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Dispelling the Myths

A Pan-Canadian Assessment of Public-Private Partnerships for Infrastructure Investments



Dispelling the Myths: A Pan-Canadian Assessment of Public-Private Partnerships for Infrastructure Investments
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Preface

Public-private partnerships (P3s) have become an increasingly important means of procuring public infrastructure in Canada. Yet they remain controversial. In light of continued opposition to P3s, several P3 agencies and procurement authorities asked The Conference Board of Canada to carry out an assessment of the benefits and drawbacks of P3s. This report presents the results of that assessment, which tracks the performance of P3 projects that reached financial close in 2004 or later under the auspices of provincial P3 agencies or offices. The report concludes that, relative to conventional procurement, these P3s have delivered efficiency gains as well as a high degree of cost and time certainty from financial close through to completion of construction.

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The author alone is responsible for any errors and omissions.

EXECUTIVE SUMMARY

Dispelling the Myths A Pan-Canadian Assessment of Public-Private Partnerships for Infrastructure Investments

At a Glance

- ◆ Public-private partnerships (P3s), while controversial, are an increasingly important procurement vehicle for Canadian governments seeking to build or upgrade infrastructure assets.
- ◆ Value-for-money studies comparing the projected costs of P3s and conventional contracts show that the Canadian P3s initiated from 2004 onwards have so far delivered important efficiency gains for the public sector (i.e., taxpayers), ranging from a few million dollars to over \$750 million per project.
- ◆ In addition, Canadian evidence on the performance of P3s shows a high degree of cost and time certainty over the period from the financial close of projects through to completion of construction.
- ◆ Factors driving P3 efficiency gains include optimal risk allocation between the public and private partners, upfront assessment of project costs, output-based contracts, and private financing.

Public-private partnerships (P3s) have become an increasingly important procurement vehicle for Canadian governments seeking to build new or to upgrade infrastructure assets ranging from hospitals, bridges, and highways through to courthouses, water treatment facilities, and concert halls. Although P3s account for only 10 per cent to 20 per cent of total infrastructure spending, governments have come to rely on this type of procurement to help address the long-standing infrastructure deficit. But are P3s clearly superior to conventional procurement methods for Canadian infrastructure projects? This report provides an impartial assessment of the benefits and drawbacks of using P3s, examining arguments that they have higher financing and transaction costs, are less transparent, and lead to lower service standards than traditional procurement processes.

P3 projects tend to feature characteristics such as the integration of two or more project phases, output-based contract specifications, payment upon delivery, private financing, and private sector project stewardship. In contrast, conventional projects are characterized by separate procurements for each project phase, input-based contract specifications, monthly payments to contractors, public financing, and public sector project stewardship.

This report assesses Canadian P3 projects executed under the direction or guidance of the P3 agencies established in the early part of this decade, starting with Partnerships BC and followed by Infrastructure Ontario, the Alternative

Capital Financing Office of the Alberta Treasury Board, the Agence des partenariats public-privé Québec (recently renamed Infrastructure Québec), and PPP Canada. The period under review begins when Partnerships BC began advising on the procurement process for P3 projects such as the Sierra Yoyo Desan Resource Road Upgrade Project, the agreement for which was signed in June 2004. These P3 projects are referred to as the second wave of Canadian P3s. The report focuses on the P3 projects initiated by British Columbia, Alberta, Ontario, and Quebec, because these jurisdictions have specialized infrastructure agencies (or equivalent offices within the central agencies of the respective provincial governments) and because their projects are relatively similar in structure and thereby provide a meaningful basis for evaluation. The first wave of P3s has already been reviewed extensively.

P3 procurements can provide private sector contractors with strong incentives to deliver the infrastructure outcomes valued by the public sector owner.

