

Two Parameters, None of the Conditions

ALTO's economic appraisal takes its discount rate and its value of time from the Metrolinx Business Case Guidance, naming that document as its authority for both. The same Guidance attaches mandatory sensitivity testing, range reporting, an optimism-bias uplift and a published benefit-cost ratio to the parameters it specifies. None of them appears in Canada's Moment.

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3.5%

The Metrolinx discount rate adopted at Appendix A, footnote 65

64%

The optimism-bias uplift the same Guidance applies to capital costs at ALTO's level of design

1 — The claim under examination

Canada's Moment: The Economic Opportunity of High-Speed Rail, published by ALTO in August 2026, reports \$49.5 billion in discounted direct welfare benefits against a capital cost of \$60–90 billion.¹ The benefits are discounted at a single rate of 3.5 per cent real over a sixty-year appraisal period. The report gives no sensitivity analysis on that rate, publishes no range around the benefit figure, and declines at page 62 to state a benefit-cost ratio on the grounds that the AACE Class 5 cost estimate is not yet decision-grade.

The source of the rate. Appendix A states that the direct impacts are “discounted at 3.5% over a 60–year operation period, presented in 2024 dollars, and measured incrementally against a no-investment baseline, following industry best practices.” The footnote to that sentence — footnote 65 — cites one document and one only: the *Metrolinx Business Case Manual Volume 2: Guidance*. Guidance from the Ministère des Transports du Québec appears separately at footnote 66, attached to the value of time rather than to the rate. The Metrolinx manual is therefore the sole published authority for ALTO's appraisal method.

And it is invoked twice. Appendix A also explains that although the underlying ridership and revenue modelling distinguishes business from non-business travel, the time-saving benefits were nonetheless calculated on aggregate using a single value of time — an approach the report defends on the ground that it “is consistent with Metrolinx methodology, which applies a standardized parameter across all trips rather than disaggregating by trip purpose.” The disaggregation existed and was set aside, with the Metrolinx manual named as the warrant.

The finding is not that 3.5 per cent is the wrong rate. The rate is defensible: it is the United Kingdom Green Book rate, it is used by Metrolinx, and it has support in the appraisal literature for long-horizon public investment. The finding is that the cited document specifies that rate as one element of a mandatory reporting package, and Canada's Moment adopts the element while omitting the package. A reader of the ALTO report cannot tell that this has happened, because the choice is never presented as a choice.

2 — The cited document

The *Business Case Manual Volume 2: Guidance* is a 222-page appraisal manual published by Metrolinx in August 2021.² Metrolinx is an agency of the Government of Ontario with a mandate covering the Greater Toronto and Hamilton Area. The Guidance sets out the analytical methods and parameters used to build business cases for that network.

2.1 Currency

The 2021 edition is the current edition. As of 21 August 2026, the Business Case Guidance link on the Metrolinx resources page resolves to the August 2021 file, whose asset version token corresponds to 15 September 2022. No Volume 2 revision has been issued.³

The Guidance nonetheless anticipated its own replacement. Page 4 states that an updated version “will be prepared” in 2022 “with revised parameters and values,” and sets a refinement cycle of at most five years aligned to the Canadian census. Neither has occurred. Page 4 also scopes mandatory application to “business cases completed between 2021–2022,” while the note beneath the parameter table extends the values to all business cases completed beyond 2021 “until the next Guidance update.” Since no update has issued, the second reading governs and the document remains live — but both sentences are recorded here so that the point is not overstated.

This cuts in more than one direction and should be read that way. A five-year-old parameter set is a limitation of the Metrolinx document, not a fault of ALTO’s. It is noted because a reader entitled to assess the provenance of a federal appraisal input should know that the input comes from a provincial manual that its own publisher scheduled for revision four years ago.

3 — The parameters are specified as a set

Table 5.8 of the Guidance, headed “Economic Parameters,” is where the 3.5 per cent rate appears. Its preamble is explicit about the status of everything in it:

The standard parameters that should be used in the Economic Case are described in Table 5.8. Any variation to these parameters must be explicitly agreed upon during business case development, with a clear justification for the variation.

