FEDERAL-PROVINCIAL BUSINESS CASE TEMPLATE

A GUIDEBOOK FOR MULTIPLE ACCOUNT EVALUATION AND COST-BENEFIT ANALYSIS

Program Development and Monitoring Branch
Transportation Planning and Policy Department
BC Ministry of Transportation
June 7, 2006

Table of Contents:

Business Case Template

The Ministry requires business cases to support investment decisions with respect to establishing program priorities, recommending projects for approval, advancing projects through the various approval phases and considering project amendments. Business cases are also required to be consistent with the Capital Asset Management Framework and related guidelines established by Treasury Board.

Business cases provide the foundation for a rational, defensible and transparent program development and implementation process. Business cases establish the basis for investment and must be incorporated into the life cycle of a project; from conception through implementation, to define investment drivers, objectives and outputs with respect to guiding to option selection, scope definition, budget requirements and implementation considerations and providing the basis for Post-Implementation Reviews.

Business cases must be complete, representative and developed based on accepted practices. The Business Case is not restricted solely to economic indicators (i.e. Net Present Value, Benefit/Cost Ratio) as it is recognized it is not possible or appropriate to quantify all benefits, but the preponderance of the evidence presented must support the conclusions of the Business Case.

The responsibility for the preparation and submission of business cases and ensuring that recommendations are supported by, and consistent with the business case, lies with the project sponsor.

Submission of a Business Case is dependent on the appropriate due diligence being applied as applicable to the stage of development with respect to scope definition, value analysis, value engineering, road safety audits, peer group review, risk assessment and cost estimating.

This publication is provided as a guidebook for Business Case. It provides the recommended framework and presentation for the submission of Business Case as required under the Provincial ***Financial Administration Act***. Moreover, it provides direction on Multiple Account Evaluations and its inherent key component, Cost-Benefit Analysis. The intent of the publication is to provide a framework for analysis, and thus there will instances where more or less extensive analysis is required. More specifically, there may be instances where certain sections of the template are not applicable and thus need not be completed. For instance, economic development implications may not apply for a proposed 1 kilometer passing lane designed to alleviate safety concerns.

In order to provide an applied context to this guidebook, reference is made to a business case that was submitted to secure provincial and federal funding under the ***Strategic Highway Infrastructure Program – Highway Construction Component***. The

illustrative business case is the "Chilliwack-Vedder Interchange Reconstruction Project"[1].

In order for the Business Case to be defensible equal effort and resources should be devoted to appropriate cost-estimating techniques and adequate contingency as to the identification of its benefits.

As the Province has been involved and will continue to be involved in cost-sharing arrangements with the Federal Government (e.g., Strategic Highway Infrastructure Program, Border Infrastructure Fund, Canada Strategic Infrastructure Fund, and the recently announced Highway and Border Infrastructure Fund) this template also addresses the federal government's business case needs. More specifically, references to these needs are highlighted in "red" throughout this document.

Contacts within the Ministry

The following are a list of Ministry of Transportation staff that should be relied upon for assistance in the preparation of Business Cases:

General Business Case Queries:

1. Avi Ickovich, Manager Program Development and Monitoring, Program Development and Monitoring Branch (250-356-2023) Avi.Ickovich@gov.bc.ca

2. John Conquist, Manager, Highway Planning, Highway Planning Branch Jon.Conquist@gov.bc.ca

3. Chuck Hutchinson, Senior Highway Planning Engineer, Highway Planning Branch (250-356-9442) Chuck.Hutchinson@gov.bc.ca

Cost-Estimating Queries:

4. Mike Hallas, Manager, Estimating Services, Program Management Support Services (250-356-9328) Mike.Hallas@gov.bc.ca

Submission of Business Cases:

5. David Marr, Executive Director, Program Development and Monitoring ***and*** Secretary to the Capital Program Board, David.Marr@gov.bc.ca

[1] Helen Berthin (Partnerships Department) and Avi Ickovich (Transportation Planning and Policy Department), Ministry of Transportation, ***"Chilliwack-Vedder Interchange Reconstruction Project- Business Case"***, 2003.