Chapter 2 presents a framework for assessing whether (and under what conditions) the procurement of public infrastructure assets using P3s can generate efficiency gains relative to conventional forms of infrastructure procurement by the public sector. The overall proposition is that P3 procurements can provide private sector contractors with strong incentives to deliver the infrastructure outcomes valued by the public sector owner. This results in efficiency gains in the form of lower financial costs, faster delivery schedules, higher-quality outcomes, or a combination thereof relative to conventional procurement methods. The efficiency gains from P3 procurements are achieved through one or more of the following mechanisms:

- ◆ **performance-based contracts**, which specify deliverables in terms of the outputs (e.g., lane availability and skid resistance in the case of roads) rather than prescribing specific materials to be used;
- ◆ **optimal risk allocation** between the public sector owner and the private sector partner, which means that many of the risks are transferred from the public sector to the private partner if the partner can manage them more cost-effectively;

- ◆ **integrating the design, construction, operation, and maintenance phases** of a project in order to minimize total life-cycle costs; and
- ◆ **private financing**, which includes primarily project-specific debt and a small tranche of equity, to ensure that the risks transferred to the private partner are borne and managed by that partner. Under conventional construction contracts, such as “stipulated sum contracts,” private contractors are paid monthly based on the percentage of work completed.

The relative benefits of this procurement model take the form of:

- ◆ **cost savings** or quality enhancements in the design or construction of a new facility, as well as in its operation and maintenance (i.e., in the service provision phase); and
- ◆ **time savings** in the delivery of a public infrastructure facility fit and available for use.

It is also important to recognize that these benefits come at a cost. Specifically, compared with conventional procurements, P3s entail the following additional costs for a project of similar scope:

- ◆ **The cost of transferring selected risks to the private partner.** This is also known as the risk premium, which is used to compensate the private partner for assuming risks additional to those associated with a conventional contract. The risk premium usually represents the largest part of the additional costs involved in P3 procurements.
- ◆ **Higher financing costs.** The private financing used for P3 projects is more expensive than the public financing (i.e., government bonds) used for conventional procurements.
- ◆ **Higher transaction costs.** P3 contracts cost more to develop and monitor than conventional infrastructure contracts.

If these three categories of costs are offset by the cost savings from transferring selected risks to the private partner, the overall costs of the project will be lower under a P3 approach than under traditional project delivery.

The Canadian evidence on the cost and time performance of P3s comes from two sources: value-for-money (VfM) studies, which compare the total costs of P3 and

conventional procurement methods for each P3 project; and studies comparing the performance of projects against their own time and budget targets, which are set either when a project is first announced or when the project agreement is signed. The VfM study results indicate that the second wave of Canadian P3 projects is delivering important efficiency gains for the public sector (i.e., taxpayers) relative to conventional procurement approaches. The estimated value of these gains varies from just a few million dollars per project to over \$750 million in the case of the Autoroute 30 project south of the Montréal area. When these savings are expressed as a proportion of what it would have cost the public sector to procure the projects through conventional contracting methods, the savings range from 0.8 per cent through to 61.2 per cent per project.

The second wave of Canadian P3 projects is delivering important efficiency gains for the public sector.

VfM savings are necessarily prospective when estimated during the procurement period. Whether the actual savings match the expected savings by the end of the P3 project depends on the degree of cost and time certainty of P3 projects. However, the savings can also be verified on an ex post basis—after project completion—as in the case of the construction of the southeast and southwest legs of the Edmonton Ring Road. The two projects were broadly comparable, but the P3-procured project took two years less to deliver than the conventionally procured project.

The Canadian evidence on the cost and time certainty of P3 projects is incomplete, because only 19 of the 55 second-wave P3 projects have reached substantial completion. However, these early results point to a very strong performance. Most of the 19 projects have been delivered either early or on schedule, with only two projects delivered up to two months late. (The financial penalties resulting from these delays were borne by the private sector partner or by the public sector partner in the case where delays were due to risks retained by the public sector.) Moreover, the interim results for the P3 projects that remain in the construction phase provide little reason to expect substantial cost or time overruns,

based on the information regarding contract variations and claims against the public sector. Therefore, the preliminary evidence indicates that the second wave of Canadian P3 projects is providing a high degree of cost and time certainty for the period from financial close through to completion of construction.

