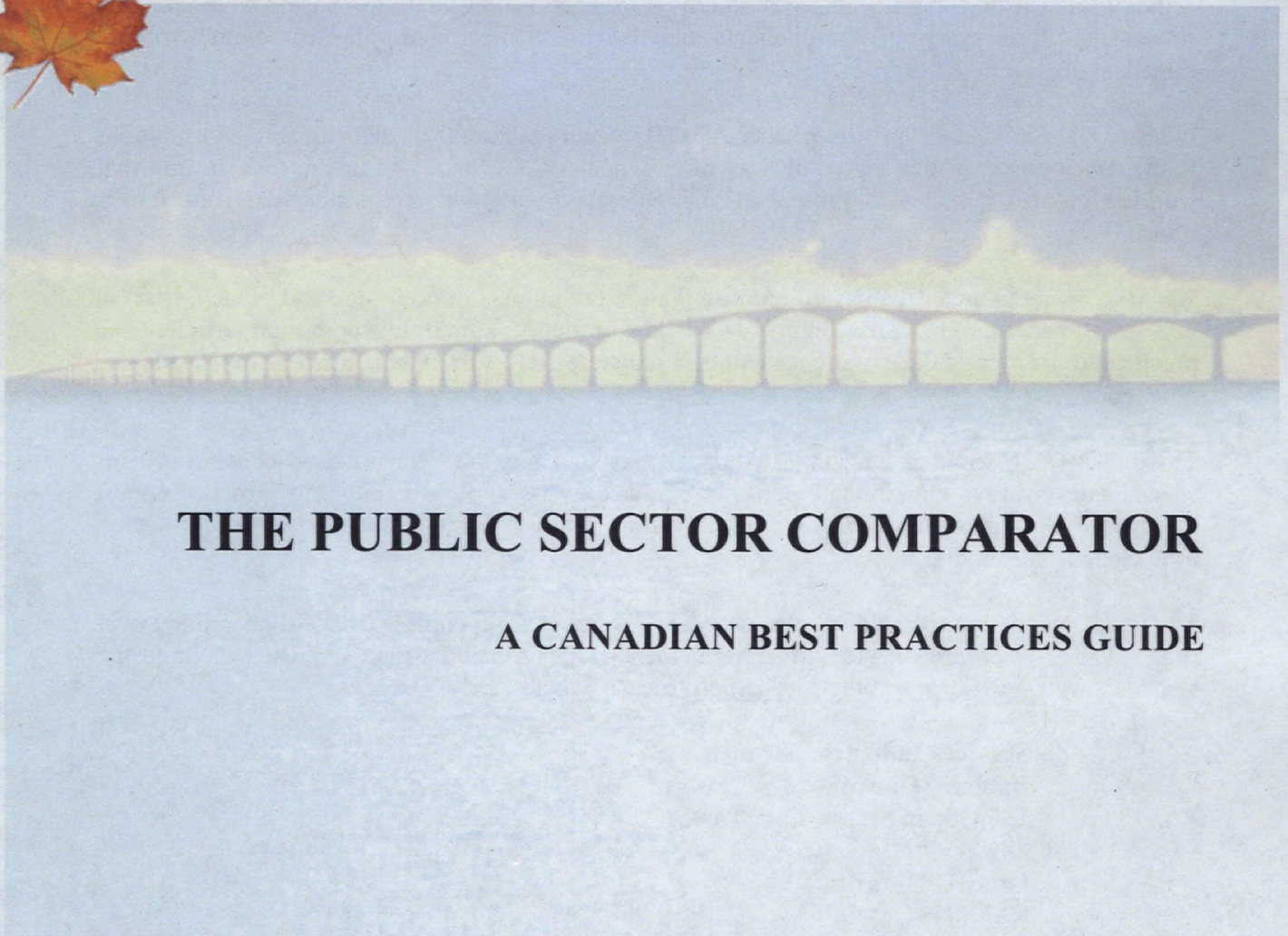


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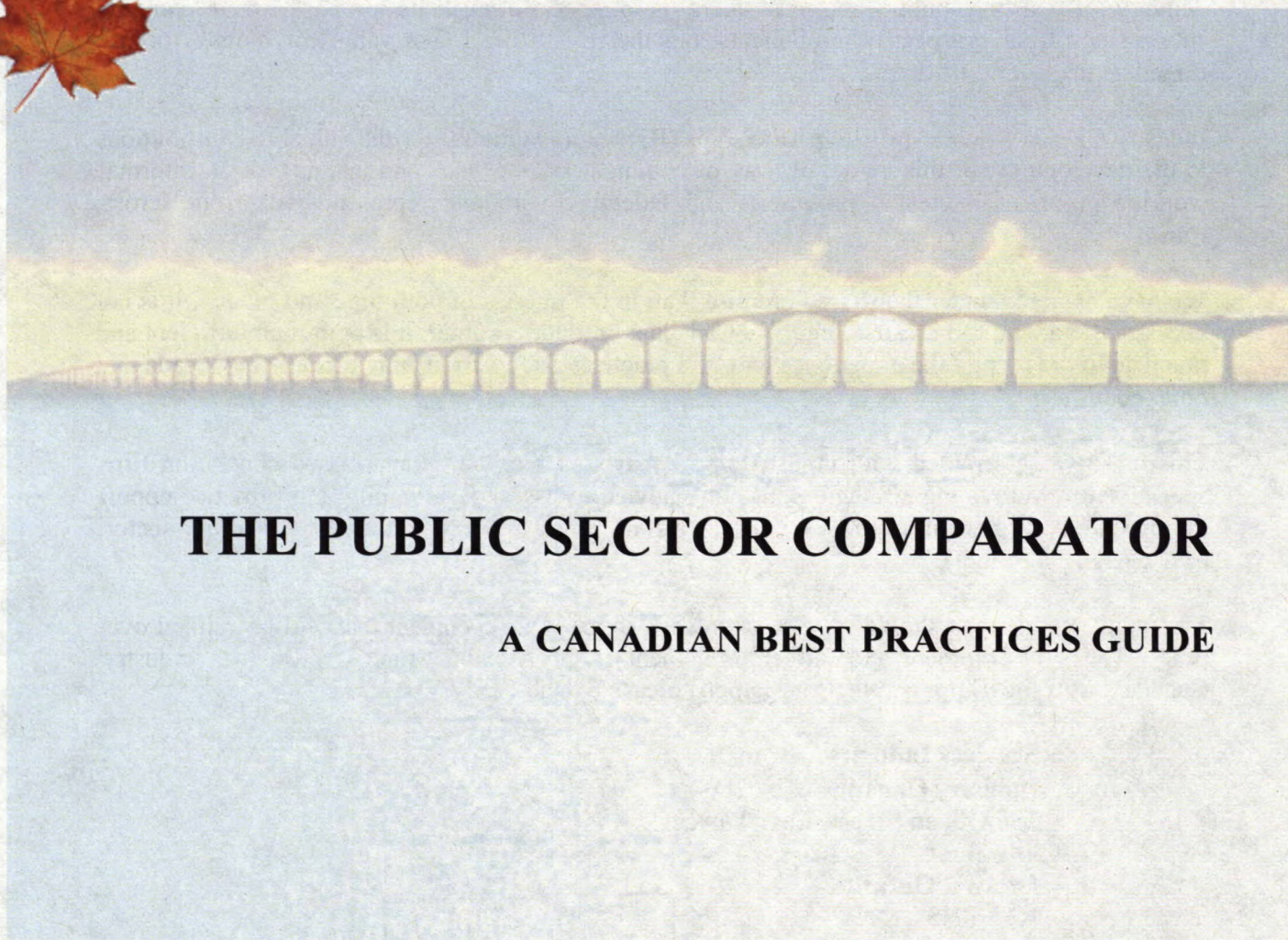
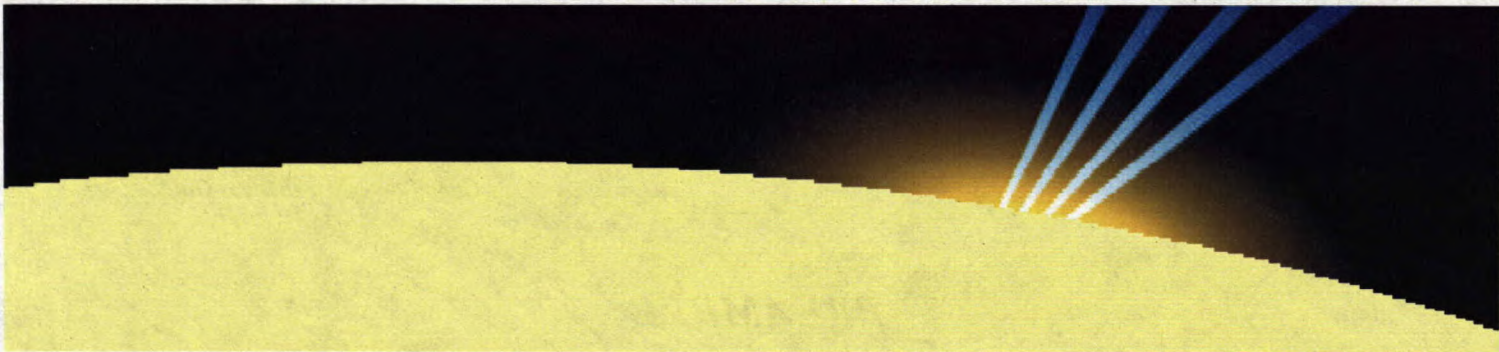
A CANADIAN BEST PRACTICES GUIDE



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THE PUBLIC SECTOR COMPARATOR

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PREAMBLE

This is a self-help guidance document for the use of government officials and/or their advisors to provide one of many tools for assessing the viability of public-private partnership initiatives. Whether for the development of new infrastructure and associated services or the alternative delivery of existing public services, there is a need to evaluate proposals and compare submissions from prospective proponents and thereby to determine value for money for the Canadian taxpayer.

Industry Canada's public-private partnerships (P3) team is grateful for the valuable contributions to the development of this guide, by way of commentary, feedback and insights, of an informal working group of interested provincial and federal government representatives from across Canada.

We have operated under the shared premise that, in the interest of both time and money, it is not necessary to attempt to create a uniquely Canadian product. Rather, it is both more efficient and practical to draw upon the experience and best practices from various jurisdictions in Canada and other countries.

This draft was assembled with input from P3 Advisors Inc., an Ottawa based consulting firm specializing in providing strategic consulting advice to assess P3 viability and provide support during the development of P3s by all levels of government and the not-for-profit sector, (www.p3advisors.com).

This guidance material should be seen as a work-in-progress document that will be refined over time. Thus, for comment and further refinement to this version which is posted on Industry Canada's web site, (<http://strategis.gc.ca/ppp>) please contact:

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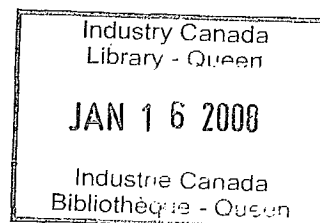


TABLE of CONTENTS

1.	INTRODUCTION	5
1.1.	Why use a Public Sector Comparator	5
1.2.	How has the PSC been used in other jurisdictions outside Canada	6
1.3.	The Canadian Context	7
1.4.	Structure of the Guide	7
2.	OBJECTIVE OF THIS GUIDE	9
2.1.	Overall Objective	9
2.2.	Intended Audience	9
2.3.	Intended Use	9
2.4.	How the Guide was Compiled	10
2.5.	Limitations and Qualifications	10
3.	BEST PRACTICES OF THE PSC	11
3.1.	Definition of the PSC	11
3.2.	When to Develop and Update the PSC	11
3.3.	The PSC and the Procurement Process	12
3.4.	How to Use the PSC	12
3.5.	Accuracy of the PSC	13
3.6.	Risks and the PSC	13
3.7.	Baseline Costs and the PSC	15
3.8.	In-house Bids and the PSC	16
3.9.	Unsolicited Proposal and the PSC	17
3.10.	Value for Money and the PSC	17
4.	PSC Financial Checklist	18
4.1	Life Cycle Costing Approach	18
4.2.	Direct Costs	19
	4.2.1. Direct Capital Costs	19
	4.2.2. Direct Operating Costs	20
4.3.	Indirect Costs	20
	4.3.1. Overheads	21
	4.3.2. Hidden or Assumed Costs	21
4.4	Risks Adjustments	21
4.5.	Third Party Revenues	23
4.6.	Financial Analysis Techniques	23
4.7.	Funding Sources	24
5.	PSC QUALITATIVE CONSIDERATIONS	25
5.1.	Socio-economic Policy	25
	5.1.1. Accounting for socio-economic policy imperatives in planning the project	26
5.2.	Balancing Public versus Private Sector Interests	27
5.3.	Environment Stewardship	28

5.4.	Human Resources	28
5.5.	Bridging National, Regional and Local Consideration within the Assessment Process	28
5.6.	Participation of Small and Medium Sized Enterprises (SMEs)	29
	5.6.1. Tailoring Financial Arrangements/Benefits-Risk Sharing for SME Participation	30
5.7.	Monitoring Costs	31
5.8.	Impacts on the Partner Selection Process	32
6.	THE CANADIAN CHALLENGE	33
6.1.	No formalized Policy of PSC Development	33
6.2.	How to Sell the PSC to Public Sector Leaders	33
6.3.	Disclosure of the PSC	33
6.4.	What Happens When There Is No PSC	34
6.5.	Dealing with Indirect Costs	34
6.6.	Dealing with Risks	35
6.7.	Where to Start in the Development of the PSC	35
6.8.	Format of the PSC	36
6.9.	Help is Available	36
Appendix A	Abbreviations and Glossary	38
Appendix B	Detailed costs checklist	43
Appendix C	Tips and trap when developing a PSC	46
Appendix D	Risk issues when developing the PSC	49

1. INTRODUCTION

In its *Vision 2010: Forging tomorrow's public-private partnerships* document, the Economist Intelligence Unit examined 12 governments across the world to determine how they are using public-private partnerships to cope with increasing public demands for higher quality services as well as to reduce their in-house costs. Among the findings was the following:

“Two-thirds of our survey respondents stated that the most successful government structure in 2010 will be one in which government focuses on policy and project/supplier management, allowing the private sector to deliver most traditional public services.”¹

In response to mounting worldwide evidence that public-private partnerships, prudently administered, can result in win-win results for both the private and public sectors, Industry Canada has been actively developing a tool kit for Canadian practitioners of public-private partnerships to ensure winning results are achieved for both the public and private participants. Whether for the development of infrastructure and ancillary services or for the delivery of existing public services by the private sector, this Best Practices Guide is specifically aimed at government administrators who need to assess options and make decisions which result in the most effective and efficient deployment of public monies, taking into account both financial and non-financial considerations.

