

A Comprehensive Business Case Framework for Evaluating Transit Projects  
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## ABSTRACT

Metrolinx is developing an evidence-based evaluation framework for business cases to inform investment decisions for transit projects. The Business Case Framework ensures that effective evaluation of options is conducted as a project advances through planning, design, delivery, and operation. The business case supports a systematic process of identifying, quantifying, and comparing expected benefits and costs of a project in a consistent and clear manner over its lifecycle. The work combines strategic and financial perspectives with the rigour of economic cost benefit analysis, while also incorporating operational issues and challenges. The Metrolinx Business Case Framework considers several important questions:

- What is the project about? Why is it being considered? How will it be realized?
- Is the project supported by a robust case for change that fits with business objectives and wider public policy objectives?
- Does the project show sufficient value for money in terms of economic, environmental and social benefits to proceed?
- Is the project financially affordable and what are the financial implications? What sources of funding will be used?
- Is the project achievable, and what are the engineering, technology, and operational issues and challenges?
- What are the deliverability and operational implications?

Metrolinx’s Business Case Framework helps ensure that public projects provide good value for money, respond to the strategic goals set by elected governments, are well justified by evidence and analysis, and are capable of being delivered effectively.

## Introduction

Metrolinx is an agency of the Government of Ontario with the goal of transforming the way the Greater Toronto and Hamilton region moves by championing long-term transportation and transit solutions that enhance prosperity, sustainability, and quality of life. Guided by an award-winning Regional Transportation Plan, Metrolinx is implementing one of the largest transit infrastructure programs in Canadian history.

“[The Province commits to] grow the economy and create jobs through investment decisions that are long-term, strategic, evidence-based and fiscally responsible.”

## Problem Formulation

Metrolinx recognized a need to align investments with transit’s fundamental role in the economy and society. This requires an integrated, coherent framework that can serve the long-term planning that is inherent in transit investments. The framework should support completion of a project on time and on budget, respond to the strategic goals set by the Metrolinx, provide robust evidence and analysis, and also look at effective delivery. The framework needed to:

- allow an understanding of the complete project in a systematic, step-by-step manner
- be flexible and responsive to requirements of different project types
- allow for objective comparisons of project proposals and options
- inform program administrators, funding partners and other interested parties of why the project should be undertaken
- estimate financial value for money and economic impact

## Review of International Best Practices

A review of international best practices was undertaken. The business case approach followed in the United Kingdom, Australia, and New Zealand were found to be relevant for the Canadian context. This approach provides a comprehensive structure and looks through a number of lenses for assessing transit’s costs and

benefits. The methods used in this approach were also well documented and the ways that agencies use the information for planning, prioritizing, funding, and stakeholder support were well described.

## **Approach and Results**

The sections below discuss the objective and scope of this work, considerations for the framework development, and framework itself.

### **i. Key Objectives and Scope**

The Business Case Framework should generate and document evidence to support projects throughout their lifecycle. The key requirement was that reporting is standardized to ensure consistent answers to common and important questions from decision makers, stakeholders, and the public:

- What is the project about? Why is it being considered? How will it be realized? How well does it perform against strategic objectives?
- Is the project supported by a robust case for change that fits with business objectives and wider public-policy objectives?
- Does the project show sufficient value for money in terms of economic, environmental, and social benefits to proceed? What is the whole lifecycle cost of the project? How much value are we creating?
- Is the project financially affordable and what are the financial implications? What sources of funding will be used?
- Is the project achievable, and what are the engineering, technology, and operational issues and challenges? How will the project be delivered and operated? What are the deliverability and operational implications?

### **ii. Considerations for Development of the Framework**

In developing the framework, Metrolinx adopted the principles that business case analysis should be:

- Universal and Consistent – the same basic business questions should be addressed by every business case
- Comprehensive – includes all material factors relevant to a realistically complete evaluation
- Understandable – the contents should be communicated using plain language.
- Transparent – sufficient detail should be available to explain the basis of the business case evaluation.
- Considerate of risk and organizational capacity – risks are unavoidable, but can be identified and mitigated while staying within the capacity of the organization to manage.
- Progressively elaborated – should be updated at certain stages of a project’s lifecycle, as new relevant material becomes available

The Business Cases are designed to add confidence to decisions and avoid re-opening decisions once they are made, to align and support decision-making as much as possible, and to optimize the total effort expended on projects.