Executive Summary

This section should include:

- ☑ One or two sentence description of problem (i.e., safety, reliability, condition of infrastructure);
- ☑ Basis for investment;
- ☑ Cost of Project (proposed solution);
- ☑ Is the problem likely to get worse (i.e., related to traffic and population growth);
- ☑ Recommended Scope of Work; and,
- ☑ Very brief explanation on the efficacy, efficiency and cost-effectiveness of how the proposed solution (scope) will address the current inherent infrastructure deficiencies (e.g., a benefit-cost ratio of over x.x and an NPV of $xx.x million).
- ☑ Timing considerations (i.e. rehabilitation cycle dependency, 3rd party investments, etc.)
- ☑ Other factors driving investment

The requirement for an "Executive Summary" is also stressed in Transport Canada's Business Case template (Appendix 1).

Problem Definition

This section should include:

- ☑ Location and Municipalities effected.
- ☑ Nature of problem.
- ☑ Why the problem exists or is getting worse. Use tables if necessary that illustrate current situation vs. 25 year situation if not resolved. In other words why is the current infrastructure deficient and likely to get worse?
- ☑ History of infrastructure.
- ☑ Implications to economic development if deficiency is not resolved.

Background

Provide evidence and contextual information (population growth charts, accident charts and so on) that illustrate the underlying factors causing the previously defined problems.

As per Appendix 1 (Transport Canada's Business Case Template), this section should address such as:

- ☑ Importance of the highway corridor to trade, tourism, industry and other sectors of the economy;
- ☑ Traffic volume and growth;
- ☑ Population growth;
- ☑ Other works being undertaken in the project areas as specified in scoping of the environmental assessment; and,
- ☑ Other relevant, unique or sensitive aspects of the project.

Potential Societal Benefits

Identify significant Provincial, Federal and Municipal benefits of the proposed project:

For instance:

- *Improved air quality and more efficient energy use due to a reduction of idling and stop and go traffic.*
- *Improved safety, performance and reliability to the interchange area and the Trans Canada Highway, or other Highways that are part of the National Highway System. These would include statements on decreases in traffic accidents, injuries and fatalities.*
- *Supporting economic development in the area. Opportunities include tourism due to easy access off highway for shopping, parks, recreation, camping and hotels, the potential development of federal facilities, improved opportunities for nearby First Nations, and improved access to downtown and government services.*
- *Safety improvements in event of earthquake since the new structure would be built to current seismic standards. Provides local community access across the freeway for emergency vehicles in the event of an earthquake, and provides provincial/federal benefits since the bridge crosses the disaster response route.*
- *Travel time benefits.*
- *Multimodal benefits, including safer pedestrian and cycling access.*
- *Opportunities for Cost-sharing that would allow for all potential beneficiaries to maximize leveraging their respective investments. More specifically, it would*

allow prospective partners the ability to obtain otherwise cost-prohibitive infrastructure.

Option Generation

With a suitable problem definition, solution options need to be generated, representing the range of reasonable alternatives available to the ministry. The Multiple Account Evaluation team should not be too quick to focus on the most obvious or conventional solution options -- some "lateral thinking" to identify unconventional approaches almost always yields better options or at least improvements to the more obvious options. Finding the best solution option is usually about finding the best mixture of all types of actions available to the ministry, rather than an "either-or" process that selects one type of action instead of another.

Since, the results of any evaluation are only as good as the options that go into the model, it is imperative that a creative and broad-ranging process be used to generate candidate options. The differing points of view of users, stakeholders, and other government agencies make for a broader range of options, if they are involved in the option generation process.

The evaluation of an incomplete or inappropriate set of alternatives, no matter how sophisticated, will not generally assist in identifying the best course of action. It may simply serve to explain why one sub-optimal alternative is better than some other.

Too often, proposals are presented in isolation and compared only to a do-nothing or status-quo base case. This is generally inadequate. If there indeed is a problem, then there is every likelihood that any proposed solution may appear attractive. However, it may not be the best alternative to pursue. What is required is the identification and consideration of a wide range of possible solutions to the problem at hand. Often there is a need to challenge proponents of a particular project to consider what they would or could do without it.