It is important to emphasize that cost certainty in a project is not just about saving a few dollars or improving the predictability of public sector budgeting. Cost certainty is vital from a public interest perspective, because it enables public decision makers to allocate public funds to the right projects. Without cost certainty, the public sector is often compelled to allocate relatively large amounts of additional funds midway through a project, regardless of whether the additional funding would have been justified on a VfM basis. This occurred in the Vancouver Convention Centre Extension Project, the Sudbury Regional Hospital (Phase I) project, and the Montréal subway extension to Laval, all of which were conventional procurements.

We also wish to dispel a few myths about P3s in Canada. First, P3s in Canada are not about the privatization of public assets. Ownership of the new infrastructure facilities either remains with the public sector or is transferred back to the public sector at the end of the contract term. Second, long-term P3 projects (i.e., those with a maintenance phase) help ensure a satisfactory level of maintenance and upgrade work during the life of the facility. The anecdotal evidence collected in this report suggests that there is little basis for the criticism that service standards suffer under a P3 relative to a conventional maintenance contract or even relative to in-house provision.

Chapter 3 reviews the main drivers of efficiency gains in P3s relative to conventional procurements. The most important is arguably the optimal risk allocation process, which is at the heart of the P3 procurement process adopted by P3 agencies and offices across Canada. This involves identifying and valuing project risks upfront and transferring to the private partner those risks that these firms have the expertise and experience to handle. This risk transfer process also has the considerable advantage of forcing an upfront consideration (i.e., before or during procurement) of all the project requirements

and associated costs. Without such upfront assessments, there is a much higher risk of cost overruns, as evidenced in several of the case studies of conventional infrastructure procurement reviewed in this report.

Performance-based contracts, which specify deliverables in terms of desired outputs rather than inputs, are another driver of efficiencies in P3 contracts. These contract provisions encourage private partners to consider the most cost-effective delivery practices. The integration of the design, construction, operation, and maintenance phases of a project is yet another potential driver of efficiencies, because it enables private firms to adopt innovations that can reduce life-cycle costs, even if they involve greater investment in the design or construction stages. However, there is little empirical evidence of the relative importance of these two efficiency drivers. As well, both these efficiency drivers can be adopted in conventional forms of contracting, provided that care is taken to specify the desired outputs and to design an appropriate contract covering a substantial part of the expected useful life of the infrastructure asset.

Private finance is the fourth efficiency driver in P3 projects. Thanks to this feature of P3s, the public sector pays the private partner only upon delivery of the facility (although some milestone payments are sometimes made before construction is complete). Consequently, the private partner has a powerful incentive to build the facility in a timely manner and in a way that meets the contractual requirements. Such payment by results forces the private partner to take on most of the financing requirements for the project, which include sizable debt obligations. Without these financing requirements, private firms would have little incentive to complete their contractual obligations should they encounter significant cost overruns that cannot be passed on to the public sector. Therefore, private financing can be considered the glue that binds together the other efficiency drivers mentioned above, particularly the optimal risk allocation process and the performance-based contract provisions.

However, these efficiency drivers do not guarantee that all P3 infrastructure projects will generate net efficiency gains. In some cases, the gains can be more than offset by

a combination of the incremental cost of private financing, any additional costs due to the risks transferred to the private consortium (i.e., the risk premium), and the incremental transaction costs. This is why each infrastructure project requires a rigorous VfM assessment to ensure that a P3 procurement option delivers value relative to a conventional procurement method, as was standard practice for all second-wave P3s. Chapter 4 of the report reviews VfM tests and other aspects of P3 procurement processes, such as the guidelines used to screen infrastructure projects for their suitability as P3 procurements and the transparency of P3 procurements compared with conventional delivery of infrastructure projects.

