network: not a reality but an ineffective patchwork." Special Report No. 19/2018. Read report
4. McKinsey & Company (2015). "Megaprojects: The good, the bad, and the better." Read on McKinsey
5. Flyvbjerg, B., Skamris Holm, M. & Buhl, S. (2003). "How common and how large are cost overruns in transport infrastructure projects?" *Transport Reviews*, 23(1). https://www.tandfonline.com/doi/abs/10.1080/01441640309904
6. UK Parliament, Public Accounts Committee. "No clear end in sight to HS2 cost or delays." Read report
7. UK Government (2025). "HS2 6-monthly report to Parliament: July 2025." GOV.UK
8. Institute for Government (UK). "HS2: costs and controversies." Read explainer
9. Winch, G. et al. (2025). "So, What Went Wrong with HS2?" Productivity Institute Insights Paper.
10. California High-Speed Rail Authority. Cost estimate evolution and project status. https://en.wikipedia.org/wiki/California_High-Speed_Rail
11. Eno Center for Transportation (2023). "Timeline of California High-Speed Rail Cost Estimates." Read on Eno
12. Smil, V. (2014). "Fifty Years of the Shinkansen." *The Asia-Pacific Journal: Japan Focus*.
13. Lowy Institute (2024). "Indonesia: The high cost of high-speed rail." Read on Lowy
14. Transport Canada (2025–26). "High-Speed Rail — Main Estimates." Read on Transport Canada
15. Gessaroli, J. (2026). "Canada's next budget bomb is the Alto high-speed rail project." https://www.theglobeandmail.com/business/commentary/article-canadas-next-budget-bomb-is-the-alto-high-speed-rail-project/
16. Transport Action Canada (2025). "Cadence wins $3.9B High Speed Rail development contract but delivery timeline is cause for concern." https://www.transportaction.ca/topics/intercity-rail-and-bus/cadence-wins-3-9b-high-speed-rail-development-contract/
17. Reevely, D. (2021). "The high cost of high-frequency rail." *https://thelogic.co/news/the-high-cost-of-high-frequency-rail/*
18. Reevely, D. (2025). "Winning Toronto–Quebec City high-speed rail bid was so low officials feared it was impossible." *https://thelogic.co/news/cadence-high-speed-rail-bid/*
19. "High-speed rail won't save Canada." https://thehub.ca/2026/02/04/high-speed-rail-wont-save-canada/
20. Forster, S. (2026). "The high cost of high-speed rail." https://www.canadianaffairs.news/2026/01/09/the-high-cost-of-high-speed-rail/

YOUR VOICE CLOSES MARCH 29, 2026

The consultation is open until March 29. Every comment submitted becomes part of the official record that Alto must consider when recommending a route. Make yours count. Submit at: **en.consultation.altotrain.ca**

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