The following best practices guidance material draws upon work undertaken in the United Kingdom by the Treasury Taskforce with respect to the U.K.'s *Private Finance Initiative or PFI* as well as more recent material developed for Australia's *Partnerships Victoria*. Both organizations recognize the importance of addressing the key policy issue of *how to ensure that value for money is achieved when a public-private partnership (P3) is undertaken*. Thus, for all levels of government within Canada, the development of a “comparator”, based on the fair and accurate valuation of internal or in-house costs, establishes a benchmark against which options can be compared and decisions can be made with respect to ensuring value is achieved for the Canadian taxpayer.

1.1. Why use a Public Sector Comparator?

Borrowing from Partnerships Victoria material “A **Public Sector Comparator (PSC)** is used by government to make decisions by testing whether a private investment proposal offers value for money in comparison with the most efficient form of public procurement.”² In the Canadian context, this rationale is expanded to cover the assessment of options by internal and not-for-

¹ *Vision 2010: Forging tomorrow's public-private partnerships*. The Economist Intelligence Unit Limited and Andersen Consulting, 1999, Pg. 4

² *Partnerships Victoria Public Sector Comparator Technical Note*, Department of Treasury and Finance, State of Victoria, 2001, Pg.1,

profit organizations as well as other levels of government and the private sector as prospective P3 proponents taking into account both financial and non-financial considerations.

A PSC thus assists government in assessing whether or not to use internal public or alternative financing for the development of infrastructure and ancillary services or for alternative delivery of existing services. Typically the PSC begins and ends with a rigorous examination of the “in-house” costs of implementing the project and assigning the various types of risks to the appropriate party that can best handle them. The development of a “comparator” results in a benchmark against which options are compared and value for money is assessed. Therefore, the PSC is a critical piece of the puzzle when embarking on an assessment of P3 options for infrastructure and services.

1.2. How has the PSC been used in other jurisdictions outside Canada?

In the UK, the central government enacted legislation to guide, facilitate and finance the development of Compulsory Competitive Tendering, Private Finance Initiatives (PFIs) and Public-Private Partnerships. These initiatives and their accompanying legislation, enabled the delivery of many new infrastructure projects, facilitated the introduction of private sector delivery of public services, and created a whole industry, including new companies, which focused on this market. An important component of the new regulations dealt with the affected public employees and the protection of their rights under PFI and P3 projects. This served to provide a level playing field for all prospective proponents. As part of its Treasury Task Force Technical Notes, the UK mandated that any initiative contemplating a PFI or a P3 had to develop a PSC based on a highly prescriptive process. This was necessary as funding for PFIs and P3s was provided by the central government from dedicated programs. As a result, a strict adherence to the prescribed methodology for the development of a PSC in the UK was an essential step to ensuring the forward progression of projects.

In the State of Victoria in Australia, the government enacted legislation to accelerate the development of P3s and it also provided the regulations for dealing with the various aspects that needed to be put in place for the successful introduction of P3s, including the funding mechanism. The State of Victoria PSC Technical Note is fashioned from the UK material and embeds the same type of prescriptive requirements to move the project forward, i.e. development of a PSC must be based on the Technical Note details before a P3 is considered to be adequately assessed and value for money determined.

As the UK and Australia have been implementing PFIs and P3s based on more structured approaches and methodologies than in other parts of the world, they have kept up with the related legislative and regulatory developments to sustain momentum, notwithstanding changes in government. An important distinction between the UK, the State of Australia and other jurisdictions is the fact that P3s were developed based on “central” policies accompanied by tools (legislation, regulations, funding) and a more mature P3 market.

1.3. The Canadian Context

P3s are not new in Canada, they have been in place under different names for many years. Canadian suppliers have been very successful in delivering P3s in Canada and abroad. Thus far, Canadian-based P3s have been developed without a 'central' agency, unlike the policy-driven UK model, which provided the tools and dedicated funding for the introduction of PFIs and P3s.

In Canada, we have, by and large, three levels of government that provide public services (federal, provincial - including territorial, and local - including municipal and regional) and a quasi-public, not-for-profit sector that provides certain public services, such as hospitals.

Each level of government has its own definition of what constitutes P3s, and its own approach to the development of the P3 business case and funding mechanism(s). To date, no level of government has initiated a program similar to the UK under PFI or P3, where tailored legislation and regulations were introduced and where predictable on-going long term funding is made available. Rather, in Canada, projects are assessed on a case-by-case basis, and in some instances, enabling legislation and regulations are developed as part of the P3 process. This should not be viewed entirely as a negative situation, for it is part of the Canadian fabric of delivering public services by the three levels of governments, where transfer payments, infrastructure funding programs and other mechanisms are in place. The trend evidenced in recent infrastructure funding programs is to promote the use of P3s as one of the tools to be analyzed in the development of project business cases.

The majority of the P3 projects developed in Canada will pass the scrutiny of a PSC value for money test. The notion of a PSC is, however, new in Canada, as different benchmarks have been used in the past to compare various options, such as in-house costs, internal costs, baseline costs, and in some cases, decisions were made without having completed a thorough assessment of the costs which would be incurred if the public sector delivered the infrastructure and ancillary services. In other cases, other non-financial considerations weighed heavier than pure internal costs, considerations such as regional industrial benefits opportunities, technology infusion, establishment of centres of excellence, special interest groups, etc.

In the next several years, with the public demanding higher quality infrastructure and services, P3s will become more prominent as a preferred tool to develop infrastructure and ancillary services, bringing with them ever increasing scrutiny of the approaches followed and the benchmarks used in determining best value for the taxpayers.

1.4. Structure of the Guide

This Guide, intended as a compendium of best practices material, was assembled with the view that each level of government and/or project type will develop its own specific approach to the preparation of a PSC. Therefore, the Guide is not intended as a rigorous step-by-step, prescriptive process for the preparation of a PSC.

Section 2 outlines the key objectives of this Guide, offers some insight into how it was assembled, and explains its intended audience and expected use.

Section 3 presents some of the best practices of the PSC, including the timing of the PSC, how to use the PSC in the procurement process, the need for accurate financial information, the importance of valuation when developing a PSC, what the differences are between the PSC and in-house costs and finally, some commentary on the impact which unsolicited proposals have on the PSC development.

Section 4 provides a checklist of financial information that is typically included in the PSC, such as direct costs, indirect costs, third party revenue, and life cycle costs. Also included is a discussion of some techniques for analyzing financial information, such as net present value.

Section 5 discusses some of the qualitative considerations when developing a PSC, such as how to deal with employment issues, including the transfer of existing staff, the importance of the economic development aspects, the relevance of technology infusion, and the interests of the respective levels of government and how to protect these interests.

Section 6 completes the guidance material by addressing some of the challenges that are inherent in the Canadian context, such as the lack of a formal policy for the development of a PSC, how to sell the PSC to public sector leaders, and how to deal with the challenges of indirect costs and risk quantification .

Key technical terms are defined in Appendix A: Abbreviations and Glossary

Appendix B presents a detailed costs checklist

Appendix C outlines a few tips and traps in developing the PSC

Appendix D presents some of the risk issues when developing the PSC

2. OBJECTIVE OF THIS GUIDE

2.1. Overall Objective

This document is intended to provide guidance on best practices for the development of a PSC. It is hopefully both “food for thought” and a user-friendly tool for public sector managers interested in developing a PSC and in understanding how a PSC is developed, used or interpreted in other Canadian or international jurisdictions. As a best practices guide, it explores some key factors necessary to ensure the integrity, and successful completion of a PSC.

This Guide is not intended to be too prescriptive in its approach; rather, it is intended that this Guide provide a kind of checklist for the public evaluation of P3 proposals. Moreover, it is hoped that the Guide proves to be both highly relevant and useful to government officials who are considering alternative service delivery and infrastructure development initiatives. The value of the guide material can be further enhanced when used in combination with P3 training now available in Canada. Please check Industry Canada’s web site at <http://strategis.gc.ca/ppp> to find information with respect to training as well as informative P3 material and useful links to other P3-related sites.

2.2. Intended Audience

The intended audience of this guide is any public sector manager or public administrator contemplating a P3 initiative. As this is a tool, and a key piece of the puzzle to the development of P3s, care should be taken in applying the concepts of the PSC to ensure their relevancy to the project and to the legislative framework of the implementing government body.

For example, federal level managers can use this Guide to develop Level D costing for an intended project that could be developed as a P3. Alternatively, the guide could be used by a municipal administrator who is reviewing internal costs of delivery services to determine how they compare with other municipalities.

2.3. Intended Use

Ideally, this Guide is intended for use by the public sector manager to:

- Develop a PSC for a specific project under consideration;
- Compare an already developed PSC, or any of its derivatives, to the guidance material in this Guide, to identify gaps and update and revise the developed PSC;
- Provide contextual framework for the development of specific PSC policies or guidelines related to a particular level of government or sector that is considering P3s;
- Share examples of PSCs by any central agency or governmental department/ministry interested in P3s; and
- Provide a forum for commentary on the Guide in order to encourage the continuous

improvement of its content.

2.4. How the Guide was Compiled

This version of the Guide was compiled based on the following steps:

- A review of various references on the PSC from the UK and Australia;
- An assessment of the relevancy of the gathered information to the Canadian context;
- Comments from earlier draft versions that were circulated to interested public and private sector individuals;
- Discussion with P3 practitioners in the public and private sectors;
- Research on existing Canadian PSC best practices and PSC examples (notwithstanding the limited number of documented PSC examples); and
- Accessing consulting resources to review and fine-tune the Guide.

2.5. Limitations and Qualifications

Caution should be used when applying the best practices concepts of this Guide as each situation is different and various jurisdictions may have regulations, guidelines, freedom of information considerations or accounting principles that are not always consistent with the material herein. In some instances, it may be prudent to seek legal advice prior to starting the development of a PSC in order to determine the best course of action and appropriate procurement practices.

It should be noted that no level of government is mandating the use of this guidance material for the development of P3s, the evaluation of proposals or for deciding on procurement tactics. As best practices, they are presented for consideration only.

Industry Canada, its advisors and consultants are held harmless in the event of any dispute(s) concerning the application of the concepts of this Guide.

3. BEST PRACTICES OF THE PSC

3.1. Definition of the PSC

The U.K. material defines the PSC as a hypothetical, risk-adjusted costing by the public sector as a supplier, to an output specification produced as part of a procurement exercise. Accordingly, it:

- Is expressed in net present value terms;
- Is based on the required output specifications; and
- Takes into full account the risks which would be encountered by that style of procurement.

The public sector comparator serves the following purposes:

- To determine if the project is affordable to government by ensuring full life cycle costing at an early stage;
- As a means of testing whether a P3 is viable and demonstrated Value for Money;
- As a management tool during the project to communicate with partners on such key aspects as output specifications and risk allocation; and
- As a means of encouraging broader competition by creating greater confidence in the bidding process.

The evidence that value for money has been achieved is normally provided through the use of a public sector comparator; however, other factors may include any/all of risk transfer considerations, service quality and wider policy goals. Obviously, the more complex the procurement decision, the more factors, other than merely cost, which must be considered. These other factors come into play particularly when the comparator is close to or even less costly than the external bidder.

Each P3 project is unique. As such, there is no prescriptive formula or approach which universally applies to the determination of value. As a general practice, with respect to cost effectiveness, the amount of effort expended and degree of analysis undertaken in the determination of a comparator should be commensurate with the scale and scope of the proposed project.

3.2. When to Develop and Update the PSC

The PSC should be prepared as soon as practical, typically early on in the planning process to develop a P3. There are two broad types of P3 projects that involve the development of a PSC:

1. P3 projects intended to take over the ownership/operation of existing public facilities and services by the private sector. In this case, the direct base costs are usually known, a rough order of magnitude is constructed to get a general feel for the possible scale of the

P3, and the types of risks in order to conduct a pre-feasibility/review of the potential success of the P3. Once approval of the pre-feasibility/review is obtained a more in depth PSC should be constructed to capture as much as possible life cycle costs, direct and indirect costs and costs of the risks to be transferred (if any).

2. A new development of infrastructure and/ancillary services. In this case, once approval is obtained to conduct the analysis of the project, a full fledged PSC should be developed, based on in-house costs, and utilizing any data available from similar projects or from market intelligence or estimates obtained from a market sounding.

In all cases, the PSC should be constructed early on in the planning process at the highest level and updated and detailed throughout the planning process before embarking on the procurement process. The final version of the PSC is usually included in the project approval document to move forward to the procurement stage. The PSC is an integral component of the business case document and at this stage should be considered as the best estimate for the benchmark until submissions from the market are obtained. Only then, should any amendments to the PSC be considered.

3.3. The PSC and the Procurement Process

Depending on the type of procurement process (stages) followed, the PSC should be an integral part of a fair, open and transparent process.

In the case of a 1- or 2-step procurement process, i.e. RFP and Negotiation, or RFP with no negotiations, the PSC should be constructed before the issuance of an RFP document.

In the case of a 4-step procurement process: Request For Expression of Interest (RFEOI), Request for Qualifications (RFQ), Request for Proposal (RFP) and Negotiations, the PSC should be constructed and updated until the RFQ stage.

Once bids are received, it might be prudent to re-evaluate the business case, including the PSC, in order to ascertain affordability.