VfM tests are designed to ensure that the right projects are selected as P3s and that the risk transfer effected in a P3 agreement is cost-effective for the public sector owner. Our review of the available VfM studies and guidance documents suggests that each of the four jurisdictions under consideration—British Columbia, Alberta, Ontario, and Quebec—has developed a rigorous VfM methodology for comparing the costs of P3s and traditional procurements. (VfM studies are not published for the Alberta P3 transactions, but the VfM methodology is available through Alberta Infrastructure and Transportation.) VfM tests are not undertaken as an afterthought: A first pass at the test is done before the start of the procurement process (i.e., before the request-for-proposal stage), and the test is finalized after the financial close. This report also suggests that there is value in updating the VfM studies ex post at key milestones, such as at completion of construction, and periodically thereafter. In contrast, conventional infrastructure procurements are normally not subject to any VfM-type tests to inform procurement strategy.

In addition, this report notes that the procurement process for the second wave of P3s is considerably more transparent than that for conventional infrastructure projects of equivalent scale. This is because the key procurement documentation, including a redacted form of the partnership contract, is publicly available and a fairness commissioner assesses the fairness and transparency of the process for all bidders. Neither of these features is typical of conventional public infrastructure procurements.

CHAPTER 1

Introduction

Chapter Summary

- ◆ Canadian governments are increasingly turning to public-private partnerships (P3s) to build or upgrade infrastructure assets, with over 100 P3 transactions concluded since the early 1990s.
- ◆ Despite this activity, there remains some opposition to P3s, which have been criticized for higher financing costs, less transparency, and lower service standards than conventional procurement methods.
- ◆ This report reviews the performance of the second wave of Canadian P3 projects—those that reached financial close under the auspices of the P3 agencies (or offices) set up in the early 2000s.
- ◆ P3s are characterized by the integration of two or more phases of a project, output-based contracts, payment upon delivery, private financing, and private sector project stewardship.
- ◆ P3s in Canada are not about the privatization of public assets, nor do they typically involve replacing public provision of assets or services with private provision on a large scale.

Public-private partnerships (P3s) have become an increasingly important procurement vehicle for Canadian governments seeking to build or upgrade infrastructure assets ranging from hospitals, bridges, and highways through to courthouses, wastewater facilities, and concert halls. This is partly the result of a long-standing infrastructure deficit.¹ The growing importance of P3s is reflected in the fact that three provincial governments—British Columbia, Ontario, and Quebec—have set up specialized infrastructure agencies to handle P3 procurements and to support the development of P3 markets. Other provinces—such as Alberta and New Brunswick—either have set up equivalent offices within their central government agencies or have at least put in place guidelines for P3 procurements. And the federal government recently set up a Crown corporation (PPP Canada), whose responsibilities include managing a \$1.2-billion fund to support innovative P3 projects. As a result of these and other Canadian government initiatives, over 100 P3 transactions have been concluded with private sector consortia in Canada since the early 1990s.

Yet, despite all this activity and the major efforts by provincial governments to use innovative procurement methods for building and maintaining infrastructure, there remains some opposition to P3 procurement methods.

1 This has been documented by several sources, including Mirza in *Danger Ahead*, a report prepared for the Federation of Canadian Municipalities.

The criticisms have been wide-ranging. They include arguments that, compared with traditional procurements, P3s have higher financing costs, are less transparent, and lead to lower standards of service provision.

P3s are also facing new market conditions and possibly further changes in policy. The global credit crisis led to a major contraction in the availability of private financing, which is a key element of P3 projects. And the financing that remains available is also more costly relative to government bonds. However, the global economic downturn has also led governments in Canada and worldwide to look to infrastructure projects as a source of economic stimulus.

In light of these changing conditions and continued opposition from certain quarters, several P3 agencies and procurement authorities asked The Conference Board of Canada to undertake an assessment of the benefits and drawbacks of P3s for Canadian infrastructure investments.² The remainder of this chapter describes what we mean by P3s and conventional infrastructure procurements, and the methodology used for this study. Chapter 2 provides an assessment of the benefits and drawbacks of P3s, while Chapter 3 discusses the key drivers of potential efficiencies in P3 projects.