Determining a "Base Case"

Usually it will be necessary to define a "base case" against which to compare the other options being considered. The base case identifies what would happen if the decision makers did "nothing".

The following table gives examples of types of alternatives (Options) to be evaluated:

	Options To Be Considered
1	alternate project schedules
2	alternate project resourcing (i.e., cost-sharing, private-public partnerships, user pay/ beneficiary pay)
3	alternate design standards/ geometrics

4	alternate design configurations within selected route
5	alternate materials and methods for construction
6	identifying alternate routes within the corridor and corresponding assessment and implications
7	alternate degrees of corridor protection (i.e. acquisition of Right-of-Ways)
8	analysis of non-transportation solutions
9	alternative mixes of different modes of transportation
10	Can enhanced maintenance and rehabilitation eliminate, delay or postpone the need for the project?

Although a full set of options should be generated in this section of the report (business case), it is acceptable to dismiss options that are not viable without further discussion in subsequent sections of the business case. For instance, the following is an excerpt from a recently completed federally-funded project.

> *Option (3) was dismissed because the incremental benefits relative to costs compared to Options (1) and (2) are minimal. More specifically, in order to achieve the "Cost-Benefit Ratio" of the Vedder option (at 4.160), the upgrade from the two lane version to the four lane version of the Evans Overpass would need to generate over $20 Million of additional benefit.*

Project Description

As per Appendix 1 (Transport Canada's Business Case Template), once the options have been described, the preferred option should defined as follows:

Project Description, to include:

- ☑ Description of the project work to be carried out with maps and diagrams showing the location, characteristics and phases if applicable;
- ☑ Consideration of alternatives to the project being proposed (this should already have been addressed in the previous section of the report);
- ☑ Proposed work schedule and phasing (is it important to specify the estimated start date and completion date of the work). The work schedule should also be re-iterated in greater detail in the ***"Project Implementation"*** section of the report.
- ☑ The estimated total project cost, eligible costs under the highway program and predicted cash flow. The work schedule should also be re-iterated in greater detail in the ***"Project Implementation"*** section of the report.
- ☑ Description of how the project design meets at least the engineering guidelines accepted by the Transportation Association of Canada; and
- ☑ Description of how the project is consistent with all applicable federal/provincial/territorial legislative and regulatory obligations.

Multiple Account Evaluation

Multiple Account Evaluation complements the quantitative information of Cost-Benefit Analysis with additional quantitative or qualitative information. The usual five categories are:

Financial	Customer Service	Traditional Cost-Benefit Analysis (Quantitative)	
Economic Development	Environmental	Social	Qualitative/ Quantitative

Cost -Benefit Analysis:

The table below illustrates the required elements of the Cost-Benefit Analysis component of the Multiple Account Evaluation. An explanation of each of the elements as well as examples of their use in actual business cases are also included below.

Discounted Costs (Financial Account)	Construction Cost	Salvage Value	+/- in Maintenance and Rehabilitation	
Discounted Benefits (Customer Service)	Time-Savings	Vehicle Operating Cost – Savings	Accident Cost-Savings	Disruption During Construction

Net Present Value	Discounted Benefits – Discounted Costs (Maximizes Differences between Societal Benefits and Costs)
B/C Ratio	Discounted Benefits / Discounted Costs (Societal Benefits relative to Societal Costs)

Financial Performance Account (Account 1) - to document the investment implications of the alternatives from both a corporate and broader government perspective.

This is the cost to the infrastructure provider(s) of each option. It is expressed as a life cycle cost which is the present value of capital costs, periodic rehabilitation costs and annual maintenance costs, discounted at the appropriate discount rate over a 25 year planning period to the current year. The discounted costs to be considered include but need not be limited to:

- Construction and Property Costs – The preferred cost-estimating technique and methodology is the Wolski method cost-estimating system[2]. This method tabulates construction costs using a quantity take off system extended by unit rates. It then applies factors to the construction costs to develop soft cost items such as design, engineering, project/program management, resident engineering and contingency. Standard MoT unit rates and factors were used in this estimate.