3.4. How to Use the PSC

As part of the procurement tactics, a strategy should be developed for the use and disclosure of the PSC. In a fair, open and transparent process, it is important to communicate that strategy as part of the process. Below are some situational examples indicating how the PSC might be used:

- In a mature P3 sector, a summary PSC should be disclosed as part of the procurement process while indicating that the government is looking for a minimum saving of X% over the PSC financial figures, given a specific set of non-financial considerations. Each prospective bidder might be required to sign a non-disclosure agreement before obtaining the PSC document.

- In a new P3 sector, especially with the first procurements, the PSC document may not be made available to the prospective bidders; rather, a general indicative budget may be provided as part of the RFQ or RFP documents.
- For P3 procurements that do not include new infrastructure development, the PSC detailed information is typically available in a data room as part of historical costs.

In all cases the PSC, as a project benchmark, is to be used as a comparison to the submission received from the market to assess the value for money test.

3.5. Accuracy of the PSC

Depending on the complexity of the project, size of the investment sought, degree of risk to be transferred, maturity of the P3 sector, maturity of the service providers' market and past experience with similar procurement, a PSC should be prepared to a level of detail that will allow sensitivity analysis to be conducted with a high degree of confidence.

Care should be used in determining the level of detail and accuracy. In all cases, detailed assumptions should form part of the PSC documents and disclosure of the source of information should also be included in the PSC document. For large size projects, it is not unusual to spend several months of effort constructing a PSC; however, common sense should prevail to determine the level of detail to be included.

3.6. Risks and the PSC

As the PSC is a risks-adjusted costing for the delivery of infrastructure and/or services based on public sector procurement techniques, the identification, analysis, quantification and allocation of risks often proves to be the most controversial aspect in developing a PSC. Examples from the UK, Australia and Canada confirm the sensitivity of how to tackle the risks elements in a PSC.

The degree of effort in identifying and evaluating risks should be commensurate with the complexity and scope of the proposed P3.

The risk analysis typically follows these steps:

- Construction of a risk matrix, i.e. categories of risks that might be encountered by the public sector entity in developing the project. For example delivery risks that the public sector will deliver the project later than planned;
- Identification of specific risks (see Table 3.6. below);
- Quantification/Calculation of the consequences of risks, i.e. the value assigned to each risk if the public sector is developing the project. This is probably the most contentious

issue in the analysis of risk as it is very much dependent on the availability of information pertaining to past project delivery by the public sector. For example, the value assigned the public sector to deliver the project later than planned can be expressed in terms of possible overruns, lost revenue if the project is late and additional transition if the P3 is replacing an existing project;

- Estimation of the probability of risks for each risk identified and quantified. For example, based on past public sector delivery techniques, what is the likelihood (probability) that the project will be delayed;
- Valuation of the cost of the risk, taking into consideration the quantification and the probability of each risk; and
- Allocation of risks. For example, which risks should be transferred to the P3 proponent and which ones retained based on the premise that risks should be borne by the party that can better manage it at the least cost.

Appendix D provides additional detail on risk considerations for a PSC. Simpler techniques have been used to assess risks in a project by utilizing a scale for each risk and a tiered system for the probability of occurrence. For example, all types of risks could be categorized as resulting in:

- A. Catastrophic disruption to the services;
- B. Significant disruption to the services;
- C. Medium disruption to the services; and
- D. Minimal disruption to the services.

Each risk could be subjected to a tiered system of occurrence: high, medium and low.

The analysis, while subjective and not quantitative, might provide for a quick filter to focus the analysis on the risks that are of types A or B and that have a high degree of occurrence, therefore spending effort to quantify those rather than ignoring the whole risk analysis.

Table 3.6.: Identification of specific risks

Construction risk	The risk that the construction of the physical assets is not completed on time, to budget and to specification.
Demand(usage) risk	The risk that demand for the service is lower than planned.
Design risk	The risk that the design cannot deliver the services at the required performance or quality standards in the output specifications.
Environmental risk	The risks that the project could have an adverse environmental impact which affects project costs not foreseen in the environmental impact assessment (EIA).
Financial risk	The risk that the private sector overstresses a project by inappropriate financial structuring.

Force majeure risk	An unanticipated unnatural or natural disaster such as war, earthquake or flood of such magnitude that it delays or destroys the project and cannot be mitigated.
Inflation risk	The risk that actual inflation differs from assumed inflation rates.
Legislative risk	The risk that changes in legislation increase costs. This can be sub-divided into general risks such as changes in corporate tax rates and those which may discriminate against P3 projects.
Maintenance risk	The risk that the costs of keeping the assets in good condition vary from budget.
Occupancy risk	The risk that a property will remain untenanted - a form of demand risk.
Operational risk	The risk that operating costs vary from budget, that performance standards slip or that the service cannot be provided as per output specs.
Planning risk	The risk that the implementation of a project fails to adhere to the terms of planning permission, or that detailed planning cannot be obtained, or, if obtained, can only be implemented at costs greater than in the original budget.
Policy risk	The risk of changes of policy direction not involving legislation.
Residual value risk	The risk relating to the uncertainty of the value of physical assets at the end of the contract.
Technology risk	The risk that changes in technology result in services being provided using non-optimal technology.
Volume Risk	The risk that actual usage of the service varies from the level forecast.

3.7. Baseline Costs and the PSC

Baseline costs are typically calculated for services that are currently being provided by a public entity and which are subjected to a review that could involve a P3 option. The baseline costs are a reflection of the historical costs for providing the services under review, based on a set of assumptions regarding future needs of these services in terms of growth, reduction, a new type of service based on changes in demographics, public policy or any other considerations.

The baseline costs are usually presented for the most recent year of operation assuming that the year under consideration is a "normal year" adjusted to take into account special activities and based on sound commercial practices. Adjustments to normalize the figures could be for a variety of reasons such as:

- A one time non-recurring activity;

- Major capital upgrade to facilities;
- Actual level of services were higher or lower than previous years because of weather; and
- Anticipated adjustments to wages based on the latest collective agreement negotiations.

The objective of the normalization is to present an adjusted baseline that reflects the most likely outcome in a typical year. A “normal year” should not be confused with an average year. An average year is simply a mathematical average of the information that is reviewed which could include several years of under/over spending, therefore the average may not be representative of a “normal year” of operations.

The normalized information pertaining to the “normal year” becomes the basis for forecasting future expenditures for a predetermined level of service. The forecasts should be for the same period of review as the PSC. The baseline costs become the raw costs that go into a PSC calculation to be adjusted for other factors such as hidden costs, assumed costs and risks.

Also, a Baseline document will cover non-financial information such as the level of service, performance standards, current organizational set-up and other qualitative information to describe the services under review. It is like creating an information repository for possible bidders who are interested in buying a business, where such information is usually available in a data room to assist in the conduct of a due diligence exercise.

3.8. In-house Bids and the PSC

There should be no distinction between in-house and private sector proposals. Typically, in-house bids are encouraged when the services are currently provided by the public sector rather than when new infrastructure is needed to provide services. Affected staff or other internal staff could form an in-house bid team.

For an open, fair and transparent competitive procurement process to prevail, work on the PSC or other internal baseline documents should be conducted by people that are not attached to the in-house bid. While early work may involve staff who may become part of the in-house bid team, their work should be communicated to all prospective bidders. Furthermore, as soon as an in-house bid team is formed, separation should be instituted between the in-house bid team and the project team managing the prospective procurement.

The PSC should be constructed in the same fashion, whether an in-house bid is contemplated or not, as the PSC is to be used as a benchmark to ascertain value for money.

In the case where in-house bids are anticipated, the PSC and other tools used during the procurement process should address issues like taxation, internal support and administrative services, capital usage charges and staff costs in order to achieve competitive neutrality.

3.9. Unsolicited Proposal and the PSC

Whether the public sector entity entertains an unsolicited proposal (UP) or not, a PSC should be constructed as part of the value for money test.

A PSC must reflect the public sector need and not simply use or necessarily adapt the private UP solution as the basis for costing. Accordingly, careful analysis and scrutiny of the UP technical output should be conducted and generally several additional approvals and disclosures will be required to ensure that fairness is maintained.

There are several policy frameworks for dealing with UPs, either the Swiss challenge, shadow bids or other mechanisms; notwithstanding, in all cases a properly constructed PSC is needed.

3.10. Value for Money and the PSC

While the PSC is basically a costing and a financial analysis document, value for money should not be considered merely from a monetary perspective; rather, value for money should also include other considerations that satisfy the guiding principles that the public sector entity has established to engage in a P3.

While the PSC should be used as a benchmark to compare life-cycle costs from various bidders, it may not be the only benchmark to determine the final outcome of the procurement process. Each case should be considered on its own merits and qualitative considerations, if they exist, should be communicated to the market before starting the bidding process. The next chapter presents a financial description or checklist of items that can be included in a PSC, followed by a short presentation of some of the qualitative considerations that may be considered in assessing value for money.

4. PSC FINANCIAL CHECKLIST

4.1. Life Cycle Costing Approach

The PSC is calculated on the basis of the net present value of the expected life-cycle costs to the public sector of what is typically articulated as a Reference Project. The Reference Project is generally described in terms of the output specifications for the design, construction, operation and maintenance of a project over the expected length of the contractual arrangement and covering all the costs associated with it. Typically, the direct costs cover:

- Initial Capital Outlay;
- Operating and maintenance costs; and
- Capital upgrades.

The costs should be expressed in constant dollars based on the year that they are likely to occur. Added to the above direct costs are indirect costs associated with the delivery of the infrastructure and services, those indirect costs could cover such items as:

- Administrative overhead;
- Assumed or hidden costs;
- The cost of transferred risks;
- Other costs, such as surplus property or equipment; and
- Expected third party revenues that could be shared between the parties.

The above indirect costs/third party revenue should also be expressed in constant dollars and allocated to the year in which their impact will occur.

Adding the direct and indirect costs year by year will present the expected total costs of the project over its expected life, hence, its life-cycle costs. The total costs per year or cashflows, expressed in constant dollars, are imputed by the appropriate discount rate to obtain the net present value of the life-cycle costs.

As a very simple illustration of the above, assume a project that has a five year life span, costing \$100m in year one to build, \$20 million in years two to five to operate, requiring a capital upgrade of \$10 million in year 3. The indirect costs are estimated at \$1 million in overheads per year starting in year 1 and \$3 million in assumed or hidden costs per year. The property will be transferred to the public sector at the end of year 5 at which time it will be disposed of for \$50 million. It has been assumed that the costs will be incurred at the same time during each year. The discount rate (cost of capital) is assumed to be 6%. Table 4.1 provides a way to present the above information in discounted cashflow fashion:

Table 4.1 – Illustrative Cashflow Example

Year	Capital	Operating	Indirect	Disposal	Total	Discount Factor	Discounted Cashflow
1	100		4		104	1.0000	104.00
2		20	4		24	0.9434	22.64
3	10	20	4		34	0.8900	30.26
4		20	4		24	0.8396	20.15
5		20	4	-50	-26	0.7921	-20.59
Total	110	80	20	-50	160		156.46

In this simple illustrative example, the net present value of the life-cycle costs of the project is \$156.46 million. If no other considerations are used to compare the PSC to the P3 bids, value for money could be achieved if the lowest price private sector bid is less than \$156.46 million in discounted net present value cashflow terms.

The discount rate to be used should reflect the public sector value of money plus a possible premium for the systematic risk inherent in the project. It can be argued that the public sector should use the private sector's cost of capital which takes the risk into account. (The public sector's internal cost of borrowing inevitably reflects an implicit tax subsidy).

4.2. Direct Costs

Direct costs are those that can be traced or assigned to particular project elements. The PSC should include all the assumptions underlining the estimation of the direct costs, their source and their accuracy if available. Direct costs should reflect the best estimates based on public sector traditional procurement methods and not on the assumed efficiency of the private sector.

Direct costs of a project could be grouped under two major headings: Capital and Operating.

4.2.1 Direct Capital Costs

Capital costs are those needed to construct or upgrade the facility, these costs typically include:

- Design;
- Land;
- Construction;
- Material;
- Plant and Equipment;

- Demolition;
- Inspection;
- Modification/Improvement/Upgrades throughout the life of the project;
- Transition costs;
- Permits; and
- Public Procurement Processes including external consulting.

Estimates for the sale or disposal of assets and or the residual value of assets at the end of the useful life of the project, should either be deducted from the direct capital costs or included in third party revenues.

4.2.2. Direct Operating Costs

These are the costs that are necessary to operate and maintain the facilities based on a set of performance standards and service levels. It is important to address any anticipated changes in the services over the life of the project, for example if demographics impact the types and levels of services in future years, their impacts need to be described in terms of estimated decreases or increases in the operating costs. This is normally true for municipal recreation services, where the types and expected quantity of services will change over a twenty year typical life span for a new facility. Consideration must be given to additional or different services when needed to address demographic changes.

Direct operating costs can include the following:

- Staff wages, salaries and benefits
- Material and consumables
- Tools and equipment
- Rentals
- Utilities
- Support subcontracts, such as cleaning, HVAC, landscaping, snow removal, etc..
- Repairs and Maintenance (preventive and corrective)
- Security
- Emergency and unplanned repairs
- Quality assurance and Audits

4.3. Indirect Costs

Indirect costs are those that can be incurred which are not directly related to the provision of services or those assumed by the public sector entity.

Typically, indirect costs fall under two headings: Overheads and Hidden or Assumed Costs.

4.3.1 *Overheads*

Overhead costs include a portion of corporate and administrative costs that can be allocated to services. These overhead costs are usually for centrally provided support services such as:

- IT support;
- Accounting;
- Human Resources;
- Project Management;
- Space, if co-located with other units;
- A portion of senior management time; and
- Shared Services, such as procurement.

Each case is unique and requires a thorough analysis to determine the best way to estimate overhead costs. Techniques for estimating overhead costs include allocation methods based on a variety of factors that act as drivers to support the services, or more elaborate activity-based costing methods which capture the costs of the services according to the consumption of each activity. In other instances, some public organizations have determined a certain percentage multiplied by its direct costs, based on historical trends, serves as a proxy to its overhead costs. Care should be exercised in determining the overhead costs and their estimation methodology.

