

50,000 Jobs?

What ALTO's employment claim implies about its burn rate — and how the number breaks down into direct, supply-chain and induced work

September 2026

≈ 18,000

People working on the programme at ALTO's own ten-year build, at HS2 and REM observed labour intensity (CRI estimate)

50,000

Full-time-equivalent jobs across direct, supply-chain and induced effects over a ten-year construction period — defined once, in Appendix A.2 (Alto, August 2026)

ABSTRACT

Alto says the Québec City–Toronto high-speed rail project will support approximately 50,000 jobs during construction. Rebuilding that figure from the outside — from the annual capital spend and programme workforce that HS2 and CDPQ Infra's Réseau express métropolitain both publish, plus standard supply-chain and induced multipliers — gives 50,600 on a ten-year build at the top of Alto's capital range. The agreement is within one per cent. It uses the same three layers Alto names in its own appendix, and it shares no inputs with Alto's model. The figure survives that test. The same reconstruction also fixes its composition: roughly 18,000 people on the programme, 14,000 in supplier firms, 18,000 supported by the re-spending of their wages. Fewer than four jobs in ten are on the railway.

That composition is stated once in Canada's Moment, in an appendix table, and nowhere else — not in the executive summary, not in the comparison table that carries the case against high-frequency rail, not in the federal announcements, not in the press. Read as the workforce a reader hears, 50,000 requires \$15.2 to \$22.7 billion of spending every year: a programme of \$152 to \$273 billion, against the \$60–90 billion Alto has published, and close to the \$142 billion the Initiative's own cost model predicts for this corridor. **On the arithmetic set out here, Alto's employment claim implies a more expensive railway than the one Alto has costed.**

1 — The Claim

The number. Alto states that the Québec City–Toronto high-speed rail project will support approximately 50,000 jobs during the construction period and more than 5,000 ongoing jobs once in operations. The figure appears in Canada's Moment: The Economic Opportunity of High-Speed Rail (August 2026), on Alto's benefits page, and in the reporting that followed the report's release. It is not the first version of the number. The federal announcement of February 19, 2025 promised over 51,000 good-paying jobs during construction alongside a GDP gain of up to \$35 billion annually — a pairing Transport Canada was still publishing in its December 12, 2025 release naming Ottawa–Montréal as the first segment, ten months later

and eight months before Canada's Moment gave 50,000 jobs and \$24.5 billion. The two GDP figures differ by 43 per cent and have never been reconciled in public.

The definition, and where it lives. The report does define the figure — once. Section 4.3.3 gives it as approximately 50,000 full-time equivalent jobs during the construction phase. Tables 7 and A4, which carry the same four rows in the body and again in the appendix, label the row “Jobs during construction period (10-years)” and describe the beneficial effect as employment supported across direct, supply chain, and induced effects. Appendix A.2 names the instrument: the 2019 Statistics Canada input-output model, static, capturing all three effects, producing the 50,000 alongside \$86 billion in value added and \$23 billion in tax revenue. The methodology box is candid about the limits. It states that the results represent spending-supported activity rather than net economic gains, excludes them from the benefit-cost ratio, and concedes that the approach does not account for constraints such as labour shortages or capacity limits. Both tables head their value column “upper estimate.”

The definition does not travel. Two pages of an eighty-three-page report carry it; nothing else does. The executive summary gives approximately 50,000 jobs during construction with no unit, no layers and no model. Table 2, which sets high-speed rail against “high-frequency” rail, gives “construction jobs supported,” 44,000 against 50,000, with no unit, no layers and no model. Alto's benefits page does the same. So did the February 2025 federal announcement, the December 2025 Transport Canada release, and every news report of the figure since. The issue is not that the number is undefined. It is that the definition sits in an appendix while the number, without it, is what reaches the public. The Initiative has recorded the same pattern in this report's treatment of the GDP claim, where base years, ranges and modelling caveats appear in the commissioned studies but not in the public summaries.