The table below sets the parameters as specified against their treatment in Canada’s Moment. Metrolinx guidance does not bind a federal Crown corporation, and nothing here asserts that it does. The comparison is offered because ALTO cited this document, and a citation carries the terms of the thing cited.

Parameter	Metrolinx Guidance, Table 5.8	Canada’s Moment
Social discount rate	3.5% real	3.5% real — adopted
Evaluation period	5 to 60 years, by lifecycle and impacts	60 years — the maximum
Growth cap	Growth in all evaluation inputs, user benefits named expressly, capped 30 years after the base year “to reflect uncertainty”	Applied selectively: accident rates capped at 20 years, vehicle emission factors to 2050. No cap stated on travel-time benefits, the largest line
Dollar value	All values discounted and escalated to one common year fixed at the outset of the study	Three price bases: 2024 for the appraisal and capital cost, 2019 for the macroeconomic result
Unit of account	Factor cost. User impacts divided by 1.13 for indirect tax, applied to the present value of each impact	Not stated

Parameter	Metrolinx Guidance, Table 5.8	Canada's Moment
Value of time	\$18.79 (2021 dollars), single blended value across modes and trip purposes	\$22.32, single blended value, zero real growth, expressly justified as “consistent with Metrolinx methodology”
Value of time growth	0% base case, with 0.75% real required as a sensitivity test	0% — no sensitivity run

On the value of time. Escalating the Metrolinx figure for consumer price inflation between 2021 and 2024 gives approximately \$21.40, within a few per cent of ALTO's \$22.32. The Initiative does not assert that ALTO derived its figure that way, and ALTO does not say. What ALTO does say is that its single blended value follows Metrolinx methodology. So the corridor is being appraised with an approach calibrated to regional transit trips in the Greater Toronto and Hamilton Area, applied without segmentation to intercity travel between Toronto and Québec City — and applied in preference to a trip-purpose split the ridership model had already produced. The direction of any resulting error is not obvious; intercity business travel is conventionally valued above commuting. The point is that a simplification was made, that Metrolinx was named to justify it, and that Metrolinx's accompanying requirement to test the value of time at 0.75 per cent real growth was not carried across with it.

4 — The sensitivity testing the Guidance requires

Chapter 5 scales its requirements by project size. Projects above \$500 million are “large scale.” ALTO's capital estimate is \$60–90 billion, some two orders of magnitude above that threshold. For projects at this scale the Guidance requires the following, none of which is discretionary.

Requirement	Guidance provision	In Canada's Moment
Discount rate sensitivity	Table 5.3: economic discount rate tested at 2.5%	Not performed
Value of time sensitivity	Table 5.3: value of time growth tested at 0.75% real	Not performed
Monte Carlo analysis	Table 5.2: all costs and modelling assumptions run through Monte Carlo and reported as a range at 80% confidence	Not performed
Probability of net benefit	Page 88: “the probability that the project has positive net benefits (BCR >1) should be reported”	No benefit-cost ratio published
Key performance indicators	Table 5.32: conventional and expanded NPV, BCR, capital utilisation, ROI and IRR	None published
Land use scenarios	Low, medium and high land use scenarios modelled, with ridership growth rates for each	Ridership range shown; land use scenarios not stated

The direction of the prescribed test matters, and should be stated plainly. The only discount-rate sensitivity the Guidance requires is 2.5 per cent — lower than the base case, and therefore favourable to benefits. Nothing in the Metrolinx document supports an argument that 3.5 per cent is too low. What the document supports is the narrower and firmer proposition that its author expects the rate to be tested and the test to be reported.

4.1 The report concedes a range it does not publish

Tables 5 and A1, which carry the entire \$49.5 billion direct-benefit case, are both headed “*MONETIZED VALUE ESTIMATES (upper estimate, \$2024 CAD)*.” Every narrative figure is prefixed “up to”: up to 24

million riders, up to 9.3 billion hours, up to 400 fatalities avoided, up to 39.1 million tonnes. An upper estimate is one bound of a range. The other bound is nowhere in the document.