4.3.2. *Hidden or Assumed Costs*

These are indirect costs that cover items such as:

- The provision of services by another level of government that otherwise would not be available from a private sector entity at the same cost, such as normalization of grants-in-lieu of taxes as a proxy for property taxes.
- Insurance costs for assets and services that are typically not insured by a public sector entity as it was deemed from a risk management perspective to self insure the facilities.
- Assumed costs which include any Government Furnished Equipment (GFE) to be provided to the facility at a lower cost than market value.

The intent of these indirect, hidden or assumed costs, is to normalize the costs between the way a public sector entity might deliver infrastructure and related services and the way a private sector provider might establish its comprehensive costs for the project.

4.4. **Risks Adjustments**

As described above in Section 3.6 – Risks and the PSC, the assumption of certain risks that the private sector is better equipped to manage and mitigate is one of the fundamental

principles of P3s.

The quantification of these risks is generally both complex and controversial, thus care needs to be exercised in attempting to assign value to risks. Consensus building between all affected stakeholders will ensure that the project risks have been validated and the success of the project is enhanced. Several P3s have either stalled, delayed or cancelled because of the subjectivity involved in the quantification of certain risk elements of a project.

Based on the illustrative example used in Table 4.1 of this section, the risks of this project are assumed to be the following:

- *Construction risk*: an overrun of 20% of the capital costs is anticipated based on historical trends of the public sector delivery history, 50% of the time. Therefore the construction risk will be \$100 million multiplied by 20% overrun multiplied by 50% probability, which makes it \$10 million in year one.
- *Life cycle capital allowance risk*: \$10 million in year three carries a moderate degree of risk, as the technologies are changing rapidly; therefore, it is assumed that these costs might be higher by 50%, with a probability of 50% of this happening. Therefore, the cost of this risk is quantified at \$2.5 million.
- *Operating Cost risk*: given the new types of services to be delivered, operating costs will increase by 50% in year two, 25% in year three and 12.5% in years four and five. The probability of the increase occurring is 20% based on past public sector experience; therefore, in year two, an additional \$2 million should be included in the operating costs, \$1 million for year three and \$0.5 million for years four and five.
- *Indirect Costs risks*: are deemed to be very minimal and given that the total life cycle indirect costs are 12.5% of the total life cycle costs, it was determined not to quantify these risks.
- No other risks were identified as significant.

Based on the above scenario, the previous Table 4.1 is expanded to include risk adjustments in Table 4.4 as follows:

Table 4.4 – Illustrative Cashflow Example Including Risk Adjustments

Year	Capital	Operating	Indirect	Disposal	Risk Adjustment	Total	Discount Factor	Discounted Cashflow
1	100		4		10	114	1.000	114.00
2		20	4		2	26	0.9434	24.52
3	10	20	4		3.5*	37.5	0.8900	33.38
4		20	4		0.5	24.5	0.8396	20.57
5		20	4	-50	0.5	-25.5	0.7921	-20.20

* The sum of \$1.0M (operating cost risk) and \$2.5M (Life cycle capital allowance risk)

Total	110	80	20	-50	16.5	176.5	172.27
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Thus, taking the risk adjustments into account, a further \$16.5 million (\$15.8 million in net present value terms) is added to the total costs. The risks effectively increase total project costs by 10 per cent.

4.5. Third Party Revenues

Forecasting potential third party revenues can be a particularly difficult aspect of the PSC especially where there is little or no historic data available. The two key variables of price and quantity should be identified separately but the inter-relationship between these two variables (or demand curve) should not be overlooked. The need for specialist advisers should be considered. Notwithstanding, the amount of time and money put into this exercise should reflect the materiality of the amounts involved.

A possible area for third party revenues which could have a positive impact on the bottom line cost of the PSC, is the potential for the private sector proponent (to be allowed to) provide other complementary services on the site, such as additional floors within the facility to attract other tenants, thereby reducing the cost to the public sector tenant (or anchor tenant). This will largely depend on the private sector proponent's risk appetite. Historical trends have shown that third party revenues are generally not a very material part of a public sector facility. Nevertheless, care should be exercised in addressing this issue of third party revenue. Detailed assumptions need to be presented to substantiate the results, as private sector bidders accept the notion of third party revenue. It is important to undertake a thorough due diligence on this item as it might represent a major risk element in the deal.

4.6. Financial Analysis Techniques

As illustrated above, a discounted cashflow yielding a net present value (NPV) over the expected life of a project is the major technique used in presenting the results of the PSC analysis. Other techniques may be used to develop certain aspects of the PSC, such as the return on investment for a specific investment, or the pay-back period when analyzing capital funding of various utilities upgrade options during the life span of a project.

In all cases, sensitivity analysis should be conducted to verify the robustness of key assumptions and to determine the vitality of the PSC when exposed to potential changes in those assumptions, risk factors and the predicted operating environment over the life cycle of the project. Sensitivity analysis can be used for the following purposes:

- for comparison with bids to identify the changes in base assumptions which would result in a different evaluation decision being reached; and
- to determine the relative robustness of the PSC to differing bids. This may be assessed as a qualitative factor if the PSC is close to the lowest bid.

Again, as a general rule, the amount of sensitivity analysis performed should reflect the materiality of key variables, the complexity of the PSC and the proximity of the PSC to the lowest cost bid. Variables that are typically analysed using sensitivity analysis include:

- length of the project (both the construction and concession periods);
- discount factor; as a proxy to a private sector debt versus equity ratio;
- construction costs, schedule and completion dates;
- total service demand;
- total operating costs;
- indirect costs;
- third-party revenue; and
- residual value.

Where possible, the financial model should be developed to allow different values for key variables over time.

4.7. Funding Sources

Various provincial governments are encouraging the consideration of P3s. Moreover, the federal government has recently established several infrastructure initiatives which promote P3 developments.

In establishing the PSC, it will be very difficult and at times, inappropriate to assume that there will be funding available for P3s from the various levels of government. The analysis should be constructed based on a best public sector solution and if other sources of funding become available during the procurement process these should be used to reduce the costs to the public sector and not necessarily as a prerequisite for embarking on a P3.

5. PSC QUALITATIVE CONSIDERATIONS

A PSC is often viewed as a one-dimensional approach to project assessment that focuses primarily on financial factors, investment appraisals and accounting issues.

This tends to overlook a broad range of social, economic and environmental factors in adapting a P3 approach as a means to generate social and economic well being and encourage an innovative role in environmental stewardship.

In any event, a public sector comparator is not the only determinate for assessing value for money for a public sector investment (s).

5.1. Socio-economic Policy

A PSC should be developed from an option appraisal conducted during the planning phase and in advance of the bidding and proposal assessment stage. The principal definitions in the analysis include:

- specific assumptions underlying the comparator; and
- variables that will have significant impact on full-cycle costs

The construction of a PSC for a P3-based project is seldom a straightforward exercise. The analytical framework within which PSCs are applied is based on the creation of a hypothetical design, build, operate contract using empirical evidence, recent experience, and judgment (which involves comparison, discrimination and insight) to estimate and create representative measurements or benchmarks.

In practice, many of these estimates can vary substantially. Each project will have a different dynamic and require considerable analysis to get things right. Small alterations to financial assumptions, or minor changes to annual operating cost assumptions, can reflect significant differences in full-cycle costs. As well, not every model of prior infrastructure investment can be copied, automatically imitated or be deemed relevant in all respects.

Beyond financial considerations in the assessment of whether or not a proposed P3 offers value for money, policy imperatives may require the inclusion of social-economic performance criteria within particular projects. Determining the all-in, life-cycle costs to the public sector not only includes financing, overheads, maintenance, self-insurance and so on but may require the inclusion of costs related to the promotion of, or adherence to, social, economic or environmental stewardship policy considerations. Furthermore, case projects are viewed as a consistent whole rather than from a single perspective.

Social-economic factors are crucial because the implementation of a P3-based initiative is based primarily on an assessment of whether or not a particular project has economic or social value. Most P3-based initiatives have underlying social and economic development objectives.

Project design can be influenced by considerations from a number of perspectives.:

- the advancement of regional development goals, e.g. the siting of fixed infrastructure or on-going service operations;
- the advancement of social benefits; e.g.:
 - equal and equitable service access;
 - skills transfer and the creation of sustainable local employment;
 - assurance of employment equity (affirmative action, non-discrimination employment practices, etc.);
 - equality of access for language, cultural or regional interests; and
 - offsets or application of set asides for aboriginal or local businesses.
- the imposition of privacy and security considerations, e.g. information technology infrastructure building and operation;
- the creation of economic benefits, e.g.:
 - nurturing and supporting vertical and horizontal linkages among small, medium and large-size enterprises; and
 - (to the extent permissible under trade agreements) the integration of commitments to support the participation by local/regionally-based businesses such as:
 - identification and promotion of technology diffusion or transfer opportunities; or
 - development of local expertise/skills and export capabilities.
- establishing linkages between public sector investment and construction industry capacity for participation in P3-based initiatives; and
- facilitating technology transfer between public and private sectors.

5.1.1 Accounting for social-economic policy imperatives in planning the project

The environment within which public policy is being developed and deployed is becoming increasingly complex. Socio-economic policy considerations often form a significant part of the decision-making process in public sector infrastructure initiatives. The requirements reflected in the advancement of public sector investments are generally somewhat of a holistic “weighing up” of public interests.

While potential distortions in the development of a PSC can occur by reference to wider policy objectives, it is important within any P3 evaluation to assess the weight to be attached to various policy imperatives.

The wider the range of services requested under a P3, the wider the range of socio-economic considerations. This may mean organizing a P3 initiative around public policy themes, not just financial/operational considerations.

Where such over-riding policy considerations apply, the costs of implementation must be factored in the business model and financial arrangements.

It should be recognized that a PSC is only a partial method of assessment. P3s require a full and comprehensive social, economic and environmental review of public versus private sector options.

5.2. Balancing Public versus Private Sector Interests

A P3 is a legal arrangement between two or more parties who have agreed to work collaboratively towards shared or compatible objectives and in which there is shared authority and responsibility, joint investment of resources, allocated or shared liability and risk-taking, and mutual benefits.

A P3 requires criteria to establish the nature of the business relationship relative to its public versus private value. Operationally, in the case of a P3, partnering is commonly defined as delegating to the private sector some or all of the financing, design, development or operation of public infrastructure and services. Profitability for the private sector participant versus broader public policy concerns about technology transfer; equity of access; language or ethnic considerations; or educational, human development and community benefits, need to be clearly understood. The imposition of commercial criteria on public sector operations or vice versa may not be valid. In a public system, managers serve socio-political interests. In a private system, managers serve commercial interests. These interests could be in conflict from time to time, and need to be clearly identified in the analysis process.

The business planning process for a P3 engagement must facilitate a shared understanding of the intent of the partnering arrangement (e.g. access to capital, technology, and business know-how) while maintaining government's public policy interests and priorities. The elements of the project that represent the public interests should be identified during the planning phase as they will require definition in financial structures and legal agreements at the implementation stage.

Engaging the private sector may also require additional financial support to mitigate risks or requirements imposed by legislative or policy considerations that require tailoring the project to specific social-economic objectives.

Fulfillment of public policy commitments throughout the duration of the project may also represent a substantial contingent liability in the event of a failure of the project company.

5.3. Environment Stewardship

Environmental stewardship is a major public policy consideration in infrastructure development or regeneration projects. It encompasses:

- energy conservation and protection measures;
- adopting new architectural and maintenance technologies, i.e. eco-efficient infrastructure design requirements;
- incentives for the use of eco-efficient technologies; and
- facilitating the identification of eco-efficient technology choices.

When embarking on a P3, the costs required for compliance with such public policy obligations or objectives need to be quantified at the project planning stage.

5.4. Human Resources

Human resource considerations generally relate to one-time costs associated with entering into a P3. These may include:

- severance packages; and
- successor collective bargaining rights.

The application of fair wages and benefits policies may also form part of “the deal” and will have to be reflected in on-going operational costing scenarios.

5.5. Bridging National, Regional and Local Considerations within the Assessment Process

The community needs of a province, region or local area are an important element of federal P3 initiatives where it may be envisaged that the effects of increased local business participation in a P3 will multiply throughout the community. These may include:

- opportunities for local builders/investors to participate in innovative proposals; and
- scaling the project or its components in a manner that allows for local small and medium sized enterprises (SMEs) to participate.

Where such criteria are applied, PSCs will have to reflect such policy overrides.

Bridging national, regional and local considerations within the assessment process also requires pro-active communication between socio-economic development policymakers, project proponents and the broader community of stakeholders. This could include:

- meeting early in the project development cycle to discuss overlapping issues;
- promoting shared understanding of both financial and over-riding public policy objectives; and
- orchestrating collaboration and cooperation during the planning and design stage.

It is important to carefully consider the interests of the various parties involved and provide for participation by community leaders as well as consultation with potential business community participants.

5.6. Participation of Small and Medium Sized Enterprises (SMEs)

Small and medium sized enterprises, whether in design, engineering, technological developments or services are the source of significant innovation that can be captured within P3 initiatives.

Whether short-term optimization and the subsequent conditions for financing P3s provide opportunity for participation by small and medium sized enterprises (SMEs), or limit participation to large, mature firms is a significant policy consideration.

Where public policy considerations for the inclusion of SMEs (at the national, provincial or local level) are applied, the PSC must be prepared in such a manner that it recognizes the possible financing and contractual arrangements that would be required to engage or include these potential private sector players in the project.

SMEs may have limited capacity to participate in design/build requirements, particularly where a call for a P3 proposal includes financing, because of the limitations on their access to capital or their own capital structure. In addition to lacking the financial resources to invest in large infrastructure projects, they may not have the experience of participation in consortia or in managing specific project risks.

“Packaging” the design, build and operate work and the support of long-term relationships that recognize SME conditions would have to be addressed within a proper business dimension. The design of a P3 may have to devise special methods for estimating the costs of such requirements and assessing the impact on operational and financing designs.

Canadian companies, particularly at the SME level; (a) may have no experience in P3 deal making, (b) limited experience in constructing or participating in multi-discipline consortia, and (c) face limited experience within local financial institutions who could

potentially support their participation.

Engaging smaller local firms may increase risk and costs – the opposite of value for money in the traditional sense – and perhaps more importantly may also preclude the allocation of risks to those best placed to manage them. If transfer of risk is paramount, then some firms can not play.