P3s account for only a fraction of total spending on public infrastructure. In most of the provincial jurisdictions in Canada that are active in this type of procurement, public spending on P3s is usually between 10 per cent and 20 per cent of total spending on public infrastructure.³ This means that there can be considerable discretion in determining which infrastructure projects are procured using a P3 approach. But as we will see later in the report, P3 procurements are not suitable for all infrastructure projects. The issue of how projects are selected to be

procured as P3s is therefore important. Chapter 4 reviews this and other key issues in the P3 procurement process, such as transparency. Chapter 5 presents eight case studies, consisting of four P3 projects and four conventional infrastructure projects. Chapter 6 presents the conclusions of the report.

P3s: DEFINITIONS, SCOPE, AND METHODOLOGY

In this report, we define P3 and conventional procurement methods for public infrastructure projects based on the features presented in Table 1. However, there are a number of qualifications to these definitions of P3s and conventional approaches. First, the distinction between P3s and conventional procurements is not as clear-cut as implied in the table: Some procurement approaches lie somewhere between the two models. These include design-build (DB) projects, which have P3 characteristics such as more than one project phase and output-based performance specifications. However, because such projects are publicly financed, we categorize them under the conventional approach.

The distinction between P3s and conventional procurements is not clear-cut; some approaches lie between the two.

Second, we recognize that the definition of P3s differs somewhat across the Canadian jurisdictions that are actively engaged in this type of procurement. For example, some jurisdictions do not require more than one project phase for a P3. This is the case for Ontario's build-finance (BF) hospital projects, which are procured as alternative financing and procurement (AFP) projects—a term for P3s used by the Ontario government. As another example, Quebec's definition of P3s does not necessarily entail private financing, although private financing has been used in all the projects that have reached financial close⁴ and have been managed or co-managed by PPP Québec

2 The project funders consist of the Alberta Treasury Board, Infrastructure Ontario, Infrastructure Québec (formerly the Agence des partenariats public-privé Québec or "PPP Québec"), Partnerships British Columbia (henceforth "Partnerships BC"), PPP Canada, and The Canadian Council for Public Private Partnerships.

3 For example, according to the Chair of the Conseil du Trésor, Monique Gagnon-Tremblay, "only about 10 per cent of the \$42 billion the [Quebec] government is currently spending on infrastructure projects is for P3 projects." See Dougherty, "Quebec Renames Agency."

4 Financial close refers to the point in time when the contractual agreements, including all terms and conditions as well as the funding arrangements, between the winning consortium and the procurement authority are agreed to and signed.