What remains undefined. One question the report does not settle is the most consequential of them. Full-time equivalent jobs “during a ten-year construction period” is ambiguous between an average of 50,000 full-time equivalents sustained annually across the decade, and a cumulative total of 50,000 full-time-equivalent years spread across it. The two readings differ by a factor of ten. Only the first is arithmetically available: 50,000 job-years against a \$75 billion programme is 0.67 job-years per \$1 million of spending, against 2.6 at HS2 and 2.6 to 3.3 at the REM — a quarter of the labour intensity of any comparable railway actually being built. This paper therefore reads the figure as an annual average, which is the reading that makes it defensible. Alto has not said so, and a reader has no way to know.

The test. This paper tests the claim against two projects that publish both halves of the ratio — how much they spend each year, and how many people that spending puts to work. HS2 reports an audited capital spend and a programme workforce every year. The Réseau express métropolitain, delivered by CDPQ Infra, is the closest Canadian analogue to ALTO's own delivery structure and published both a jobs claim and periodic site-workforce counts. Between them they establish a reference-class range for employment per dollar of annual spend, which is then applied to ALTO's own capital estimate and schedule. Because Alto has now named the layers its figure contains, the same evidence supports a second test: whether the published total can be rebuilt from counted employment plus standard multiplier ratios, and what proportion of it turns out to be people on the railway.

Status of the figures. Every figure attributed to Alto, HS2, CDPQ Infra, the California High-Speed Rail Authority or a Government of Canada release is quoted from the published source named in Sources and notes, and can be checked there. Every other figure is a calculation by the Initiative from those published inputs, and is identified as such where it appears. The reconstruction in Section 6 is an estimate rather than a measurement: it applies observed

labour intensity from two comparator projects, together with standard supply-chain and induced multiplier ratios, to ALTO's own published capital range and schedule. Where Alto has not published a figure, this paper says so rather than inferring one, and makes no claim about why any particular figure was or was not published.

2 — Method

2.1 Four layers of employment

Any infrastructure employment figure is a sum of up to four distinct populations, and the arguments about such figures are almost always arguments about which layers are included:

- **Layer 1 — owner and engineering:** the client corporation, its delivery partners and the design houses — engineers, project managers, land and environmental staff. On HS2 this population sits in offices and is separately visible in the accounts.
- **Layer 2 — site and contractor workforce:** everyone employed by the contractors and their sub-contractors on the works themselves, plus programme-side staff at supplier firms. This is what HS2 counts as its “workforce” and what REM counted as “workers and employees on site.”
- **Layer 3 — supply chain (indirect):** employment at firms producing steel, rail, concrete, cabling and rolling stock away from the corridor. Neither HS2 nor REM counts these in its workforce figures; input-output models do.
- **Layer 4 — induced:** employment supported when the wages paid in layers 1 to 3 are re-spent in the wider economy. This layer exists only inside a model; no one can be counted standing in it.

Layers 1 and 2 together are what a reader hears in the phrase “50,000 jobs during construction”: people working on the railway. Layers 3 and 4 are legitimate outputs of an input-output model and are routinely reported by transport agencies. Alto's own three-way split — direct, supply chain, induced — collapses layers 1 and 2 into its direct category and matches the rest, so the taxonomy used here is Alto's taxonomy rather than one imposed on it. But a modelled aggregate is not the same claim as a workforce, and the difference is not a rounding error.

2.2 Why annual spend is the right denominator

The denominator. Labour follows money, not kilometres. A railway employs people in proportion to what it spends per year, because the spending is largely the wage bill plus the materials whose manufacture is itself a wage bill. Route length is a poor denominator: HS2's Phase One is a tunnel-and-viaduct railway through southern England at roughly C\$779 million per route-kilometre, while ALTO's published estimate implies about \$75 million per kilometre — a tenth as much. On a per-kilometre basis ALTO's claim looks modest; on a per-dollar basis it does not. Section 8 tests the per-kilometre objection directly.