If local participation is an objective, and there is an assessment that the number of potential local suppliers is limited, then the planning also requires the project be structured in a manner that can nurture participation by SMEs and stimulate local competition. This includes such factors as the length of contracts, appropriate allocation of risks; payment mechanisms and incentives and mechanisms that afford SMEs to participate in offering innovative approaches to construction or service requirements.

While construction and finance costs may be higher, they may be offset by being more innovative in the design, construction, maintenance and operation of a project over the life of the contract.

5.6.1. Tailoring Financial Arrangements/Benefits-Risk Sharing for SME Participation

Financial models within the PSC and P3 modeling exercises are developed at a very early stage. These models are used both for risk and equity allocation and for benchmarking performance expectations and generally define:

- fundamental principles;
- investment and remuneration criteria (including any attribution of benefits);
- accounting principles;
- the acceptable term of financial arrangements (consistent with the requirements of the private sector to recover their investment and make a profit); and
- realistic discount periods based on the nature of the assets or infrastructure to be employed.

These financial models also adopt pricing as a mechanism for the transfer of risks, for example:

- payments referenced to benchmarked (current) costs of services;
- guarantees or assignments for statutory pricing provisions or social policy requirements; or

- output specifications and appropriate payment mechanisms that properly reflect the desired approach to risk allocation;
- transactional-based allocations;
- service availability versus volume/usage payments for core services;
- financial incentives for superior performance or penalties for non-compliance
- how private capital used in the creation/renewal of public assets or services can be secured based on the chain of financial rights and obligations in respect of the assets being created; and
- provisions to fairly protect the interests of all parties in the creation of the assets, particularly intellectual capital.

The design and structure of all these elements may be affected by the inclusion of a public policy imperative to use a P3 initiative to support SMEs. In that event, the form the PSC will take, will be based on specific financial arrangements tailored to SME participation.

The examination of factors relative to appropriate capitalization and operational capital requirements will also need to encompass conditions for financing, thus providing an opportunity for participation by small and medium sized enterprises (SMEs), or limiting participation to large, mature firms being reflected in the financial model.

The requirements in innovative financing models may also have to reflect financial surveillance of SMEs (contracted to long-term program delivery) to ensure long-term corporate stability.

5.7. Monitoring Costs

Fulfillment of public policy commitments has to be expressed in performance metrics (embodied in contract terms and supporting service level agreements) and may require the development and/or adoption of specific governance and accountability frameworks. These conditions create requirements for particular oversight mechanisms.

Oversight mechanisms add costs and have to be considered in the development of a PSC, from both public and private sector perspectives. These elements will have to be quantified, promoted and protected in a PSC to ensure competitive neutrality in the analysis.

Do not underestimate monitoring costs. Performance monitoring will place a higher administration burden on the project.

5.8. Impacts on the Partner Selection Process

The selection of a private sector partner for the development and advancement of longer term public sector objectives requires the development of criteria for partner selection that could operationally reflect an initiative as an instrument of public policy, as well as provide opportunity for private sector profitability.

These criteria (principles and values) are in turn embodied in the contractual control and performance monitoring mechanisms put in place to govern and manage a P3 initiative.

Private sector agents are organized into profit centers where, whatever their statements on social responsibility, the operating managers are under pressure to get relatively short-term financial results. However, where private sector partners are being held accountable for services, relevant checkpoints and performance standards have to be built into contracting arrangements. While no one knows yet how to assess social performance to the degree of objectivity and systemization used for financial performance, public sector interests and expectations (i.e. "standards") have to be balanced with other objectives and integrated into the overall organization planning and control procedures.

It should also not be expected that a business accept responsibility for areas where it has no legitimate authority (e.g. program compliance and enforcement or government commitment to third parties). It may in fact be counter-productive for government to look to business for actions and solutions of which it is incapable, or which are commercially uneconomic and that are properly the responsibility of public institutions.

6. THE CANADIAN CHALLENGE

As indicated in Section 1 of this Guide, the Canadian environment presents an interesting test case, where P3s are implemented by various levels of government with very little coordination in terms of approaches and methodologies. One thing that is common in Canada is the desire of governments, irrespective of their political convictions, to explore various funding mechanisms, including P3s. The overall arching principle is to ensure that the public sector does not lose control during the process and that societal benefits are addressed in one manner or another.

6.1. No formalized Policy of PSC Development

Unlike the U.K. and Australia, there does not yet appear to be any formalized policy within any Canadian jurisdictions with respect to the development of a PSC; rather, what is evident, is a collation of guidance material on how to develop in-house costs, or how to conduct an activity-based costing of a service or a function.

This lack of a formalized process should not preclude the public sector from developing a PSC report, or any of its derivatives. The PSC should be based on the sound application of commercial business practices and detailed enough to allow decisions to be made based on qualitative and quantitative considerations including risks.

6.2. How to Sell the PSC to Public Sector Leaders

The PSC as an internal costing tool could be of interest to public sector leaders, administrators and politicians alike. Even if the political climate does not appear to be open for P3s, the PSC document could be an important tool to assess the value of the contemplated infrastructure and services. In some jurisdictions, the use of a PSC, or any of its derivatives, is used to calculate the overall and unit costs of the services in order to compare them with other jurisdictions or other benchmarks to make informed decision on value of the services received or to assess user fee implications.

The important message is to present the PSC as a management tool in deciding if there is a need to move forward using different delivery instruments such as P3s.

6.3. Disclosure of the PSC

Effective competition comes when all parties involved in the bidding process are provided consistent, timely and accurate information about the public sector intention. Consideration can be given to open disclosure when releasing the PSC, or parts of the PSC as part of the bidding process, in order to achieve an enhanced competitive process. Some of the advantages of an open disclosure include:

- Encouraging a higher degree of confidence in the public sector commitment, thus providing prospective bidders with checks and balances; and
- Spurring greater innovation from prospective bidders.

The general principle regarding the disclosure of the PSC is that disclosure should be open and transparent and should occur where it is likely to assist in the competitive bidding process. Therefore it is the level and timing of the disclosure that are the key considerations.

The level of disclosure is very much dependent on the project under consideration and the maturity of the provider market. As a general rule disclosing some of the aggregate figures (not including cost of risks) from the PSC and other non-financial considerations will provide a starting point for prospective bidders and does not generally compromise the negotiation position if risk transfer is expected to be a material factor in the evaluation process. Key financial and operating assumptions should also be disclosed.

The timing of the disclosure should be as early as possible in the process in order to provide a measure of comfort to prospective bidders that the public sector has applied life cycle costing to the infrastructure and services. Care should be taken to ensure that the timing of the disclosure does not weaken the public sector's negotiating position. For example, disclosure later in the bidding process, particularly at the preferred bidder (s) stage where there are only one or two bidders remaining, may weaken the public sector's negotiating position.

6.4. What Happens When There Is No PSC

The absence of a PSC, or its derivatives, creates a dilemma for the public sector to determine value for money and whether the received bids are reasonable and affordable.

At the very least, if a formal PSC, or a baseline costing does not exist, a benchmark should be established, maybe by analogy, or perhaps another plausible technique to ensure that the bids are in the rough order of magnitude range.

Several smaller P3 projects have been implemented without the scrutiny test of the PSC, where political will and non-financial considerations typically weigh heavier than value for money. Generally, larger projects need to establish a PSC, or any of its derivatives, to provide a value for money test.

6.5. Dealing with Indirect Costs

One of the more controversial issues which typically arises when developing a PSC, is the determination and valuation of indirect costs, especially corporate overheads and hidden or assumed costs particularly when these costs are not directly attributable to the infrastructure or services under consideration. One of the techniques that could be used

is a pro-rata determination of the support services headcount to the line positions. Thus, if on average for every X line positions there are Y support service positions, this can be used as a proxy for some of the overheads. Where existing services delivered by the public sector are considered for a possible P3, there would also be some information on the indirect costs or an activity-based costing may provide input into these types of costs.

In the case of hidden or assumed costs, it may be a more subjective determination. One method to compute these costs is to get a quote from the parties that are providing services or obtain insurance quotes from the market in the case of self insurance in order to normalize these costs. In many cases, only a portion of these costs is included in the PSC.

6.6. Dealing with Risks

As described in Sections 3.6 and 4.4, the level of effort to quantify risks should be commensurate with the complexity and scope of the proposed P3. In many cases, especially smaller projects, risks are not quantified, but simply acknowledged and assessed qualitatively to determine the risk tolerance of the public sector to the specific project.

In larger projects, types of risks need to be identified, especially where project financing is required for the infrastructure portion of the P3. Therefore, a thorough understanding of the risks of the project will enhance its success and provide the market with a firmer commitment from the public sector to the P3 prospect. Risk identification, assessment and quantification requires specialized skills that are not always readily available within the public sector entity contemplating a P3. In such cases, it is very common for the public entity to hire external resources to tackle this, sometimes complex, activity.

6.7. Where to Start in the Development of the PSC

Creating a plan for the development of a PSC is typically a starting point. The PSC could be produced in phases and in various levels of detail as the project moves forward.

As a minimum, the plan to develop a PSC should include the major sections of the document, the author of each section and a timeframe. Consideration should be given to obtaining internal approval on major assumptions and on the issue of using external resources.

The PSC should commence as a very high level document to gauge internal acceptance of the endeavor and then move into a detailed assessment of each section within the PSC. Depending on the project complexity and scope, more time and resources should be allocated to the items that appear more challenging and complex.

6.8. Format of the PSC

A typical PSC document should cover the following points:

1. Brief description of the project
2. Summary of the output specifications
3. Financial Component
 - 3.1. Capital Costs
 - 3.2. Operating and Maintenance Costs
 - 3.3. Indirect Costs
 - 3.4. Third party Revenue
 - 3.5. Costs of risk transferred
 - 3.6. Assumptions underlying the above costs
 - 3.7. Net present value calculation
 - 3.8. Sensitivity Analysis
4. Qualitative Consideration
 - 4.1. Socio-economic
 - 4.2. Labour
 - 4.3. Special Interest Groups
 - 4.4. Other
5. Value for Money Assessment Framework
6. Timescale
7. Other Information, such as the overall procurement process, approvals, needed legislation changes, etc.

6.9. Help is Available

Informal discussion with P3 practitioners, advisors and associations such as the Canadian Council for Public-Private Partnerships may prove to be very beneficial to understanding the complexities of the development of a PSC or any of its derivatives.

In preparing a PSC, a number of public sector entities have used external advisers, such as actuaries and accountants, in addition to internal resources and other source of public sector assistance. Within reasonable cost limits, the use of advisers is encouraged when there is a business case in which clear value will be added by external experts. In smaller projects, strategic type advice could be enough to get the process going, while in larger more complex projects, more support may be required where skills and experience (e.g. in financial modeling and risk assessment) are scarce within the public sector entity.

Industry Canada maintains an (unqualified) list of P3 practitioners. Please contact us to make yourself known to us or if you are seeking advice or direction to other sources of information on public-private partnerships. We can be reached at:

**Services Industries Branch
Industry Canada
235 Queen Street, East Tower
4th Floor
Ottawa, Ontario
K1A 0H5**

**Email: sicp@ic.gc.ca
Fax: (613) 952-9054**

ABBREVIATIONS AND GLOSSARY

BAFO	Best And Final Offer
BBO	Buy-Build-Operate
Bidder	<p>A respondent to a request for Expressions of Interest or an invitation to submit a bid in response to a Project Brief. Typically, a bidder will be a consortium of parties, each responsible for a specific element, such as constructing the infrastructure, supplying the equipment, or operating the business. Government normally contracts with only one lead party (bidder) who is responsible for the provision of all contracted services on behalf of the consortium.</p> <p>A private sector syndicate (or in-house team) bidding for a P3 procurement.</p>
BLOT	Build-Lease-Operate-Transfer
BOO	Build-Own-Operate
BOT	Build-Operate-Transfer
BOOT	Build-Own-Operate-Transfer
C2P3	Canadian Council for Public-Private Partnerships
Client	A team of managers/procurers in the public sector responsible for PFI/P3 procurements.
Contingency	An allowance included in the estimated cost of a project to cover unforeseen circumstances.
DB	Design-Build
DBFO	Design-Build-Finance-Operate
DBO	Design-Build-Operate
DBOT	Design-Build-Operate-Transfer

DCMF	Design-Construct-Manage-Finance
Discounting	The application of a discount rate to allow comparison of quantities which are distributed over time by converting them to a present value.
Discount Rate	The rate used to calculate the present value of future cash flows; usually determined on the basis of the cost of capital used to fund the investment from which the cash flow is expected.
Discounted cash flow	A general term for the analysis which discounts a stream of future cashflows in order to calculate a net present value.
EOI	Expression of interest
Estimate	Approximate judgement of amount
Fixed Cost	A cost that does not change with varying activity levels.
Gantt Chart	A diagrammatic representation of the timing and duration of the various sequential phases of a project, commonly used in project management, and routinely available in many project management software packages.
GDP Deflator	An index of the general price level in the economy as a whole, measured by the ratio of gross domestic product (GDP) in nominal (i.e., cash) terms to GDP at constant prices.
LDO	Lease-Develop-Operate
Monte Carlo	A statistical method of calculating the effect of risk on outcome by simulations producing a probability distribution of possible outcomes.
Net Present Cost (NPC)	The equivalent cost for a given time frame of a stream of future net cash outlays (calculated by discounting the actual values at the appropriate discount rate).
Net Present Value (NPV)	The aggregate value of cashflows over a number of time

	periods discounted to today's value.
Opportunity cost	Value of the most valuable alternative use (e.g., the value of an asset in the net best alternative use to which the asset could be put).
Optimism bias	A tendency to budget for the best possible (often lowest cost) outcome rather than the most likely. This creates a risk that predicted outcomes do not fully reflect likely costs.
Output Specification	The output specification sets out the range of services/requirements that government is seeking to procure and the performance levels required for each of those services.
PFI	Private Finance Initiative (term used in the United Kingdom)
P3	Public-Private Partnerships
Probability	The extent to which a certain event is likely to occur, measured by the ratio of the number of times that event does occur to the total number of cases possible.
Project Brief	The Project Brief details the government's objectives, service delivery requirements, policy and commercial matters, material background information and the processes for lodging and evaluating submissions. It also sets out government's role and intentions for the infrastructure to be built, and explains how checks and balances are observed in the process to ensure impartiality.
Public Sector Comparator (PSC)	The Public Sector Comparator (PSC) represents the most efficient public procurement cost (including all capital and operating costs and share of overheads) after adjustments for Competitive Neutrality, Retained Risk and Transferable Risk to achieve the required service delivery outcomes. This benchmark is used as the baseline for assessing the potential value for money of private party bids in projects.
Residual Value	The expected value of a capital asset at some future date,

	normally the end of a contract.
Retained Risk	The value of those risks or parts of a risk that government proposes to bear itself under a partnership arrangement.
RFEOI	Request for Expression of Interest
RFP	Request for Proposals
RFQ	Request for Qualifications
Risk	The possibility of more than one outcome occurring, and thereby suffering harm or loss.
Risk allocation	The process of assigning operational and financial responsibility for specific risks to parties involved in the provision of services under P3. Also see risk transfer.
Risk matrix	A table used as a management tool throughout the procurement process. It will usually constitute a listing of the various risks and uncertainties to which particular project options are exposed, together with an assessment of the likelihood of their occurring and the financial or other impact on the outcome of the project.
Risk Register	A document which identifies the bearer of a particular risk, (e.g. a risk matrix which will also contain quantitative assessments (e.g., costs and likelihoods) of the characteristics of the risks).
Risk transfer	The process of moving the responsibility for the financial consequences of a risk from the public to the private sector.
Sensitivity Analysis	Analysis of the effects on an appraisal of varying the projected values of important variables.
Transferable Risk	The value of those risks (from government's perspective) that are likely to be allocated to the private party under a partnership delivery method.
Turnkey project (public sector)	A project procured through private design and construction, according to public sector specifications and objectives.