The claim built on top of it goes further. Page 3 states that “the proposed benefits hold across a wide range of scenarios,” and the conclusion at page 69 that the evidence supports confidence that the benefits “hold across a wide range of plausible scenarios.” Robustness across scenarios is precisely what a sensitivity analysis demonstrates, and precisely what the Guidance requires be reported at this project scale. The scenarios may well have been run. Their results are not shown.

The same asymmetry appears one appendix later. Appendix B describes multiple scenarios and sensitivity tests behind the ridership forecast, and Figure 15 publishes the resulting band. Appendix A.2 reports nearly one hundred computable general equilibrium simulations behind the \$24.5 billion GDP figure, varying model closures and labour-market regimes. Between the tested input and the tested output sits the \$49.5 billion appraisal result — the largest single number in the report — presented as one column of point estimates.

4.2 The Guidance demonstrates the method on a real project

This is not a theoretical requirement. Table 5.7 of the Guidance works the method through on the Yonge North Subway Extension, treated as a preliminary design business case. A point estimate of \$5.65 billion including contingency becomes a Monte Carlo mean of \$6.5 billion, reported as \$6.16–\$6.84 billion with 80 per cent confidence.⁴ A reader is shown the central value, the range, and the confidence attached to it. On a project roughly one per cent of ALTO’s scale, the manual ALTO cites publishes more about uncertainty than ALTO does.

5 — Optimism bias

The Guidance requires an optimism-bias uplift on capital costs in the economic case, applied over and above contingency, scaled to the level of design completion.

Level of design	Business case stage	Uplift	Standard deviation
0–10%	Initial Business Case	64%	55%
11–20%	Preliminary Design	18%	15%
21–30%	Preliminary Design	9%	8%
31–100%	Full Business Case	4%	3%

An AACE Class 5 estimate corresponds to the lowest band of design maturity — the Initial Business Case row. Applied as the Guidance directs, a \$60–90 billion capital cost enters the economic case at roughly \$98–148 billion before any comparison with benefits is attempted. Canada’s Moment applies no such uplift and does not mention the concept.

The Guidance is candid about why the uplift exists. It grounds the adjustment in Flyvbjerg’s work on transport megaprojects, citing by name the finding that 90 per cent of rail projects in a 258-project international sample were undercosted, at an average overrun of 45 per cent.⁵ Metrolinx follows United Kingdom Department for Transport practice on the point. The reference-class reasoning that the Initiative has applied to ALTO in earlier work is, in other words, already embedded in the appraisal manual ALTO chose to cite.

6 — Immaturity is the trigger for testing, not an exemption from it

Page 62 of Canada's Moment gives the immaturity of the Class 5 cost estimate as the reason no benefit-cost ratio is published. Under the framework ALTO cites, that reasoning runs backwards.

The Guidance sets out what the Economic Case must contain at each point in the project lifecycle. At the Initial Business Case stage — the earliest stage, corresponding to nought to ten per cent design completion — the requirement is stated in one line:

Conduct sensitivity testing to understand the key performance drivers and level of uncertainty for each option.

Early-stage uncertainty is the condition that makes sensitivity testing and range reporting necessary. It is not a licence to publish point estimates and withhold the ratio. Canada's Moment inverts the relationship: it invokes immaturity on the cost side as grounds for silence, while publishing single-point benefit figures on the other side of the same ledger.

And a business case for this corridor has already produced one. In December 2021 the Joint Project Office — a body formed by VIA Rail Canada and the Canada Infrastructure Bank — completed a Business Case Update for High Frequency Rail, the slower and cheaper predecessor to ALTO over the same corridor, at a comparable point in its development. It published an indicative benefit-cost ratio of approximately 0.13, rising to approximately 0.4 on an expanded basis that counts a resource correction and agglomeration benefits, together with a thirty-year net present value of –\$21.1 billion and a thirty-year public subsidy of \$37.1 to \$42.2 billion under the delivery models assessed. Its economic appraisal parameters — the social discount rate, the value of time and the value of external impacts — were taken, in its own words, from a combination of Metrolinx and Ministère des Transports du Québec guidance: the same two sources Canada's Moment cites five years later. Immaturity did not prevent the production of a ratio then, on a cost estimate roughly a third the size.⁷

The comparison has limits and they are stated here. High Frequency Rail was a different project — lower speed, \$27.71 billion in 2020 prices rather than \$60–90 billion, assessed over thirty years rather than sixty — and the Joint Project Office described its own results as preliminary. None of its figures transfers to ALTO by arithmetic, and this brief does not offer them as an estimate of ALTO's ratio. What the document establishes is narrower: a benefit-cost ratio can be produced for a project on this corridor at this stage of design, because one was, and it was published alongside the funding ledger rather than instead of it.