3 — HS2 as the Reference Case

Published on both sides. HS2 Ltd publishes audited capital expenditure and a programme workforce figure in the same annual report, and repeats the workforce number in six-monthly reports to Parliament. Four consecutive years give a stable ratio. Sterling is converted at the Bank of Canada rate of 1 GBP = C\$1.8795 (September 1, 2026).

TABLE 1 — HS2: CAPITAL SPEND AND PROGRAMME WORKFORCE

Financial year	Capital spend	In C\$	Workforce	Jobs per C\$1B/yr
2022-23	£6,917.2M	C\$13.00B	28,500	2,190
2023-24	£7,411.6M	C\$13.93B	31,000	2,225
2024-25	£6,870.2M	C\$12.91B	33,000	2,556
2025-26	£6,807.9M	C\$12.80B	30,000	2,345

Workforce for 2023-24 is the figure reported to Parliament in December 2024; the other three are annual-report figures. HS2's own numbers wobble by a thousand or two between sources, which is itself instructive.

Hours confirm the headcount. HS2 reports 71 million hours worked in 2024-25 across 33,000 people — about 2,150 hours each, which is a full-time working year with overtime. The headcount is therefore close to a full-time-equivalent count, not a roster of everyone who touched the project. Converting hours directly gives 2,580 to 2,890 full-time equivalents per C\$1 billion of annual spend, slightly above the headcount ratio. Hours fell to 66 million in 2025-26 as the programme reset.

What the 33,000 covers. The 33,000 spans layers 1 and 2. It includes HS2 Ltd itself, its delivery partners, the tier-one contractors and staff at supply-chain firms working on HS2 contracts — over 3,400 UK businesses, of which more than 2,500 are small and medium enterprises. It does not include layer 3 employment at firms manufacturing off the programme, and it contains no induced component at all. The client-side share is visible: HS2 reported total occupancy of its offices at 3,127 full-time equivalents in March 2023, when the programme workforce was 28,500 — an owner and engineering layer of about 11 per cent.

The reference ratio. HS2 sustains roughly 2,200 to 2,900 people on the programme for every C\$1 billion it spends in a year, across four years, two cost baselines and a programme reset. Call it 2,400 as a central value.

4 — The REM Cross-Check

The Canadian analogue. The Réseau express métropolitain is the closer structural analogue: 67 kilometres of automated light metro in Montréal, developed and owned by CDPQ Infra — the same organisation that leads the Cadence consortium on ALTO — and delivered through two turnkey consortia, NouvLR for engineering, procurement and construction and PMM for rolling stock, systems, operations and maintenance. Construction began in spring 2018 against a construction cost of \$6.3 billion; the total is now given as \$8.34 billion with completion in 2027.

Claim and outturn, side by side. At the start of construction CDPQ Infra announced “34,000 jobs during construction.” A November 2020 update repeated the claim as “over 30,000 direct and indirect jobs” — and, in the same release, reported “more than 2,000 workers and professionals” actually deployed. In June 2021, the peak season, the figure was “more than 3,000 workers and employees across some thirty sites.” The ratio between the announced number and the people on the sites is roughly ten to one.

Implied intensity. Spreading the \$6.3 billion construction cost across 2018-2024 gives an average of about \$0.9 billion a year, and a peak-year profile of 1.3 times average gives roughly \$1.2 billion in 2021. The 3,000 workers of that summer therefore imply between 2,560 and 3,330 people per \$1 billion of annual spend. This is a CRI estimate — CDPQ Infra

does not publish an annual spend profile — and it is deliberately generous: it brackets HS2’s ratio on the high side, and it is the high end that is used against ALTO’s claim below.

5 — ALTO’s Implied Burn Rate

What Alto has published. Alto’s capital estimate is \$60–90 billion, described in Canada’s Moment as a 2024 AACE Class 5 estimate. Construction is to begin in 2029–30 on the Ottawa–Montréal segment, with that segment in service between 2035 and 2038 and the full network between 2041 and 2044. Alto’s own jobs language — repeated by the Cadence fact sheet as “51,000+ well-paying jobs” — describes a ten-year construction period. The plausible build is therefore ten to fourteen years, and the implied burn rate follows directly.