- Maintenance and Rehabilitation- The proposed projects may yield either a increase or decrease in these costs depending on the scope of improvement. For instance added capacity such as 4-laning often can result in a net increase in rehabilitation and maintenance over a 25 year period. Conversely, a replacement of a bridge in poor condition may result in cost-savings for these operating costs. A reliable source for estimating costs for road, bridge and signal maintenance costs is the Ministry of Transportation's "NEW CONSTRUCTION AND REHABILIATION COST GUIDE FOR HIGHWAYS", September 2004.

Annual Maintenance Costs

Item	Amount	Units
Road	13,581	$/lane-km
Signal	3,600	$/signal
Bridge	7.3	$/sq.m.

Rehabilitation Costs

Item	Hot Mix	Cold Mill
$ /lane-km.	50,000	25,000
Year	15	7

Salvage – In discounted cash flow analysis, expenditures do not include interest payments or depreciation. Capital expenditures are reported on a cash flow - as incurred - basis. However, any differences in the asset mix at the end of the planning period should be reflected by an estimate of its remaining or salvage value (sometimes referred to as "Residual Value"). This can be captured by crediting in the final year of the planning period, the depreciated replacement cost of any newly acquired assets.

The following guidelines are required to promote consistency across all business cases in the Ministry:

- A discount rate of 6% (real) should be applied for purposes of a base case scenario. Sensitivity analyses at 8% and 10% should be undertaken to determine the effect of differences in the assumed cost of capital on the financial implications of the alternatives.

- **Cost Estimate-** An appropriate cost estimate is required with the application of contingency consistent with the stage of development, the level of unknowns and the

[2] Cost-estimating methodology named after its creator, Ernie Wolski of E. Wolski Consulting. .

degree of risk. The budget and cash flow is to be in "as-spent" dollars (i.e. escalated) for the proposed schedule).

- Need to indicate that financial costs are in current year dollars (non-escalated).

- **Gross versus Net Costs-** Financial costs are net of land credits.

- Financial costs are gross of cost sharing with the exception of the case where cost sharing is for scope items not required by the project but being delivered for a 3rd party (i.e. municipal sewer upgrade).

- The estimated financial impact on the organization should reflect the incremental effect of each alternative on the total system revenues and expenditures as opposed to the capital and operating expenditures of the alternative considered on its own. These system implications should be forecast over a sufficiently long planning period to capture all significant effects. For purposes of standardization it is important to examine incremental effects to capital and operating costs of each option.

- The impact of capital investments on rehabilitation, maintenance and operating costs must be appropriately defined. Specific attention needs to be given to the cost profile for the base case and the cost profile for the proposed case.

- The timing of capital investments is influence by these (i.e. co-ordinating a passing lane project with a collateral paving project or scheduling four laning to coincide with the optimum time for pavement resurfacing)

Customer Service Account (Benefits) **(Account 2)** - serves to document the net benefit or value that customers or users derive from the alternatives. The principal summary measure of performance is the discounted sum of annual benefits, i.e., the present value (NPV) to the Ministry and society as a whole. These benefits must include but need not be limited to: Time-savings, Vehicle Operating Cost Savings and Accident (Collision) Cost-savings, as identified above.

If safety is identified as one of the fundamental drivers for the project, then the nature and severity of the safety problem must be defined. Indicating that the accident rate is higher than the provincial average does not provide the basis of a problem as 50% of all locations would have a rate higher than the median.

As per Appendix 1 (Transport Canada's business case guidelines), the inherent safety analysis should include a quantitative analysis of these benefits and include a chart as follows:

Safety Analysis

Accidents Statistic	Accident rate without improvement (per 100 mill veh-km)	Accident rate with proposed improvement (per 100 mill veh-km)	Predicted accident rate decrease
Fatal Accident			
Personal Injury Accidents			
Property-damage-only Accidents			

Transportation economics is beginning to incorporate disruptions during construction. In fact, there have been some estimates from US studies indicating that, the disruption costs of some projects are never recovered throughout the subsequent useful life of the improvement. It should also be remembered that disruption costs for truck traffic also carry a higher premium than for automobile traffic, and thus are particularly important for trucking and goods movements. It is therefore important to capture this impact as either neutral ($0) or a dis-benefit (negative) of the proposed option.