Table 1
Key Features of P3 and Conventional Procurement Methods

P3 projects	Conventional projects
<p>Integration of two or more phases of a project from design and build through to a concession period, which can include providing the facilities maintenance services or even the core services that rely on the use of the newly built facility. This feature means that P3 contracts are usually long-term contracts covering a large part of the economic useful life of the asset, which may exceed 30 years.</p>	<p>Each phase procured separately through a succession of separate contracts. Facility design is completed before tendering of the construction phase, which is often accomplished through multiple contracts awarded to multiple contractors for separate pieces of work. This conventional approach is also known as “design-bid-build.” Once the new facility has been built, facilities maintenance services and other aspects of operations are delivered through contracts that are separate from the design and build contracts. Conventional construction contracts usually take the form of stipulated price contracts,³ or construction management contracts, where an engineering firm is hired to manage the successive contract phases, including the procurement for each phase.⁴</p>
<p>Output-based contracts, in which the deliverables are specified in terms of the outputs required, leaving the private sector partner to put forward the best solution for meeting the output specifications. Output-based specifications are particularly important for the operational phase of the contracts (i.e., after the facility opens for public use), but they are also used for the design and construction phases, where the public sector owner specifies the functional requirements for the facilities to be procured.</p>	<p>Input-based contracts, in which the public sector owner specifies the exact inputs required for the facility. In some cases, input-based contract provisions may be appropriate either because it is not possible to specify outputs that capture the contractor’s performance in a satisfactory manner, or because the potential benefits from specifying such outputs may not justify the effort required to develop, monitor, and enforce them.</p>
<p>Payment upon delivery, whereby the private firm is paid only for defined assets or services once construction has been completed.¹ When this feature is combined with output-based specifications, the result is a performance-based contract.</p>	<p>Monthly payments to contractors based on the percentage of the contract work completed. Up to 90 per cent of the stipulated contract price may be paid in monthly payments. Note: Payment on a percentage completion basis is not the same as payment initiated upon final delivery of the project.</p>
<p>Private financing, in which a substantial share of the project is financed through project-specific equity and debt. The private financing is usually provided on a non-recourse basis,² with the equity provided by the consortium partners making up less than 20 per cent of the project financing. Third-party debt, bank loans, and contributions from governments provide the remaining finance requirements. In other words, private working capital is not enough to qualify a project as privately financed; it must have project-specific equity and debt. This kind of private financing is usually available only to projects that are at least \$40 million in size, and often much larger.</p>	<p>Private financing limited to relatively modest levels of working capital. Because conventional contracts involve regular payments to the contractors, private financing is limited to a modest amount of working capital.</p>

- 1 In some cases, partial payments have been arranged at key milestones during the construction phase.
- 2 Financing is provided on a non-recourse basis when recourse to the equity investor for any claims resulting from the project is limited to the investor’s equity contribution.
- 3 Stipulated price contracts, which are also known as Canadian Construction Documents Committee (CCDC) 2, require the contractor “to perform the required work for a single, pre-determined fixed price or lump sum, regardless of the contractor’s actual costs.” See www.ccdc.org/documents/index.html#CCDC2.
- 4 Construction management is sometimes referred to as an “engineering-procurement-construction-management” approach. In this case, the firm managing the contracts is the “managing contractor.” See Grimsey and Lewis, “Public Private Partnerships,” for a comparison of the advantages and disadvantages of traditional fixed-price contracts, managing contracts, and P3s. In addition, a matrix developed by the Canadian Design-Build Institute compares the performance criteria found in the design-bid-build approach with those in the construction management and the design-build approaches. See www.cdbi.org/documents/guides/matrix.pdf.

(cont’d on next page)

Table 1 (cont'd)

Key Features of P3 and Conventional Procurement Methods

P3 projects

Private sector project stewardship, whereby overall control of project execution is transferred to the private sector partner. The completion of milestones is determined by an independent certifier and overseen by the private sector partner. The public sector owner must step back and allow the P3 consortium and its contractors the freedom to manage each phase of the project in a way that best meets the contractual obligations. However, the public sector owner ultimately retains ownership of the asset, including the right to make changes to the requirements or even to terminate the P3 agreement.

Conventional projects

Project stewardship by the public sector or a contract management firm. Overall control of project execution rests with the public sector owner (or a contract management firm acting on behalf of the public sector owner). The public sector owner (or its contract management firm) would typically have engineers on site to supervise and direct the project and to inspect and approve the work at key completion milestones.

Source: The Conference Board of Canada.

to date. Since our objective in this report is to include in our assessment of P3s all of the transactions undertaken by P3 agencies or P3 offices within government departments in Canada, we have allowed for some ambiguity in the P3 definition.

One misconception that must be dispelled is that P3s in Canada are about the privatization of public assets.