TABLE 2 — IMPLIED ANNUAL SPEND AND ON-PROGRAMME EMPLOYMENT

Capital / duration	Annual spend	At 2,200/C\$B	At 2,400/C\$B	At 3,300/C\$B
\$60B over 14 years	\$4.29B	9,400	10,300	14,100
\$60B over 10 years	\$6.00B	13,200	14,400	19,800
\$75B over 12 years	\$6.25B	13,750	15,000	20,600
\$75B over 10 years	\$7.50B	16,500	18,000	24,750
\$90B over 10 years	\$9.00B	19,800	21,600	29,700

Columns apply the HS2 low, HS2 central and REM high intensities from Sections 3 and 4 to ALTO’s own capital range and schedule.

The comparison in one line. ALTO’s central case burns about \$6.25 billion a year. HS2 has been spending C\$12.8 to C\$13.0 billion a year — roughly twice as much — and peaks at 33,000. Even at the top of ALTO’s capital range, the fastest credible build and the most labour-intensive comparator, the ceiling is under 30,000 people on the programme. The central estimate is 15,000 to 18,000.

The inversion. Read the claim as a workforce and the arithmetic runs the other way: 50,000 people on the programme requires between \$15.2 and \$22.7 billion of spending every year. Over a ten-year build that is a programme of \$152 to \$273 billion, and at the central intensity \$208 billion — between two and three and a half times the capital estimate in Alto’s own report. The employment claim and the cost claim cannot both be true. They are not, however, irreconcilable: they meet at a corridor costing roughly twice what Alto has published, which is where the Initiative’s cost model already puts it. Section 8 works that through.

6 — Breaking Out the 50,000

A reconstruction. The claim becomes arithmetically reachable if it is an all-in modelled figure. Reconstructing it layer by layer shows both that this must be what it is, and what it costs the reader to be told only the total.

6.1 The layers, quantified

Layer 2 (with layer 1 inside it) comes from the reference ratio: 15,000 people at a twelve-year build, 18,000 at Alto’s own ten-year framing. Layer 3 is taken at 0.8 times the on-programme figure, the ratio implied by the standard treatment of first-round supplier employment in transport input-output work. Layer 4 is taken at 36 per cent of the all-in total, the induced share used by the US Council of Economic Advisers in the estimate the Federal Highway

Administration now cites — 13,000 job-years per US\$1 billion, split 64 per cent direct and indirect, 36 per cent induced.

TABLE 3 — RECONSTRUCTING THE CLAIM, BY LAYER

Layer	12-year build (\$6.25B/yr)	10-year build (\$7.50B/yr)	Counted by HS2?
1 — Owner and engineering	600 – 1,650	700 – 2,000	Yes
2 — Site and contractor	13,400 – 14,400	16,000 – 17,300	Yes
3 — Supply chain (indirect)	12,000	14,400	No
4 — Induced	15,200	18,200	No
All-in total	42,200	50,600	—

Layer 1 is shown as a range from a CDPQ-style lean owner (4–6 per cent of the on-programme workforce) to HS2's observed 11 per cent; layers 1 and 2 sum to the on-programme figure. CRI estimates throughout.

What the reconstruction shows. Alto's 50,000 reconciles in the right-hand column — the top of the capital range compressed into the shortest credible build, with supply-chain and induced employment included. The reconstruction gives 50,600 against a published 50,000: within one per cent, on the layer structure Alto itself names in Table A4, by a route that shares no inputs with Alto's model. That agreement is the substantive result. It corroborates what the appendix says and the rest of the report does not — that the figure is an all-in modelled aggregate — and it fixes the composition. On Alto's own capital envelope about 36 per cent of the headline are people working on the railway; nearly two-thirds are supplier employment and wage re-spending. The figure holds as an output of the model that produced it. What this paper questions is its presentation: almost everywhere it appears, an all-in modelled total is given in language a reader is likely to take for a headcount.