It is also important to capture the following interactions among benefits:

- Travel time savings associated with accident reductions;
- Travel time savings associated with improved reliability (reduced road/lane closures); and,
- Other benefits specific to the investment

Net Present Value and Benefit Cost Indicators (Account 1 vis-a-vis Account 2)

As indicated in the table above these cost-performance indicators can be determined by the absolute and relative differences between the benefits and cost (Customer Service Account vis-à-vis the Financial Account required to provide it).

The NPV indicates the magnitude of the net benefit or cost from each option [3]. Since, the government is faced with a fixed amount of capital for transportation investments, it

[3] The organization may wish to calculate and use other measures of performance as well. For example, the NPV per dollar of capital expenditure can be useful in ranking alternatives where the organization is subject to an overall capital constraint. The Payback period can be useful in highlighting vulnerability to uncertain future events.

is recommended that the examination of capital costs be conducted in terms of Net Present Value, rather than other measures such as B/C ratios and Internal Rates of Return. Economists always recommend maximizing the difference between discounted benefits and discounted costs in order to maximize the difference between the societal costs or resources used to produce the anticipated societal benefits. This is referred to as maximizing Net Present Value (NPV). If we rely exclusively on the Benefit-Cost ratio for capital planning purposes approach we fall into the "Stop Sign Syndrome" or trap, where we pursue the project that may have the best return per dollar invested rather than projects that maximize the actual difference between societal benefits and costs. The stop sign may save a life that is valued at a recognized $4 Million level, at a low cost of $1,000, thus yielding a very high return per dollar invested. The Benefit-Cost ratio approach would favor low-cost projects, which in the extreme would mean creating project packages (Capital Plans) that would **not** allow us to fund those projects that merely achieve a 2:1 return yet yield $100 million of benefits. Using the Stop Sign example we would end up with a program of SMALL projects.

The following is an excerpt from the Vedder Interchange Reconstruction project on these economic performance indicators:

- *The Net Present Value of both options is favorable, although the Vedder Interchange upgrade generates a much better NPV of $28 Million. However, from a Benefit-Cost ratio perspective, the difference between the Vedder project coefficient of 4.2 and the coefficient for the Evans Road project of 4.8 is small and probably statistically not valid. Furthermore, on large projects, the proper measure is the NPV with only secondary importance to the B/C ratio. The B/C ratio will always favor small projects. NPV measures the net incremental benefit to society not the comparison of costs relative to benefits. Nevertheless given fiscal constraints the B/C ratio should still be used as a secondary decision-making tool. In other words, since the NPV of the Vedder option exceeds the NPV of the Evans option, and the two options have similar B/C ratios, then the preferred option is Vedder option. An additional consideration here is that the Evans 2 lane option, unlike Vedder, has no access to the TCH and as a flyover is primarily a municipal element providing minimal provincial and federal benefits.*

- *It should also be stated that another (unquantified) benefit of this project is that considering the significant improvements being undertaken, disruption to the road user during construction is very reasonable. It is expected that impact to users on key movements such as the SB to EB ramp and through traffic on Vedder and TCH will be minimal.*

Economic Development Account (Account 3) - serves to document the nature, magnitude and significance of the income and employment impacts of the alternatives.

The economic development benefits of a project are subject to the empirically established principle of "Diminishing Marginal Utility" of transportation economics. More

specifically, the largest economic development benefits are to be found for those projects where access is created, an impediment to growth is eliminated, or new opportunities are created. This is in contrast to projects where the improvement merely provides added capacity or enhances the performance and safety of existing infrastructure and networks, and thus only limited new opportunities are created. Nevertheless, the following opportunities should be examined for all proposed options:

- Increased access to natural resources;
- Changes to trucking practices due to time and vehicle operating cost-savings;
- Changes to warehousing/inventory practices of industry due to time-savings;
- Increased tourism (i.e., due to easy access off highway for shopping, recreation, camping and hotels);
- Potential development of former federal facilities (i.e., CFB Chilliwack Base);
- Greater access offered to nearby First Nations population; and,
- Improved access to downtown and government services.