When the project passes completion tests, the public sector reimburses the private party/parties for design and construction.

Uncertainty

Arises when the outcomes of courses of action are indeterminate or subject to doubt.

Variability

A spread of possible outcomes around an expected outcome.

Variable cost

Cost that changes in proportion to volume levels, reflecting the direct relationship between cost and volume.

VFM

Value for Money

Detailed Costs Checklist

This appendix is intended to provide a starting point or a checklist for detailing cost items which typically make-up a PSC. Each project needs to prepare its own list based on its complexity, materiality, the relevance of costs and availability of information. For each of the cost items identified in the PSC, it is important to assess the timing, quantity, frequency and accuracy.

1. **Direct Costs**

Timing	Quantity	Frequency	Accuracy
--------	----------	-----------	----------

1.1 **Direct Capital Costs**

- Land
- Demolition
- Design
- Construction
- Material
- Equipment
- Plant
- Inspection
- Project Management
- Modification
- Transition
- Permits
- Procurement Process
- External Advisors
- Life Cycle renewals
- Upgrades
- Others

1.2 **Direct Operating Costs**

- Full time staff
- Part time staff
- Casual staff
- Contract staff
- Performance bonuses
- Benefits, EI, CPP, insurance, pensions, etc.
- Training
- Travel
- Conferences
- Material
- Consumables
- Office supplies
- Parking
- Advertising and promotions
- Minor repairs

	Timing	Quantity	Frequency	Accuracy
Major repairs				
Preventive maintenance				
Tools				
Equipment				
Rentals				
Utilities, Gas, hydro, water				
Telephone				
Telecommunication				
Support subcontractors, such as landscaping and snow removal				
Recycling				
Purchased services				
Security				
Alarms monitoring				
Emergency and unplanned repairs				
Insurance				
Quality Assurance				
Audits, technical, financial				
Others				

2. Indirect Costs

2.1 Overheads

Management Support
IT Support
Accounting
Human resources
Project Management
Space, if co-located with other units
Shared services, such procurement
Others

2.2 Hidden or Assumed Costs

Insurance
Depreciation for assets to be transferred to project if costs not captured in capital costs
Services by other levels of public sector organizations

Corporate and executive overheads, if not identified in indirect costs
Others

2.3 Risks

Transferred risks
Retained risks
Others

Timing	Quantity	Frequency	Accuracy
--------	----------	-----------	----------

3 Third Party Revenue

3.1 One time Items

- Sale of surplus land
- Sale of surplus plants and equipment
- Others

3.2 Recurring Items

- Expected third party revenue
- Others

Tips and traps to consider when constructing a PSC:

The following checklist may be helpful in verifying that a Public Sector Comparator (PSC) has been rigorously constructed according to the material provided in this guide.

TIPS

Disclosure: ensure that the PSC disclosure is open and transparent, and that it occurs where and when it is most likely to assist the competitive bidding process. The PSC should not be disclosed when the short-listed bidding field is not strong - this could compromise the government's negotiating position.

In-house bids: ensure that the in-house bid team is completely distinct from the government's procurement team. (Although in-house bids are not generally submitted often.)

Life Cycle Costing: the PSC and Life cycle represent the *full* and *true* cost to the government meeting the output specification proposed in the project.

Quantifying: ensure that the various elements of the PSC are taken into consideration, including all capital costs (upfront and ongoing) and operating and maintenance costs to deliver the service.

Risks: ensure that all identifiable risks are individually allocated to whoever is best able to manage them at the lowest cost to government. If risk is inappropriately transferred to the private sector, government may pay a premium or jeopardize the long-term sustainability of a partnership. Ensure that whichever party is allocated risk, that they have the freedom to choose how to handle and minimize it, subject to any statutory constraints and public interest considerations. Care should be taken to avoid double counting of the underlying risks.

Financial Assessment: material risk assessment may lead to a significant mispricing or underestimation of the PSC. This distortion could result in the best value for money option not being selected, significantly increasing the cost and ongoing exposure of government. In addition, it should be understood that the consequences associated with a particular risk may also change over time.

Sensitivity Analysis: used to determine the flexibility and robustness of the PSC model if changes are made in the key assumptions of the underlying project. A sanity check is performed on the various components of the model to verify that the assumptions are reasonable, including capital, operating and maintenance costs.

Audit trail: developed by maintaining a record of the key discussions and assumptions used in the PSC.

Financial Model: ensure that the model is built in a way to allow flexibility in changes and ease in conducting sensitivity analysis (i.e. different sections for inputs and outputs). Start with a high level model that will evolve with the project.

Availability of funds: ensuring that the PSC reflects the timing of the availability of public funds, e.g. phasing capital investment over 15 years on the basis that public capital would be available in that time scale is not a legitimate approach. It is better to assume up front funding and then conduct sensitivity analysis to assess whether conclusions drawn are robust in the face of delays in the availability of public capital.

Independent party: should be used to check the reasonableness of the assumptions and confirm that the assumptions made have been correctly incorporated into the model to produce an accurate result (both arithmetically and logically).

Form and Contents of Bids: ensure that bidders are provided with detailed instructions on how to prepare their bids to provide consistency and ease of evaluation.

TRAPS

Impractical scenarios: are included in the analysis and will consume unneeded resources; accordingly, they need to be discounted early in the process.

Inappropriate discount rate: use the public sector approved rate to ensure consistency in analyzing P3 projects.

Using costs from previous projects: ensure that costs from previous projects are still valid especially if the public sector has changed the way it procures goods and services internally. For example, if the public entity has adopted a design/build approach in its current procurement practices and information from past projects is derived solely from a more traditional procurement process, then design/build information should be used to estimate the costs to the public sector.

Indirect and hidden costs: internal costs not identified and/or un-quantified are unreasonable to compare with market bids.

Constant changes in personnel: changes in the public sector team during the construction of the PSC can make for difficulties; such problems can be minimized by being meticulous in maintaining appropriate documentation.

Inflation: ensure that the discount rate used in the PSC is nominal and before income tax, nominal costs rather than real costs need to be considered. Also ensure that the inflation rate specified in the PSC is also incorporated within the bids.

Depreciation and the PSC: ensure that depreciation is not included in the PSC – the only exception is where depreciation may affect tax payments.

Overestimating Third Party Revenues: if a project has significant third party revenue, then the reasons for undertaking it should be revisited. Third party revenue, with the exception of initial and end of project disposition of assets, should not be significantly material to the determination of the best value.

Underestimating costs: especially life cycle renewals, as typically many public sector entities do not create reserves for these costs, rather these are funded from on-going annual operating and/or capital budgets which are subjected to annual approval. Accordingly, many public sector assets do not obtain sufficient funding to keep them up to par with comparable private sector facilities, resulting in significant major repair and maintenance backlogs.

Inconsistent Output Specifications: between the PSC and the P3 bids, make sure that P3 bids are not requested in terms of a different (higher) quality of services than what is expressed in the output specification and PSC documents.

Self-Insurance: not including this proxy premium in the PSC will distort the comparison between the market bids and internal costs.

RISKS AND THE PSC

1. RISK

This section deals with the identification and valuation of risk as well as the construction of a risk matrix. Risks are inherent in every project, no matter who owns it. In Australia's *Partnerships Victoria* PSC Technical Note, the valuation of risk is given in-depth consideration and is viewed as essential to forming the framework for the subsequent allocation of risks to the categories of transferable risk and retained risk. Given the complexity of this subject and the significance of risk to the formulation of a robust PSC, the following sections on risk are taken liberally from the PSC Technical Notes of both the U.K. and Victoria, Australia material. Some editing has been undertaken to improve relevancy to the Canadian context and enhance Canadian understanding.

As stated previously throughout this guide, the degree of effort in identifying and evaluating risks should be commensurate with the complexity and scope of the proposed procurement.

In order for the PSC to provide a meaningful test for "value for money" against private bids, it is absolutely essential that it include a comprehensive and realistic pricing of all quantifiable and material risks. The inclusion of a valuation for risk in the PSC forms part of the broader process of risk identification, allocation and management. Careful consideration of the implications of project risks and a determination of who is best able to manage them influences:

- Delivery of the output specification under the Reference Project;
- Construction of a PSC and its evaluation against other bids;
- Formulation of an appropriate payment mechanism to reflect the risk allocation and any incentives generated for cost-effective, high quality services;
- A department's or agency's understanding of the project risk and its risk management strategy; and
- Negotiation and the form of the partnership arrangement.

1.1 Risk Matrix

1.1.1 The construction of a risk matrix is a fundamental part of the P3 procurement process and is usefully integrated with the construction of a PSC. The construction of a risk matrix usually comprises the following broad steps:

- The identification of risks involved in the project;

- An assessment of the impact of these risks;
- An assessment of the likelihood of such risks arising; and
- The calculation of the financial impact (and ranges of possible outcomes).

1.1.2 The construction of the risk matrix enables the following to be considered:

- Sensitivity testing of risks, which generally follows the calculation of the impacts and the likelihoods of the individual risks and the construction of the discounted cash flow table;
- The categorization of these risks, especially in terms of the allocation of risks to possible transfer categories; and
- The development of policies and processes to manage and mitigate risks.

1.2 Identification of Risks

1.2.1 The first step is to compile a list of all the risks that may be relevant to a project. This list will provide a means for monitoring the evaluation and the eventual allocation of risk throughout the procurement exercise and will eventually build up into the risk matrix. The development of this project management tool is an iterative process which needs to be reviewed throughout the project life cycle. Further risks can be identified at any time during the procurement exercise. If the transfer of such risks is included in the price of the P3 option, the PSC must be adjusted to ensure that it also includes such risks.

1.2.2 For a large project, the process of risk identification is likely to be a complex exercise as the number of separate risks and the scope of the inter-relationships involved may be substantial. In these cases, workshop or brain-storming sessions will help to achieve a comprehensive coverage of all risk areas.

1.2.3 For these sessions, attempts should be made to get as many experienced people as possible involved from both the public and the private sectors. Possible participants include the managers of the potential procurement exercise, financial and economic advisers, design, engineering and insurance professionals, professional negotiators, actuaries, lawyers and especially the managers or operators of the business or service - these are the people who really understand all the risks that matter.

1.2.4 Where possible, for projects which are similar to existing P3 contracts, every effort should be made to contact the managers of those contracts and draw on their experience of risk identification, as well as consulting audits and post-project evaluations.

1.2.5 It may also be desirable to engage specialist consultants who have relevant expertise in facilitating a risk identification exercise. However it is important to remember that the engagement of consultants does not eliminate the need for substantial involvement by the project management team to ensure a searching examination of project-specific risks. The value of the input by specialist consultants will be directly

proportional to the quality of the briefings they receive from client team members who fully understand the project specific risks. The full involvement of all team members at this stage is essential to ensure they fully understand the issues before they face the private sector across the negotiating table. It follows that the chief negotiator should be involved in the process of risk identification.

1.2.6 The risk register must be as comprehensive as possible. Even if it is considered difficult to quantify the impact or likelihood of a risk, e.g. force majeure, it is important to be able to demonstrate that the risk has not been overlooked.

1.2.7 It is easy to miss identifying risks - but being systematic will minimize this danger. One final imaginary walk through of the project as it develops over time can provide a useful check that no material risks have been left unrecorded.

1.2.8 Table 1.2.8. describes the main general types of risk that you are likely to encounter. The aim should be to explore each of these in further detail and produce a more detailed project specific breakdown.