6.2 An independent check: the wage bill

Wage-share arithmetic. The same answer arrives by a different route. Direct labour typically accounts for 30 to 40 per cent of heavy civil construction expenditure. Applied to \$75 billion at a fully loaded cost of \$100,000 to \$140,000 per worker-year, and spread over ten to twelve years, that supports between 13,400 and 30,000 people, centred near 19,000. Two methods that share no inputs — observed outturn on two comparator projects, and the wage share of construction spending — bracket the same range: the on-programme workforce ALTO's budget can support is roughly 15,000 to 22,000.

6.3 Which family does the number belong to?

Expressing every project on one basis — job-years per million dollars of spending — settles the question of what kind of number Alto has published.

TABLE 4 — JOB-YEARS PER \$1 MILLION OF SPENDING

Project / source	Basis	Job-years per C\$1M
HS2 (2024–25)	People on the programme, counted	2.6
REM (2021 peak)	Workers on site, counted	2.6 – 3.3
ALTO (implied by 50,000)	Modelled: direct, supply chain, induced	6.7
California HSR (FY2024–25)	Modelled: direct, indirect, induced	6.0
US CEA / FHWA	Modelled: direct, indirect, induced	9.4

Project / source	Basis	Job-years per C\$1M
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California figures converted at 1 USD = C\$1.3896 (Bank of Canada, September 1, 2026): 121,960 job-years against US\$14.6 billion of programme spend, and 13,200 job-years against US\$1.57 billion in FY2024–25.

Placement. ALTO’s implied 6.7 sits with the modelled figures, at more than twice the rate at which HS2 and the REM actually put people to work — and Appendix A.2 confirms the placement rather than leaving it to inference. California is the instructive case because it publishes both numbers: 13,200 job-years modelled in FY2024–25, against an average of about 1,400 workers dispatched daily to its construction sites. The gap between the modelled figure and the site count is roughly nine to one. That is the ordinary difference between an input-output total and a headcount, and it is why the basis of such a figure matters whenever the figure is quoted on its own.

6.4 Two things the tables give away

Upper, not central. Tables 7 and A4 head their value column “upper estimate, \$2024 CAD.” One appendix earlier, the \$24.5 billion GDP figure is labelled a central estimate and described as the central case drawn from a range of sensitivity tests. A range therefore exists behind the 50,000 as well, and it has not been published. What has been published is its top. The Initiative’s earlier work on this report recorded the same pattern twice: the ranges in the commissioned Avisio and CPCS studies — \$14.8 to \$41.0 billion and \$177 million to \$3.9 billion respectively — appear in those studies but are not reproduced in the public summaries. The employment figure follows the same pattern.

The comparator’s number has no source. Table 2 credits “high-frequency” rail with 44,000 construction jobs against a capital range of \$45–75 billion. Neither figure carries a footnote, a source or a method anywhere in the document. The table that compares the two options therefore gives an employment figure and a capital range for the alternative without indicating where either comes from. At the midpoints the implied intensity is about 733 jobs per billion for high-frequency rail against 667 for high-speed rail, which is internally consistent. The point is not that the figures look wrong; it is that a reader has no way to check them.

7 — The Engineering Layer: Lean by Design

HS2’s client organisation. The owner and engineering layer deserves separate treatment, because ALTO’s delivery model is designed to make it small. HS2 built a large client organisation: 3,127 full-time equivalents in its offices in March 2023, about 11 per cent of the programme workforce, carrying design assurance, consents, land, environment and programme management in-house alongside its delivery partners.