Environment Account (Account 4) - serves to document the nature, magnitude and significance of the major biophysical and natural resource impacts of the alternatives. Some software packages such as Micro-BENCOST and HDM (World Bank Model) calculate and quantify these impacts (i.e., fuel consumption and vehicle emissions) along with the economic performance indicators of NPV and B/C ratios discussed above. Alternatively, for the Vedder Interchange Reconstruction project which has previously been cited in this template, fuel consumption in litres per kilometer were calculated by the analysts using Emme/2 output and fuel consumption factors. More specifically, the analysts for this project determined:

> *Total vehicle kilometers for the 2021 PM peak hour were grouped by the analysts into categories by the speed at which the vehicles operate. These values were factored up by the consultant to annual values. Emission quantities were calculated by the consultant for carbon monoxide, carbon dioxide, nitrogen oxide and hydrocarbons in grams per kilometer (g/km). The four quantities were obtained by factoring Emme/2 speed-based volumes up to annual figures, and subsequently coefficients were applied by the analysts to convert these quantities to emissions.*

In order to address Transport Canada's (Appendix 1) on environmental considerations it is important to quantify greenhouse emissions and smog reduction. Transport Canada will accept the calculated (generated) values from Micro-BENCOST for these purposes.

Social Account (Account 5) - serves to document the major impacts of the alternatives on the social fabric and values or goals of directly effected communities or groups, including, where relevant, impacts on specific aboriginal community values and concerns.
These could include societal benefits and such as:

- Community Severance;

- Access to cultural and sporting events;
- An increase in pedestrian and cycling would entail health benefits not captured in traditional cost-benefit analysis;
- Safety improvements in event of earthquake since the new structure would be built to current seismic standards. Provides local community access across the bridge for emergency vehicles in the event of an earthquake, and provides provincial/federal benefits since the bridge crosses the disaster response route.
- Safer access and egress to the community and developments.

Summary Multiple Account Evaluation (MAE) Table (All Five Accounts)

It is important to provide a summary table of the MAE results. The table below is the summary table for the Vedder Interchange Reconstruction project which is cited previously in this template.

		Figure 1 - Chilliwack - Business Case Summary			
			Options	9010	9020
				Opt. 1	Opt. 2
				Vedder I/C	**2 Ln Evans O/P**
Account	Criteria	Measurement	Unit		
Financial	Construction Cost	Present Value	(M$)	10.888	5.881
	Property Cost	ROW req'd for construction	(M$)	0.334	0.979
	Maint. & Rehab Costs	Present Value	(M$)	0.456	0.327
	Salvage Value	Present Value	(M$)	2.693	1.646
Service	Road Network Performance (Consumer Surplus)	Value of Travel Time	(M$)	26.465	18.704
		Value of Operating Costs	(M$)	6.616	4.676
		Value of Accident Costs	(M$)	4.301	3.039
Economic Summary	**Benefits**	**Present Value**	**(M$)**	**37.382**	**26.419**
	Costs	**Present Value**	**(M$)**	**8.985**	**5.540**
	Net Present Value	**Present Value**	**(M$)**	**28.397**	**20.879**
	Benefit/Cost Ratio	**Calculated**	**Ratio**	**4.160**	**4.769**
Economic	Quantitative	Employment	**Person Years**	203.4	129.6
Development		Provinical Economic Impact	**(M$)**	24.4	15.6
	(See Attached Appendices 1A and 1B)				
Environment	Fuel	Fuel consumed	Millions litres	-32.020	-36.347
	Vehicle Emissions	Carbon dioxide	Millions kg.	-83.436	-94.216
		Carbon monoxide	Millions kg.	-3.360	-3.442
		Nitrogen oxide	Millions kg.	-0.121	-0.169
		Hydro-carbons	Millions kg.	-0.371	-0.371
1	Note: Property cost includes the value of ROW required for contstruction,				
	it has not been offset by the value of surplus lands available for development				
2	Salvage Costs: Ratio 24% of construction costs and property costs				

Risks/ Sensitivity Analysis

The performance and efficacy of the respective options needs to be examined relative to unforeseen variations in underlying key cost and benefit assumptions. If options are generated independently of each other and/or are composites of a series of smaller engineering and non-engineering solutions (i.e., ITS), it is logical to assume the respective options would perform differently if one alters the underlying assumptions.