Table 1.2.8. - Types of Project Risk

Types of Project Risk	
Construction risk	The risk that the construction of the physical assets is not completed on time, to budget and to specification.
Demand (usage) risk	The risk that demand for the service is lower than planned
Design risk	The risk that the design cannot deliver the services at the required performance or quality standards in the output specifications.
Environmental risk	The risks that the project could have an adverse environmental impact which affects project costs not foreseen in the environmental impact assessment (EIA)
Financial risk	The risk that the private sector overstresses a project by inappropriate financial structuring.
Force majeure risk	An unanticipated unnatural or natural disaster such as war, earthquake or flood of such magnitude that it delays or destroys the project and cannot be mitigated
Inflation risk	The risk that actual inflation differs from assumed inflation rates
Legislative risk	The risk that changes in legislation increase costs. This can be subdivided into general risks such as changes in corporate tax rates and specific ones which may discriminate against P3 projects.
Maintenance risk	The risk that the costs of keeping the assets in good condition vary from budget.
Occupancy risk	The risk that a property will remain untenanted - a form of demand risk.
Operational risk	The risk that operating costs vary from budget, that performance standards slip or that the service cannot be provided as per output specs.
Planning risk	The risk that the implementation of a project fails to adhere to the terms of planning permission, or that detailed planning cannot be obtained, or, if obtained, can only be implemented at costs greater than in the original budget.
Policy risk	The risk of changes of policy direction not involving legislation.
Residual value risk	The risk relating to the uncertainty of the value of physical assets at the end of the contract.
Technology, risk	The risk that changes in technology result in services being provided using non optimal technology.
Volume Risk	The risk that actual usage of the service varies from the level forecast.

1.3 Quantifying the Consequences of Risks

1.3.1 Having identified all of the relevant risks to be included in the risk matrix, it is necessary to quantify and assess the timing of the possible consequences. Some literature on this subject refers to quantified and un-quantified risks. *Partnerships Victoria* consider the financial consequences of risk as being influenced by the following factors:

- **Effect** - the risk may be expected to either increase costs or reduce revenue;
- **Time** - the financial consequence of risk may change over time, as the ability to forecast costs accurately decreases over time. In addition, the expected timing of the consequence will have an impact on the NPV cash flow of the PSC; and
- **Severity of risk consequence** - The cost of additional repairs to a building will be less than if the same building collapses due to a major structural flaw.

It is certainly common to start by having some risks that are easily subject to quantification and others which are not. But it is a dangerous distinction to draw, because it suggests that there are risks which, because they have not been quantified in the past, can never be quantified and which may therefore be ignored. Such risks are as pertinent as the more easily quantified risks to the overall judgement of whether a P3 bid is likely to represent value for money. "The value given to a risk in a PSC measures the expected cost of that risk to government if the project were delivered under a public procurement. This also represents an estimate of what government would be willing to pay to transfer a risk to the bidders in a *Partnerships Victoria* arrangement."³ Thus, the *Partnerships Victoria* approach classifies risk between those which would be transferred to a bidder and those which the government would "take back" or retain.

1.3.2 The best methods for quantifying or valuing the impact of identified risk will depend upon the information sources available. As a general rule, the best approach should be to use empirical evidence whenever it is available; otherwise, common sense approximations should be used. What this means in practice, depends on the nature of the risk. The objective is always to obtain an unbiased estimate of the cost for the public procurement plans (i.e., an estimate where the chance of the cost outcome being too optimistic is the same as the chance of it being too pessimistic). Care should be taken to distinguish between planned costs (which assume everything goes well) and expected costs (which include an allowance for problems such as costs and time over-runs on the basis of past experience). The PSC must be based on expected costs.

1.3.3 Typically, arriving at expected costs will involve adding on a percentage of the original estimate to take account of an optimism bias in estimating costs. Moreover, this percentage should not be arbitrary in nature; rather, the adjustments should be based on experience and relevant data.

³Ibid, P.32, Sec 5.2, 1st paragraph.

1.3.4 Quantifying the impact of project risks can be made easier by banding the risks into a smaller number of categories according to their impact. For example, the categories of: catastrophic, critical, serious, marginal and negligible. The amount of time and resources that are devoted to quantifying risks should relate to their likely materiality.

1.3.5 Even when it appears that costing a risk is impossible at first, it should be listed in the matrix, to return to later and to refine when information becomes available. Ignoring difficult risks is not an option, as such risks ultimately affect the prices charged to the public sector or the service being procured. Therefore, even though these risks may not be specifically costed at first, it will benefit the public sector to identify the risks and to be sensitive to factors affecting these risks. Greater understanding of all project risks will assist the public sector to compare private sector bids with the PSC.

1.3.6 When assessing the consequences of any risk, thinking should be as broad as possible to ensure that all follow-on effects, not just the immediate, direct effects are considered. This is particularly relevant where the event causes delay and is on a critical path. This requires a little care, as there will be interaction between different risk events. For example, if a property-based service is not available on time, the possible repercussions may include:

- The cost of renting alternative premises or continuing to use existing premises;
- The costs of servicing this property;
- Lost management time as a result of litigation;
- If appropriate, increased insurance premiums, or, alternatively, self-insurance; and
- An inability to meet contract commitments.

1.3.8 The ultimate objective is to be able to add up the consequences of all risk elements to obtain the net present expected value of the costs and benefits in the project. Care must be taken to avoid double counting the same risk, e.g., incorrectly counting the cost of insurance products available to cover a particular risk (whether taken up or not) and, in addition, adding in the impact of the risk covered by such insurance. It is also important to make a sensible assessment of when the consequence of each risk will arise as this will affect the NPV of that consequence.

1.3.9 Generally, risk can be included in the PSC through one of the following methods:

- Including the costs of project specific risk in the cash flow numerator; or
- Adjusting the discount rate (cost of capital) to reflect the specific level of risk for each project.

The Australian PSC Technical Note advocates valuing risk in the cash flow numerator of the PSC. This is seen as offering the following advantages:

- By valuing risk as a separate cash flow item, government is better able to focus on the key factors influencing the optimal level of risk allocation;
- Cash flow valuation takes better account of the timing of risk by analysing the risk profile of each risk. For example, construction risk arises early in the project, while upgrade and residual value risks arise towards the end; and
- The value and impact of a particular risk may vary over time; and cash flow valuation provides a transparent methodology by using a consistent government discount rate across projects.

1.4 Estimation of Probability of Risks

1.4.1 After identifying the risks and assessing the potential consequences, it is then necessary to assess the likelihood or probability of each of the possible consequences occurring.

1.4.2 A key practical issue is how to arrive at the relevant probabilities, in a manner that is reasonable, consistent and transparent. A database of costs captured for previous similar procurements is an ideal source of information. However, in most cases, this type of high quality information is likely not available and an approach which is as close to the ideal as possible must be devised.

1.4.3 Box 1.4.3. shows how probabilities can be used to derive the expected value/cost of a risk.

Box 1.4.3. - Likelihood of Risks and Expected Costs

Imagine a PSC or a Reference Project where the basic procurement cost has been estimated to be \$385M in NPV terms. The total cost initially includes \$10M for the IT system - as this is considered to be the most likely outcome. However, risk analysis identifies a technology risk relating to the IT system. The PSC should therefore be adjusted to include the expected cost of the IT system rather than the most likely cost outcome.

What do we mean by expected costs? How does it vary from most likely cost?

The risk evaluation exercise has indicated that the probability of everything going to plan, is only 60 per cent. There is a significant chance (40 per cent) that the IT system, which is original and untested in practice, will be difficult to implement which will require a period of parallel running with the old system. This will lead to total costs escalating to \$48M to achieve reliability consistent with the overall output specification.

Overall, expected costs of the IT system can be obtained by multiplying the costs by the respective probabilities and summing:

Outcome		Probability		Total
\$M				\$M
10	X	0.6	=	6.0
48	X	0.4	=	19.2
Expected Cost			=	25.2

The PSC should be increased by \$15M to reflect the difference between the original cost estimate (\$10M) and the expected cost (\$25M).

1.4.4 Even if no formal database is available internally, the estimation of probability should be based on experience rather than arbitrary estimates. All internal sources of Departmental/organizational data should be exploited as fully as possible. Cost outcome data should be the most recent and relevant available. Possible sources of information include:

- Industry wide information on outcome costs - such as the Quarterly Building Price and Cost Indices;
- Sector specific surveys;
- Departmental case studies; and,
- Data on the cost and time overruns of construction projects,

1.4.5 Another possible source of information is the use of external consultants. If consultants are used, their predictions should be based on the experience of past events together with any foreseeable changes or developments which would deliver improvement. It is important often to distinguish between cost overruns for smaller projects or those let as a succession of small contracts and major single contracts where the risks of time and cost overrun are greater.

1.4.6 Estimating probabilities is not an exact science and inevitably assumptions - sometimes quite bold ones - have to be made. While there is nothing wrong with this, it is important to ensure that the assumptions are reasonable and fully documented, as they may be open to challenge later on in the procurement process.

1.4.7 There are some risks where the probability of the event occurring is low but the risk cannot be dismissed as negligible because the economic impact is high, e.g., the collapse of a bridge. In this case, a small change in the assumed probability can have a major effect on the expected value of the risks. If there is doubt about the ability to make meaningful estimates of probability, it is best practice to itemize the risk and use a subjective probability, rather than simply ignoring the risk altogether. Clients should also be prepared to revisit initial estimates as the negotiations develop, if they consider that they have learned something new that materially affects the initial estimate.

1.4.8 A useful approach might be to classify the likelihood of risks into broad categories (e.g., frequent, probable, occasional, remote or improbable), with each category being ten times more likely than the next.

1.4.9 The objective is to follow reasonable procedures at all times, to be as systematic as possible and to record the decision making process to facilitate subsequent audit. Exploring difficult issues with private sector suppliers may be another means of enhancing understanding of the risks involved. An approach which is as open and flexible as possible without compromising the ability to negotiate the best possible deal for the public sector should be employed.

1.4.10 Ultimately, the test of the accuracy of estimates of probability will be actual outcome figures. The client team responsible for contract maintenance should always fully record such figures and compare them to the original PSC estimates. The building and maintaining of databases will be an important development in the public sector's knowledge base and critical to its success in negotiating P3 deals in the future. Clients should be prepared to share knowledge if approached by other public sector purchasing teams, as this will help to disseminate best practice throughout the public sector.

1.4.11 Box 1.4.11 which follows, illustrates the results that sensitivity analysis can yield for the Reference Project. Sensitivity analysis can be used to identify the point at which changes in the assumptions are sufficiently significant as to change the conclusions drawn from the net present value (i.e., the "switching point"). Where practical, (after

final bids have been received) the analyses should be used to identify the changes in assumptions which would result in bids exceeding the PSC.

Box 1.4.11. - Exploring the Sensitivity of Assumptions on the Probability of a Risk

Continuing the example in Box 1.4.3, assume that the aggregate of all risk adjustments is \$10M (including the IT adjustment of \$15M). The risk adjusted PSC is therefore \$495M. An independent report about an IT innovation has been discovered, suggesting that there might be a greatly reduced chance of parallel running being required. Note that the report did not say that the innovation is definite and tested, in which case the PSC should be altered as a result of new information becoming available, but that the innovation is only in its initial development stages. Nevertheless, it looks sufficiently plausible to require an exploration of the sensitivity of expected costs to its successful development.

What would happen to the expected IT technology risk adjustment if the projections in this industry report were correct?

Professional risk analysts now suggest that the probability of the worst-case risk occurring is 20%. The revised calculation of the expected IT cost is therefore:

Outcome		Probability		Total
\$M				\$M
10	X	0.8	=	8.0
48	X	0.2	=	9.6
				17.6 Rounded to \$18M

There has been a significant impact on the expected cost of the IT system - it has fallen by \$7M from \$25M to \$18M.

What is the overall significance of this reduction? The PSC's costs are once again compared with the private sector bid. The further reduction of \$7M to the PSC costs must be compared with the best P3 bid to determine if there is still a cost advantage.

1.5 Risk and Insurance

1.5.1 Insurance can be a help when costing and allocating risk. Much of the public sector historically does not use commercial insurers (except for some special cases, such as vehicles) nor do they self-insure because commercial insurance would not provide value for money for the government. Moreover, because the size and range of its business is so large the public sector does not need to spread its risk, while the value of claims is unlikely to exceed its premium payments. Notwithstanding, the government still bears the costs arising from uninsured risks and there are many examples of projects where the public sector has been poor at managing insurable but uninsured risk

1.5.2 The PSC should include an estimate of the value of such uninsured risks, taking into account the likelihood of such costs arising. A notional insurance premium could be estimated on the basis of past losses or the costs of commercial insurance could be taken as a first approximation to the value of the risk borne by government. In the exceptional cases where the government uses commercial insurance, the cost of premiums should be included in PSCs but care should be taken not to double count the risk insured.

1.5.3 Many risks which are transferred from the public sector to the private sector under P3 deals are potentially insurable. The availability of insurance should be a consideration when risk allocation is being negotiated. Private sector arguments that they cannot accept risk may not apply when the capacity of the insurance market is considered.

2. THE ALLOCATION OF RISKS

Following the identification and valuation of risks, each risk should be identified as Transferable Risk or Retained Risk, depending on whether it should be transferred to the bidder or retained by government. The objective is to obtain an optimal balance of risk by transferring risk, whenever the benefit to government is greater than the cost of transfer to the private sector. It is only following detailed negotiations between the parties that the final balance is achieved. However, an early, if preliminary assignment of risks to the parties (government or bidder) is desirable and useful to discuss. Since different private sector bids may propose the transfer of different combinations of risks, the making of a valid comparison among bids (and later making a valid comparison between the best private sector bid and the PSC) is critically dependent on sound risk allocation accounting.

2.1 Transferable Risk

The decision to allocate a risk to the bidder depends on whether the bidder is best able to manage the risk at least cost. The type and number of risks, which are classified as Transferable Risks, need to be assessed on a project by project basis and over time as parties develop more effective risk management and mitigation skills. The value of Transferable Risk in a PSC measures the cost government would expect to pay for that

risk over the term of the project in a public procurement scenario.