The CDPQ model. CDPQ Infra describes itself as acting “as a principal owner by taking on responsibility for the planning, financing, execution and operation phases,” and distinguishes its model from conventional public-private partnerships “because of its involvement at the design and development phase.” In practice, on the REM, that involvement was exercised through two consortia holding the work: NouvLR (AtkinsRéalis, Dragados, Aecon, Pomerleau, EBC) for engineering, procurement and construction, and PMM (Alstom with AtkinsRéalis O&M) for rolling stock, systems and a thirty-year operating term. The owner sets requirements and transfers execution; it does not staff an engineering department to

match. CDPQ Infra has never published its own headcount, and neither Alto nor Cadence has published the size of the co-development team.

The co-development phase. Cadence — CDPQ Infra, AtkinsRéalis, Keolis Canada, SYSTRA Canada, SNCF Voyageurs and Air Canada — is working with Alto through a six-year co-development phase funded at \$3.9 billion. That envelope is not an engineering budget: it also covers land acquisition, environmental assessment, Indigenous and community consultation, surveys and enabling work. If professional fees are 40 to 60 per cent of it, the phase supports roughly 1,200 to 2,200 full-time equivalents a year at \$180,000 to \$220,000 per fully loaded professional year. That is the engineering population Canadians will actually see between now and 2030, and it is a CRI estimate only because no figure has been published.

What follows. Two consequences follow. First, at 4 to 6 per cent of the on-programme workforce rather than HS2's 11 per cent, the owner and engineering layer during construction is, on the Initiative's estimate, on the order of 600 to 1,100 people — about two per cent of the headline claim. Second, a lean owner concentrates design in the consortium partners, and three of the six are French or global engineering houses. Design and systems work of this kind can be executed outside Canada — in Paris, or in AtkinsRéalis's global delivery centres — while an input-output model of the type used to generate the 50,000 assumes the spending lands in Canada. Canada's Moment does address this, in a sidebar: Alto will prioritise Canadian steel, aluminium and wood and align with the federal Buy Canadian policy. That is a procurement aspiration, not a modelling parameter. A 2019 Statistics Canada input-output run requires a specific assumption about import leakage, and that assumption is not disclosed. CDPQ Infra's own answer on the REM was an outturn figure — 89 per cent of construction expenses incurred in Québec — and it is a good answer. Alto has made no equivalent commitment.

8 — Objections

The per-kilometre objection. HS2 carries 147 workers per route-kilometre against ALTO's implied 50, and ALTO builds four times the route length. On that basis 50,000 looks conservative. The answer is that labour follows spend, not distance — and that the \$75 million per kilometre implied by Alto's estimate is itself the contested input. Applying the Initiative's ECI/CFI cost model, which predicts about \$142 million per kilometre for this corridor, gives a \$142 billion programme burning \$11.8 billion a year and supporting 26,000 to 39,000 people on the programme. The employment claim is quietly consistent with a railway costing roughly twice what Alto has published.

Scope. HS2's 33,000 spans the client, the contractors and supply-chain firms working on the programme, but excludes off-programme manufacturing; it is the right comparator for people working on the railway and the wrong one for a modelled total. Table A4 makes that asymmetry explicit rather than arguable, since Alto there names the three effects its own figure contains. Section 6 handles it by rebuilding the modelled total from the counted base, rather than by setting the two headline numbers against each other directly.

Price base. HS2's spend is nominal cash; ALTO's \$60-90 billion is stated in 2024 dollars. A build running from 2030 to 2044 will report higher nominal annual spend than the figures used here, and a nominal-to-nominal comparison would narrow the gap somewhat. It would not close it: escalation raises the dollars and the wages together, leaving real employment per real dollar unchanged.

The model is not the problem. Publishing an input-output employment estimate is ordinary practice, the 2019 Statistics Canada model is a reasonable instrument for it, and Appendix A.2 states its limitations more frankly than most such appendices do. None of that is the target of this paper. The objection is narrower, and it is about distribution rather than method: a modelled aggregate is defined in one appendix and then repeated — without its unit, its layers, its range or its model — in the executive summary, in the comparison table, on the website, in two federal announcements and throughout the press, in a sentence a reader will hear as a headcount. The appendix does not reach the reader. The number does.