### **iii. Framework**

The Metrolinx Business Case framework is a collection of evidence assembled in a logical and coherent way. It explains the contribution of a proposed project to organizational objectives, and ensures that a particular project is a good use of public funds. A Metrolinx business case (figure 1) has five sections:

- The **Context and Options** section develops a problem statement that is sufficiently focused and discrete, so that solutions are manageable and measurable. The section demonstrates that a sufficiently broad range of solutions has been considered and the options developed from this long list of solutions have been selected through a transparent and defensible process. These options are evaluated against a base case which considers a “business as usual” scenario.
- The **Strategic Case** section articulates how different options align with existing strategic plans, policies, and legislation. This includes the corporate plans of individual business units, Metrolinx’s Regional Transportation Plan, the Metrolinx Act, and wider Provincial objectives. Forecasts of future ridership or other long-term trends are also be provided. Such strategic information demonstrates to what extent project options support pre-existing directions and meet the long-term aims of Metrolinx and the Province.
- The **Economic Case** section presents the economic, environmental, social, and distributional impacts of a project, using qualitative, quantitative, and monetised information. In assessing value for money, all of these are consolidated to determine the extent to which a project’s benefits outweigh its costs, how these impacts are distributed, and the efficiency of the project at achieving societal benefits.
- The **Financial Case** section describes the affordability of the project over its lifecycle. This includes capital costs, operating costs and revenues, maintenance, and replacement costs. Affordability is measured based on an option’s budgetary impact on Metrolinx’s financial position (i.e., subsidy level), standard financial performance metrics (e.g., NPV, IRR), and the level of financial risk (i.e., best and worst case scenarios).
- The **Delivery and Operations Case** section considers different delivery options, key dependencies for successful implementation (e.g., stakeholder engagement, approvals), and construction impacts.

All cases include both quantitative and qualitative information that indicates the expected performance of proposed options. In the early stages of option evaluation, Multi Criteria Analysis and other sifting approaches may yield sufficient information to compare options and discard weak performers. However, typically the costs, benefits, and risks of options are included within sifting methods.

There are some areas of impact, in particular social and environmental impacts, which can be difficult or impossible to measure within traditional approaches to the valuation of economic and financial impacts. In these instances, efforts should be devoted to local data collection and consultation to assess and quantify impacts. This is especially important where the problems identified or the objectives of the project relate directly to social or environmental impacts.

Figure 1- Metrolinx Business Case Framework



**iv. Developing the Business Case**

A description of how the project will be designed, implemented, and operated is included to a sufficient level of detail to provide decision makers with confidence that the project is both deliverable and operable. Developing a business case follows a 9 step process (see Figure 2).

**Step 1** - define a problem statement

**Step 2** - define objectives and outputs against which the project can be measured and monitored

**Step 3** - define a base case

**Step 4** - define a baseline future year transportation network

**Step 5** - develop options

**Step 6a** - assess contribution to strategic objectives

**Step 6b** – assess lifecycle economic costs and benefits

**Step 6c** - assess lifecycle financial costs and revenues

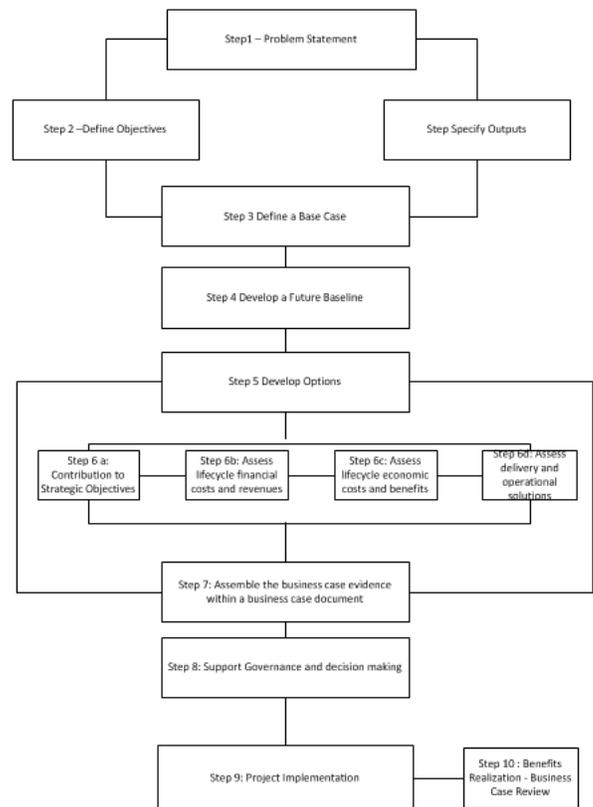
**Step 6d** - assess deliverability and operational solutions

**Step 7** – assemble the evidence within a business case document

**Step 8** – support project governance, decision making and approvals. Iterate steps 5 through 8 as required.

**Step 9** – Ex-post evaluation business case review to ensure measures of success and other outcomes were achieved and to capture lessons learnt.