The following table should be created for each viable option[4]:

	Baseline	$^{+}$25% in Cost	$^{-}$25% in Cost	10% Discount Rate (Federal Rate)	$^{+}$0.5% in Traffic Growth Rate	$^{-}$0.5% in Traffic Growth Rate
NPV ($Million)	**x.xx**	x.xx	x.xx	x.xx	x.xx	x.xx
B/C	**x.xx**	x.xx	x.xx	x.xx	x.xx	x.xx

Also please indicate other risks to the successful completion of the project which can include but are not limited to the following issues:

- ☑ Geotechnical
- ☑ Property Acquisition
- ☑ First Nation Issues

Test of Reasonableness

Although this is not a formal section of the Business Case, the following questions should be addressed on analysis completed up to this point in the report:

- ☑ Does the Business Case capture, either quantitatively or qualitatively, the benefits and dis-benefits of the proposed investment?
- ☑ The salvage, or residual, value is typically no more than 20% of the capital cost at the end of the 25 year analysis period, though it can be 40%- 50% in the case of structures or infrastructure with extended service lives, such as bridges.
- ☑ Vehicle Operating Cost reductions are typically no more 10% of vehicle travel time savings.
- ☑ Accident reduction factors need to be consistent with values derived from predictive models (where is this information available).

[4] As indicated in the section "Option Generation" some options can be dismissed outright without further evaluation.

- ☑ Travel time savings generated need to reflect demand/supply curves over the course of a day and over the course of a year (i.e. additional lanes may not derive travel time savings under low volumes or may derive significantly lower travel time savings in off-peak period).

- ☑ Traffic Volume growth rates are asymptotic. More specifically, a 4% growth usually will not be sustained over a 25 year analysis period, as there limits to growth as commuters react to attractiveness of competing options..

Project Implementation

This section should include:

a) Description of Project (Scope);
b) Schedule- provide timelines (chart preferable);
c) Budget;
d) Cash Flow – include recoveries. A chart with the respective contributions and payments of partners (e.g., Transport Canada) is highly recommended.

Cost-estimating and reporting should adopt the following principles:

- As-spent versus current year dollars - Need to indicate that financial costs are in current year dollars (non-escalated)
- Gross versus net costs
- Financial costs are net of land credits
- Financial costs are gross of cost sharing with the exception of the case where cost sharing is for scope items not required by the project but being delivered for a 3rd party (i.e. municipal sewer upgrade).

Following is an example of a preliminary project schedule, provided in the Chilliwack-Vedder Interchange Reconstruction project:

Obtain project approvals and funding:	2002/2003
Project Definition and Project Agreement	2002/2003
Request for Expressions of Interest	2002/2003
Issuance of RFP	2003/2004
Award contract	2003/2004
Start Construction	2004/2005
Project Completion	2005/2006

If there is a possibility that ICBC will contribute funds to the respective project this should be highlighted, along with a summary of the safety benefits they are attributing to the proposed project as a basis of their contribution.

Advancement of Federal and Provincial Transportation Strategies and Plans

As per Appendix 1 (Transport Canada's business case template), this section should address how the project fits into the Provincial Transportation Master Capital Plan, to include:

- Long-range planning objectives;
- Project ranking by provincial priority if possible; and
- How federal funds will advance or accelerate the project

Conclusions/Recommendations

Finally, the business case should provide a succinct rationale for proceeding with the preferred option, such as the one provided below from the Vedder Interchange Reconstruction project:

- The Vedder Road/TCH interchange requires replacement or reconstruction of the highest priority due to the significant capacity and safety deficiencies
- The proposed improvements will yield large provincial, municipal and federal benefits, hence the opportunity for partnership and cost-sharing
- Benefits are significant, with an NPV of $28 million and a B/C ratio of 4.2. They include savings to travel time, vehicle operating, safety and fuel emissions; as well as contributing to community connectivity and economic development.