The steps involved in valuing transferable risk are the following:

Step 1 - Analyse all material and quantifiable risks (see Section 3)

Step 2 - Identify optimal risk allocation

Step 3- Calculate Transferable Risk

2.1.1 Identifying the optimal Level of Risk Transfer

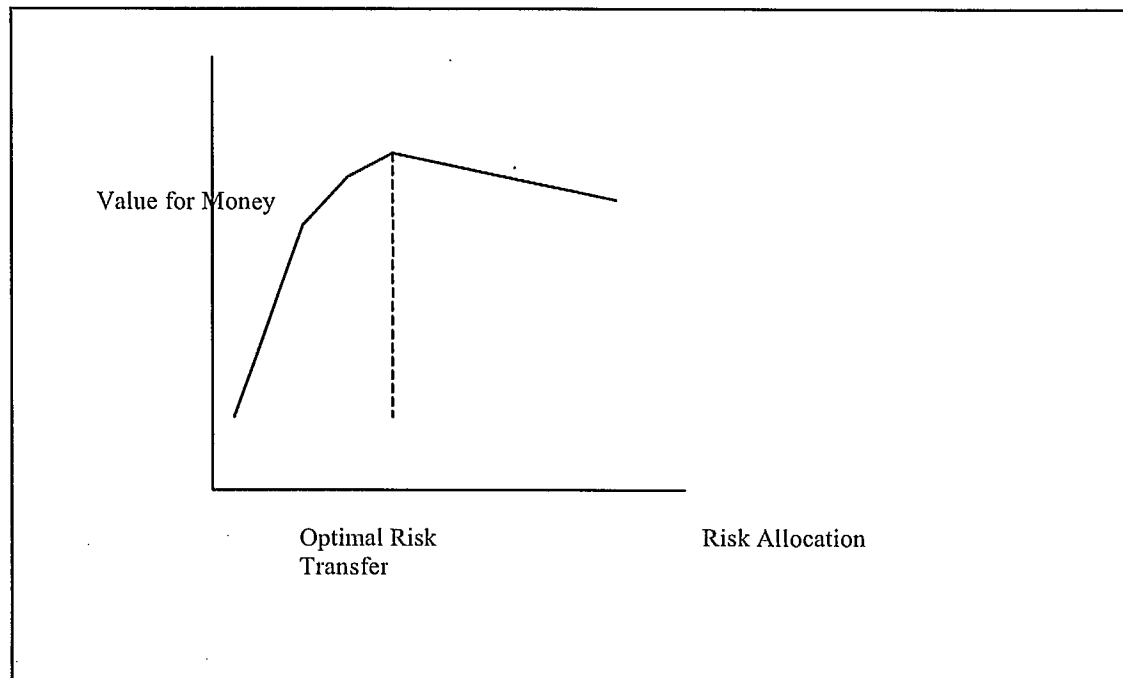
The principle governing risk transfer is that each risk should be allocated to whoever is best able to manage it at least cost, taking into account public interest considerations. It is determined by assessing the ability of each party to reduce the probability of a risk occurring, and to minimize the consequences if that risk eventuates.

It is unlikely that either government or bidders will be best suited to manage all the risks of a project.

Risk allocation should be determined separately for each project to deliver the best outcomes for government. Factors to be considered include:

- The nature of the project;
- The respective strengths and ability of each party to manage a risk (this may change over time as each party's risk mitigation skills improve);
- Flexibility of the output specification (whether any constraints exist which influence the method for managing risk);
- Previous levels of risk transfer (this indicates the historical success of each party in managing particular risks and the potential ability to manage risk in the future);
- Prevailing market attitudes towards risk; and
- Public interest factors and other policy considerations.

Figure 2.1 illustrates the principle of optimal risk transfer. An efficient allocation of risks allows government to obtain greatest value for money by harnessing the respective skills of all parties. However, if too much risk or the wrong risks are transferred to the bidder, government may pay more than if they were retained. For example, government is often in a better position to manage part of regulation risk while the bidder may be better suited to hold construction and operations risk where it has generated considerable expertise providing similar services in the past.

Figure 2.1 – Principles of Optimal Risk Transfer

Risks are then classified as either Transferable Risk (those that government seeks to allocate to bidders) or Retained Risk (those that government is willing to accept). However, there may be situations where specific components of a particular risk are allocated between parties, or where an overall risk is shared. Risk sharing may occur in accordance with an agreed formula contained in a negotiated contract. For example, where a department or agency is not expected to be the only end-user of an asset or service, government may specify a base level of demand it will support. Bidders may be required to take demand risk above this base level.

Where a risk is classified as a Transferable Risk, bidders should be given a substantial degree of flexibility to determine the best method of controlling the costs associated with that risk. This creates a powerful incentive for bidders to manage the risk in the overall interests of the project, while delivering greater value for money to government. This is further enhanced through the use of a performance-based payment mechanism. Achieving an optimal risk allocation can have a substantial impact on value for money considerations. This was highlighted in the U.K.'s survey of project managers across a number of sectors, indicating that risk transfer is considered a primary value for money driver in partnership projects. The U.K.'s Treasury Taskforce report found that partnership projects delivered an average cost saving of approximately 17 per cent compared to public procurement methods. Efficient risk transfer in turn, provided approximately 60 per cent of these cost savings.

Before seeking formal Expressions of Interest, government departments and agencies

may seek to engage the market to assess the level of likely market interest in accepting risk in a proposed project. This can be done by various means, including holding preliminary discussions with an appropriate sample of industry practitioners. In undertaking such discussions, the government department or agency needs to ensure that such discussions will not restrict or distort competition, or give any bidder an unfair advantage

However, government should also be satisfied that bidders are able to manage allocated risks effectively at the bid price specified. Although this does not directly affect the construction of a PSC, the reasonableness of risk valuation should be included in the qualitative assessment of each bid. If it becomes clear that government is better placed to take a risk, it should become a Retained Risk rather than a Transferable Risk.

2.1.2 Valuing Transferable Risk

Once all the Transferable Risks have been identified, the size and timing of the expected cash flows associated with each risk needs to be aggregated to determine the NPV of the Transferable Risk component of the PSC. Each of the risks should be included as a separate cash flow item and then added to form the Transferable Risk component, to allow for a detailed analysis of the key risks and their sensitivity to the overall PSC.

Example - Valuing Transferable Risk

Consider a project for the provision of a new educational facility and related ancillary services. The material and quantifiable risks associated with the project, which have been summarized and simplified in this example, are then allocated as shown in Table 2.1.2.

Table 2.1.2. - Simplified Risk Allocation

Risk	Transferable Risk	Retained Risk
Design and construction risk	X	
Change in law risk		X
Operating Risk	X	
Demand Risk		
• base level demand		X
• additional usage	X	
Maintenance Risk	X	
Security risk (e.g. vandalism)		
• during school hours		X
• after school hours	X	

The costs and revenues associated with each of the Transferable Risks are then specified

in the PSC model as a periodic cash flow based on the expected timing of their financial impact. Table 2.1.2. is an example of the Transferable Risk section of the PSC model for the first five years of a project.

Table 2.1.2. - Transferable Risk cash flow valuation - real flows

Cost	Year 0 (\$M)	Year 1 (\$M)	Year 2 (\$M)	Year 3 (\$M)	Year 4 (\$M)	Year 5 (\$M)
Design and construction risk	10.0	20.0	2.5			
Operating Risk		5.0	5.0	5.0	5.0	5.0
Demand Risk		0.5	0.5	0.5	0.5	0.5
• Additional usage		2.0	2.0	2.0	2.0	2.0
Security Risk (e.g. Vandalism)						
• After School Hours			1.0	1.0	1.0	1.0
Technology Risk		1.0	2.1	3.8	5.0	2.3

Note that there is a small design and construction risk cost remaining in Year 2, due to the low probability of a delay greater than one year. Technology risk is assumed to increase prior to replacement, due to the increased risk of technological obsolescence over time. The effects of expected inflation (or appropriate cost index) are now included to give the appropriate periodic cash flows, and are then discounted to give the present value of Retained Risk for the project. In this example, all costs are assumed to increase by inflation at 2.5 per cent per year.

Cost	Year 0 (\$M)	Year 1 (\$M)	Year 2 (\$M)	Year 3 (\$M)	Year 4 (\$M)	Year 5 (\$M)
Design and construction risk	10.0	20.5	2.6			
Operating Risk		5.1	5.3	5.4	5.5	5.7
Demand Risk						
• Additional usage		0.5	0.5	0.5	0.6	0.6
Security Risk (e.g. Vandalism)						
• After School Hours			1.1	1.1	1.1	1.1
Technology Risk		1.0	2.1	3.8	5.0	2.3
Total Transferable Risk	10.0	29.2	13.7	12.9	14.3	11.9
Discount factor (assume discount rate @ 8.65% p.a.)	1.00	1.09	1.18	1.28	1.39	1.51
Discounted Cash Flows	10.0	26.9	11.6	10.1	10.3	7.8
Present Value	76.7					

In this hypothetical example, the present value of Transferable Risk for the project is \$76.7 million. This demonstrates the importance of accurately assessing the expected timing as well as the size of the costs of risk.

2.2 Retained Risk

Retained Risks are those risks or parts of a risk that government proposes to bear itself.

The scope of Retained Risk reflects the nature of the project and the output specifications. Where government retains responsibility for the provision of core services, these should not be considered in the intended risk allocation, as they are not part of the project. For example, in a project for the provision of educational facilities, government maintains the responsibility of providing teachers and developing the curriculum outside the project. This risk does not form part of the project's Retained Risk.

Although both Transferable and Retained Risks are calculated from the same standpoint in a PSC (as the cost to government of holding the risk), they are treated as separate components for the following reasons:

- Retained Risk needs to be added to the private bids to determine the true cost to government under a proposed partnership model; and
- Maintaining a clear distinction between Transferable and Retained Risks focuses attention on the factors influencing risk transfer and the proposed level of that transfer.

2.2.1 Valuing Retained Risk

There are three steps involved with valuing Retained Risk:

Step 1 - Analyse all material and quantifiable risks

Step 2 - Identify optimal risk allocation

Step 3 - Calculate Retained Risk

Although the types of risk that should be borne by government need to be assessed individually for each project, Retained Risk may typically include:

- Provincial/federal change in law risk;
- The portion of commissioning or defect risks that may be caused by flaws in the output specifications; and
- The portion of demand risk which government may assume, for example if the output specifications contain a base level of demand

Government may generally be suited to managing parts of change in law risk due to its unique understanding and role in the regulatory process. Valuing change in law risk first requires an assessment of the impact of the key regulations/legislation influencing a project, and the likely impact of changes to the current regulatory framework.

Often where government assumes a portion of demand risk, the base level of government or community usage specified may be quite conservative (i.e., all government or community demand will be satisfied). In these cases, the associated cost to government of the Retained Risk component of demand risk may be fairly low or immaterial. There may also be additional risks that government agrees to take for policy or other reasons.

This recognizes the particular responsibilities and accountabilities of government with respect to the delivery of services to the community.

Once all the Retained Risks have been identified, the size and timing of the expected cash flows associated with each of these risks needs to be aggregated to determine the NPV of the Retained Risk component of the PSC. Each of the risks should be included as a separate cash flow item and then added to form the Retained Risk component to allow for a detailed analysis of the key risks and their sensitivity to the overall PSC.

Example - Valuing Retained Risk

Table 2.2.1.a- Simplified Risk Allocation

Risk	Transferable Risk	Retained Risk
Design and construction risk	X	
Change in law risk		X
Operating Risk	X	
Demand Risk		
• base level demand		X
• additional usage	X	
Maintenance Risk	X	
Security risk (e.g. vandalism)		
• during school hours		X
• after school hours	X	
Technology Risk	X	

For the first five years of the project, the real periodic cash flows for the Retained Risk component of the PSC may look something like Table 2.2.1.b.

Table 2.2.1.b - Retained Risk cash flow valuation - real flows

Cost	Year 0 (\$M)	Year 1 (\$M)	Year 2 (\$M)	Year 3 (\$M)	Year 4 (\$M)	Year 5 (\$M)
Change in law risk Demand Risk		0.5	1.0	2.0	3.0	3.0
• base level demand		0.5	0.5	0.5	0.5	0.5
Security Risk (e.g. Vandalism)						
• During School Hours		1.0	1.0	1.0	1.0	1.0

Note that the financial impact of change in law risk increases over time due to increasing uncertainty in the future (e.g. changes to wheelchair or other access requirements, or an increase in safety regulations which may require alterations to the facilities).

Consider the project for the provision of a new educational facility and related ancillary services discussed in the previous example in Section 2.1. Again, the project risks have been allocated as shown in Table 2.2.1.a

The effects of expected inflation are added to give the appropriate periodic cash flows, and are then discounted

Table 2.2.1.c - Retained Risk cash flow valuation - nominal flows

Cost	Year 0 (\$M)	Year 1 (\$M)	Year 2 (\$M)	Year 3 (\$M)	Year 4 (\$M)	Year 5 (\$M)
Change in law risk Demand Risk		0.5	1.1	2.2	3.3	3.4
• base level demand		0.5	0.5	0.5	0.6	0.6
Security Risk (e.g. Vandalism)						
• during school hours		1.1	1.1	1.1	1.1	1.1
Total Retained Risk	0.0	2.1	2.7	3.8	5.0	5.1
Discount factor@8.65%	1.00	1.09	1.18	1.28	1.39	1.51
Discounted Cash Flows	0.0	2.0	2.3	3.0	3.6	3.4
Present Value	14.3					

In the preceding example, the value of retained risk is \$14.3 million. Thus, the total value of risk in the PSC is therefore \$91.0 million (including the \$76.7 million for Transferable Risk).

2.2.2 Risk Mitigation

When evaluating Retained Risk (for the purpose of constructing the PSC), specific consideration should be given to the ability of government to mitigate risks in practice. Risk mitigation is all about minimizing and controlling either or both the consequences and the probability of a risk materializing. Factors that may help mitigate Retained Risks

include:

- Ability to influence directly the probability of a risk materializing;
- Utilizing proven technology and reputable contractors;
- Developing effective monitoring and risk management practices; and
- Maintaining appropriate insurance coverage.

Third-party insurance should be considered for economically insurable Retained Risks. As mentioned previously in Section 1.5, self-insurance, which has been traditionally used by government, is the preferred approach where the cost of it is less than commercial insurance. Ideally, self-insurance should involve setting aside the premiums in a fund or dedicated reserve. However, where government uses commercial insurance (e.g. construction or contractor insurance), the cost of the insured risk to government is no longer included as a Retained Risk, since it has been passed at a cost to a third party. Instead, the cost of premiums should be included in the Raw PSC.

For projects where Retained Risk is included in the PSC, it should also be added to each of the private bids to allow a meaningful comparison with the PSC. However, the level of Retained Risk may need to be adjusted between bids to reflect the same level of risk transfer proposed by government.

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