9 — Findings

1. **The definition appears once.** Alto defines the figure once, in Section 4.3.3 and Tables 7 and A4: full-time equivalents, across direct, supply chain and induced effects, over a ten-year construction period, from the 2019 Statistics Canada input-output model. That definition appears nowhere else in the report and nowhere at all outside it. The executive summary, Table 2, the benefits page, the February 2025 and December 2025 federal announcements and all subsequent reporting carry the number without it.
2. **One ambiguity survives, and it is decisive.** Full-time equivalent jobs over a ten-year period can mean 50,000 sustained annually or 50,000 job-years in total. The readings differ tenfold. Only the annual reading is arithmetically available: the cumulative reading implies 0.67 job-years per \$1 million of spending, against 2.6 at HS2 and 2.6 to 3.3 at the REM.
3. **Upper, not central.** Both tables label the value an upper estimate, one appendix away from a GDP figure expressly labelled central and drawn from a stated range of sensitivity tests. A range behind the 50,000 therefore exists and has not been published. It is the third such range the Initiative has found in this report that appears in source material but not in the public summaries.
4. **Two versions.** Over 51,000 jobs and up to \$35 billion of annual GDP (February 2025) became 50,000 jobs and \$24.5 billion (August 2026), with no reconciliation. The \$35 billion pairing was still being published by Transport Canada in December 2025, eight months before the report halved it.
5. **The burn rate.** At the published capital range of \$60-90 billion over ten to fourteen years, ALTO's implied annual spend is \$4.3 to \$9.0 billion — roughly half HS2's current audited rate of about C\$12.9 billion.
6. **The employment level.** Applying the observed labour intensity of HS2 and the REM to ALTO's published capital range and schedule gives, on the Initiative's calculation, 13,000 to 21,000 people on the programme in the central cases, with a ceiling near 30,000 at the top of the capital range on the fastest build.
7. **The reconstruction confirms the composition.** Rebuilt by the Initiative from counted outturn and standard multiplier ratios, the layers sum to 50,600 on a ten-year build at the top of the capital range: roughly 18,000 on the programme, 14,000 in supplier firms, 18,000 induced. That is within one per cent of Alto's published figure, on Alto's own layer structure, by a method sharing no inputs with Alto's model. About 36 per cent of the headline are people working on the railway.
8. **The inversion, and where the claims meet.** Read as a workforce rather than as a model output, 50,000 requires \$15.2 to \$22.7 billion a year — a programme of \$152 to \$273 billion. The jobs claim and the cost claim are not consistent at the published cost.

They are consistent at about twice it: at the Initiative's ECI/CFI central prediction of \$142 million per kilometre, a \$142 billion corridor burning \$11.8 billion a year brings the employment figure within reach on counted evidence rather than modelled. On the arithmetic set out in this paper, Alto's employment claim implies a more expensive railway than the one Alto has costed.

9. **The engineering layer.** Under CDPQ Infra's lean owner model the construction-phase owner and engineering layer is on the order of 600 to 1,100 people — about two per cent of the headline — with 1,200 to 2,200 professionals during the six-year co-development phase.
10. **Domestic content.** Three of Cadence's six members are global or French engineering and operating houses. The report commits to prioritising Canadian steel, aluminium and wood, but the import-leakage assumption the input-output run actually required is not disclosed, and no share of design and systems job-years is committed to Canada.
11. **The comparator figures are unsourced.** The 44,000 construction jobs and the \$45–75 billion capital range attributed to high-frequency rail in Table 2 carry no footnote, source or method anywhere in the document.

A disclosure precedent already exists. Employment modelling output for this corridor has been released before, and the record of how it was handled is instructive. The Joint Project Office's High Frequency Rail Business Case Update of December 2021 gives construction employment as 71,000 to 96,000 annual equivalent jobs — a third unit of measure again, and one stated plainly. The Canada Infrastructure Bank released that document in full in November 2025. The same document, released as Annexe A to access request 22-2207, severs the identical sentence: "an estimated ___ annual equivalent jobs could be created," with the grammar left intact around the missing figure and no exemption provision marked against it. The Initiative holds both versions. So the same employment figure for the same corridor has been treated as releasable by one federal body and withheld by another, which is worth recording before any claim of commercial sensitivity is made over the input-output outputs behind the 50,000.