There is a further tell in Appendix A.2. Explaining why the input-output results are excluded from the welfare account, the report states that they “are therefore not included in the benefit-cost ratio.” The definite article is doing unacknowledged work. Page 62 says a meaningful ratio cannot yet be produced; page 80 refers to the benefit-cost ratio as an existing object with a settled boundary about what does and does not enter it. Only one of those two statements can be a complete account.

7 — What the Guidance says it is for

Two of the Guidance's stated business case principles bear directly on the omissions above.

- **Transparent.** “Business cases should include sufficient detail to explain the basis of the business case evaluation.”
- **Proportionality.** “The greater the cost of an investment, the greater level of detail and certainty is required for benefits and costs,” with the specific instruction that “time savings are typically the largest element in the Economic Case and these should be more robustly scrutinized than auto accident savings.”

Travel time is the largest single benefit line in Canada's Moment. It is presented as one undiscounted physical quantity beside one discounted monetary value, with no range, no sensitivity and no reconciliation between them.

8 — Two questions that would settle the matter

Both are answerable from work ALTO has already done, and neither requires the release of a model.

- Was the direct-effects cost-benefit analysis run at any discount rate other than 3.5 per cent, and if so, what were the results? A negative answer is itself informative. An affirmative answer is the sensitivity table the report does not contain.
- Which provisions of the cited guidance were applied, and which were departed from? The Metrolinx document requires variations from its parameter set to be agreed and clearly noted. Canada's Moment notes none.

9 — Limits of this brief

Stated so that they are not left for others to find.

- Metrolinx guidance has no binding force on a federal Crown corporation. The argument here is about the coherence of a citation, not about jurisdiction.
- The Ministère des Transports du Québec guidance cited at footnote 66 has not been reviewed by the Initiative, which takes no position on what it requires. It is cited in Canada's Moment for the value of time, not for the discount rate or the appraisal method.
- Canada's Moment does apply conservatism in places, and this should be credited: accident-rate reductions are capped after twenty years "to avoid overstating long-run gains," and automobile emission factors are assumed to fall to 2050, which the report notes constrains the emissions benefit. These are the two smallest monetised lines. No equivalent constraint is disclosed for travel time, which is 78 per cent of the total.
- The Metrolinx parameter set is dated, and its publisher has not delivered the revision it promised for 2022. That is a limitation of the source document.
- The prescribed discount-rate sensitivity of 2.5 per cent is lower than the base case. This brief does not argue that ALTO's rate is too low.
- A further choice runs in ALTO's favour and is credited here. The 3.5 per cent rate is applied flat across the full sixty years. HM Treasury, whose Social Time Preference Rate this figure matches, steps its rate down to 3.0 per cent for years 31 to 75. Applying that schedule instead would have raised ALTO's discounted benefit total by roughly five per cent. The omissions documented in this brief do not all run one way; the finding is the absence of disclosure, not a direction of bias.⁸
- Canada's Moment is a public communications document rather than a formal business case submission. The Initiative accepts that a submission to Cabinet in 2029 may contain material this document does not. The claims examined here are the claims ALTO has chosen to place in public, and they have been reported as findings.

10 — Conclusion

ALTO names an appraisal manual twice — once for its discount rate and once to justify a single blended value of time — and leaves behind the sensitivity testing, the range reporting, the optimism-bias uplift and the benefit-cost reporting that the same manual attaches to those parameters at this project's scale. The result is a column of figures labelled an upper estimate whose lower estimate is never shown, resting on

parameters presented as facts rather than as selections, in a report that declines to divide that column by the cost while describing the benefits as holding across a wide range of scenarios.