Figure 2- Stepwise Process for developing a Business Case

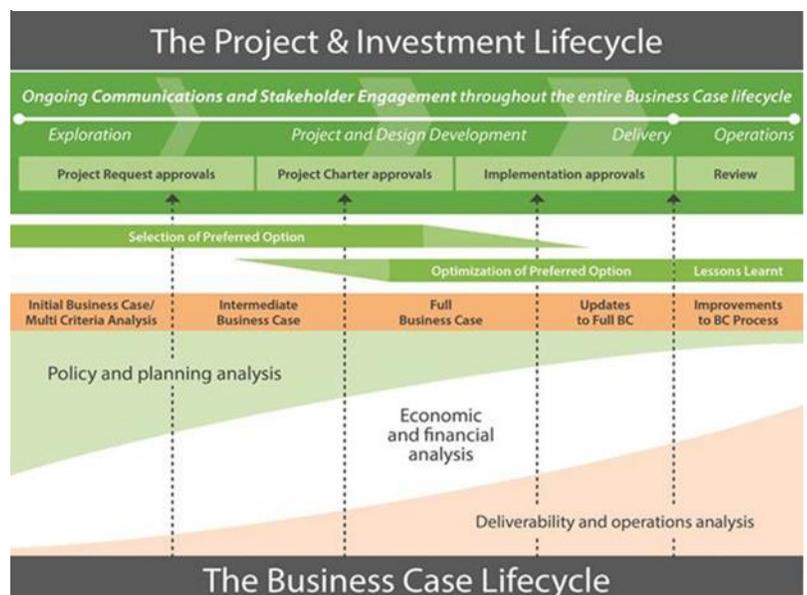


**v. The Business Case Development Lifecycle**

The business case should remain a 'live document' in the decision-making process throughout the entire lifecycle of a project: from the initial decision to proceed, to the decisions made at scheduled gates to continue, modify, or terminate the project. The business case is elaborated as the project lifecycle

progresses and is used to review and revalidate the project at each scheduled point. Figure 3 illustrates project development through the lifecycle of the project and conceptually describes the architecture of the Metrolinx Business Case Framework, including the shifting areas of effort as the project develops. At the start, planning is the primary activity, but delivery and operations considerations are also critical. Following approvals to advance the project, the initial business case is refined into a working business case through more

Figure 3 – The Business Case Development Lifecycle



detailed options analysis made possible as more detailed information is developed while design work progresses ('Project Design). Prior to full funding approval, the working business case is finalized as the business case meets investment-grade standards and is sufficiently comprehensive to match the cost and risk of the project. Towards the end, design, delivery, and operational disciplines come to the fore, but planners continue to play a very important role that helps ensure the project stays on track to achieve the strategic objectives that initiated the project. At all stages of project development, check-ins to the financial and economic cases ensure a focus on Value for Money and optimization.

At this stage the operations and delivery case becomes refined and after project implementation, an effective ex-post evaluation should then be conducted to ensure projected benefits of the business case were realized as well as provide insights into lessons learnt. ('Benefits Realization')

### **Conclusion and Next Steps**

Metrolinx has adopted this business case framework and is actively developing comprehensive guidance for creating these business cases. This includes the creation of a business case policy that sets out requirements, ongoing change management to support adoption of business cases throughout the organization, and staff training to ensure the framework is understood and correctly applied.

### **References**

1. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/85930/dft-transport-business-case.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/85930/dft-transport-business-case.pdf)
2. <https://www.nzta.govt.nz/planning-and-investment/planning/planning-process/business-case-approach/>
3. [http://transportinfrastructurecouncil.gov.au/publications/files/National\\_Guidelines\\_Volume\\_1.pdf](http://transportinfrastructurecouncil.gov.au/publications/files/National_Guidelines_Volume_1.pdf)
4. <http://www.transport.nsw.gov.au/sites/default/files/b2b/publications/tfnsw-principles-and-guidelines-for-economic-appraisal-of-transport-initiatives.pdf>

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