Recommendation. Alto holds every answer already. For the 50,000 it should publish: whether the figure is an annual average or a cumulative count of full-time-equivalent years; the split across the three effects Table A4 names; the range from which the upper estimate was drawn, and its central value; the annual profile across the ten-year period; the import-leakage or domestic-content assumption applied in the input-output run; the capital and operating expenditure profile used as the model's input; and the source of the 44,000 attributed to high-frequency rail in Table 2. Each is either a routine output of the model that produced the figure or a footnote that was omitted. None would cost Alto anything it does not already hold. And carrying the Appendix A.2 definition alongside the number, wherever the number appears, would cost less than that.

Sources & notes

HS2 Ltd, Annual Report and Accounts 2022–2023, 2023–2024, 2024–2025 and 2025–2026 (capital expenditure, workforce, hours worked, office occupancy). HS2 six-monthly reports to Parliament, December 2024, July 2025 and May 2026 (jobs supported, supply-chain businesses, spend to date, cost range and schedule). Alto, Canada's Moment: The Economic Opportunity of High-Speed Rail, August 2026 — Section 4.3.3 and Tables 7 and A4 (50,000 full-time equivalent jobs across direct, supply chain and induced effects, ten-year construction period, upper estimate; \$86 billion value added; \$23 billion tax revenue); Appendix A.2 methodology box (2019 Statistics Canada input-output model; static; excluded from the benefit-cost ratio; no account taken of labour shortages or capacity limits); Table A2 (\$24.5 billion GDP, central estimate, \$2019); Table 2 (44,000 construction jobs and \$45–75 billion capital for "high-frequency" rail, unsourced); Section 4.3.3 sidebar (Buy Canadian materials commitment); and altotrain.ca. Prime Minister of Canada, news release, February 19, 2025 ("over 51,000 good-paying jobs"; "up to \$35

billion annually”; \$3.9 billion over six years). Transport Canada, news release, December 12, 2025, naming Ottawa-Montréal as the first segment (51,000 jobs during construction; up to \$35 billion in GDP). CDPQ Infra, REM fact sheet, the Cadence project page and “An innovative model”; REM news releases of April 2018, November 2020 and June 2021 (34,000 jobs; over 30,000 direct and indirect jobs; more than 2,000 and then more than 3,000 workers on site); Railway Technology on the NouvLR and PMM contracts. California High-Speed Rail Authority, FY2023-24 and FY2024-25 economic impact analyses (121,960 and 13,200 job-years; programme spend) and the March 2024 release on cumulative construction jobs and daily dispatch. US Federal Highway Administration, Employment Impacts of Highway Infrastructure Investment (13,000 job-years per US\$1 billion; 64/36 direct-and-indirect to induced split). Exchange rates: Bank of Canada daily rates, September 1, 2026 — 1 GBP = C\$1.8795, 1 USD = C\$1.3896. Route length for HS2 Phase One taken as 225 km. Figures described as CRI estimates are the Initiative’s own calculations from the sources above and are identified as such in the text; ALTO’s per-kilometre cost comparison uses the Initiative’s ECI/CFI cost model. Joint Project Office (VIA Rail Canada and the Canada Infrastructure Bank), High Frequency Rail Project: Business Case Update, V.002, 10 December 2021 — construction employment at 71,000 to 96,000 annual equivalent jobs, executive summary; released in full by the Canada Infrastructure Bank under the Access to Information Act, November 2025, and severed at that sentence in the release issued as Annexe A to access request 22-2207 (148 pp.), with no exemption provision marked. Both versions held by the Initiative. The Initiative’s findings on dropped ranges elsewhere in the same report are set out in Two Point Two Trillion (July 2026).