Every document relied on here is public. Nothing in this brief requires access to ALTO's models, cooperation from its staff, or a view on what the correct social discount rate for a national railway ought to be.

Sources & notes

- 1 *ALTO, Canada's Moment: The Economic Opportunity of High-Speed Rail*, August 2026, 83 pp. Discount rate, appraisal period and price base at p. 73 (methodology box), sourced at footnote 65 to the *Metrolinx Business Case Manual Volume 2: Guidance*; value of time and the single-parameter justification at pp. 72–73, with *Ministère des Transports du Québec* guidance at footnote 66. Direct-effects tables at pp. 60 and 72, both headed “upper estimate, \$2024 CAD.” Benefit-cost ratio box at p. 62; reference to “the benefit-cost ratio” at p. 80. Non-additivity of the three models at p. 9; combined presentation at p. 3. CGE simulation programme and price base at pp. 75 and 78. Scenario-robustness claims at pp. 3 and 69. Capital cost and AACE Class 5 at pp. 5 and 65. Table 2 comparator at p. 28. Operating-surplus figures at p. 67.
- 2 *Metrolinx, Business Case Manual Volume 2: Guidance*, August 2021, 222 pp. Table 5.8 at p. 98; sensitivity requirements and Tables 5.1–5.3 at pp. 87–89; optimism bias and Tables 5.4–5.6 at pp. 90–94; Table 5.7 worked example at p. 97; Economic Case lifecycle requirements at p. 102; CBA adjustments and unit of account at pp. 166–167; Table 5.32 key performance indicators at p. 164; business case principles at pp. 11 and 13; guidance development and revision cycle at p. 4.
- 3 Metrolinx, “Business Cases — Resources,” [metrolinx.com](https://www.metrolinx.com), accessed 21 August 2026. The Business Case Guidance link resolves to *Metrolinx-Business-Case-Guidance-Volume-2.pdf* under asset version v1663237565, a timestamp corresponding to 15 September 2022.
- 4 *Metrolinx Guidance*, Table 5.7 and Figure 5.1, p. 97. The example is drawn from the 2013 Yonge North Subway Extension business case and is presented in the Guidance as illustrative only.
- 5 *Metrolinx Guidance*, p. 91, citing B. Flyvbjerg, *Procedures for Dealing with Optimism Bias in Transport Planning* (UK Department for Transport, 2004), and M. Semtyaki, *Cost Overruns on Infrastructure Projects: Patterns, Causes and Cures* (IMFG Perspectives, 2015).
- 6 Consumer price index escalation 2021–2024 from Statistics Canada Table 18-10-0004-01. The comparison with ALTO's value of time is arithmetic, not an attribution of method.
- 7 Joint Project Office (VIA Rail Canada and the Canada Infrastructure Bank), *High Frequency Rail Project: Business Case Update*, V.002, 10 December 2021, 150 pp., released by the Canada Infrastructure Bank under the Access to Information Act, November 2025. Capital cost breakdown and thirty-year revenue at p. 7; benefit-cost ratio, net present value and the Table 4 subsidy comparison at p. 8; economic appraisal parameters sourced to Metrolinx and MTQ guidance at p. 40; other impacts at Table 12; impact results and both ratios at Table 14, p. 43; net present value assumptions, including a 2.5 per cent discount rate sourced to the ten-year average 30-year Government of Canada benchmark bond, at Figure 38, p. 85. The same document released as Annex A to access request 22-2207 withholds section 9.7 in full, truncates the capital cost and revenue sentences mid-clause, and withholds the subsection headings of the Economic Case within its table of contents, with no exemption provisions marked.
- 8 HM Treasury, *Review of discounting in the Green Book: Terms of Reference*, 16 December 2025, setting out the derivation of the 3.5 per cent Social Time Preference Rate and the declining schedule of 3.0 per cent for years 31 to 75 and 2.5 per cent thereafter; and Green Book supplementary guidance: discounting, updated 5 February 2026. The five per cent figure is the Initiative's own arithmetic on a level benefit stream running sixty years from year 16, and is indicative of magnitude rather than a recalculation of ALTO's result.