We have also allowed for some ambiguity in our definition of the conventional procurement approach, which covers different types of contracts and procurement methods, ranging from multiple, small-value fixed-price contracts that are part of design-bid-build procurements through to contract management and even design-build contracts. In principle, conventional contracts could include some of the features of P3 contracts, such as integration of the design and construction phases and even some output-based performance requirements. However, they would not include private financing and the associated features of payment upon delivery and private sector project stewardship. This definition is consistent with the argument that effective risk transfer to the private sector consortium is much more difficult to achieve without private financing. According to this view, private financing is the glue that binds the key elements of a P3 approach to procurement, including output-based performance specifications, payment upon delivery, and private sector project stewardship.

WHAT P3s ARE NOT

Now that we have discussed conventional and P3 procurement methods, it is worth dispelling some of the misconceptions that have crept into the public discourse on P3s. First, P3s in Canada are not about the privatization of public assets. Ownership of new infrastructure facilities either remains with the public sector or is transferred back to the public sector at the end of the contract term. Moreover, the public sector retains full control of the infrastructure and the outcomes of the project. The public sector owner also retains the right to make changes to the project requirements (i.e., change orders), including terminating the P3 agreement, and it retains full accountability to taxpayers for the project.

The second point is that most of the Canadian P3s do not involve replacing public provision of assets or services with private provision. Conventional public infrastructure projects already rely almost exclusively on private sector firms for construction services. Design services for conventional projects are also obtained primarily from private firms, although in some cases governments also retain some in-house design capabilities. Facilities management and operation and maintenance of public infrastructure, such as roads and bridges, have also been increasingly outsourced to private sector firms in recent years. In areas where the private sector is already providing design, construction, and facilities maintenance services, the only differences between conventional and P3 procurement methods are the private financing and contractual provisions discussed above.

Despite this, some P3 projects that include an operation and maintenance phase have seen publicly provided services replaced by privately provided services, such as catering and laundry services in the health sector (“soft facilities management” services) and building maintenance services such as elevator repairs (“hard facilities management” services). However, very few P3 projects have included soft facilities management services, especially the most recent wave of P3 projects undertaken by P3 agencies since 2005.⁵ Moreover, some jurisdictions, such as Ontario, have explicitly avoided including soft facilities management services in the hospital P3 contracts with a maintenance phase (e.g., Sault Area Hospital, North Bay Regional Hospital, Woodstock General Hospital, and the Niagara Health System P3s included only hard facilities management services). As for the long-term P3 projects with hard facilities management services, the affected staff have typically been transferred to the private sector. However, their union representation, collective bargaining rights, and existing contract terms have not been affected.

SCOPE OF P3s ASSESSED IN THIS REPORT

This report focuses on assessing Canadian P3 projects that reached financial close under the direction or guidance of the P3 agencies or the P3 offices located within central agencies or line departments of provincial governments.⁶ These projects, which we refer to as the second wave of P3 projects, began with the Sierra Yoyo Desan Resource Road, the Gordon & Leslie Diamond Health Care Centre, and the Abbotsford Regional Hospital and Cancer Centre projects, all of which reached financial

close in 2004 under the guidance of Partnerships BC. We refer to the P3 projects that reached financial close before the establishment of the P3 agencies as the first wave of P3 projects, as shown in Exhibit 1.

We excluded the first wave of Canadian P3 projects—such as Confederation Bridge, Highway 407 ETR, and the Brampton Civic Hospital—for several reasons. First, many of the P3 procurements chosen in the first wave were initiated at least in part by governments seeking to achieve off-balance-sheet accounting treatment for their infrastructure investments (e.g., Confederation Bridge, Highway 104 Western Alignment), although these accounting treatments have been largely discredited and are now no longer feasible.

The first-wave P3 projects did not always succeed in transferring the financing risk to the consortia.

Second, the P3 transactions concluded during the first wave were quite different from those undertaken during the second wave of P3s. For example, the first-wave P3s usually attempted to transfer revenue risk to the private consortia, while in most second-wave P3 projects the consortia are compensated based on availability payments. Moreover, the first-wave P3 projects did not always succeed in transferring the financing risk to the consortia, while this is standard practice in second-wave P3s. (See box “Lessons Learned From the First Wave of P3 Projects.”)

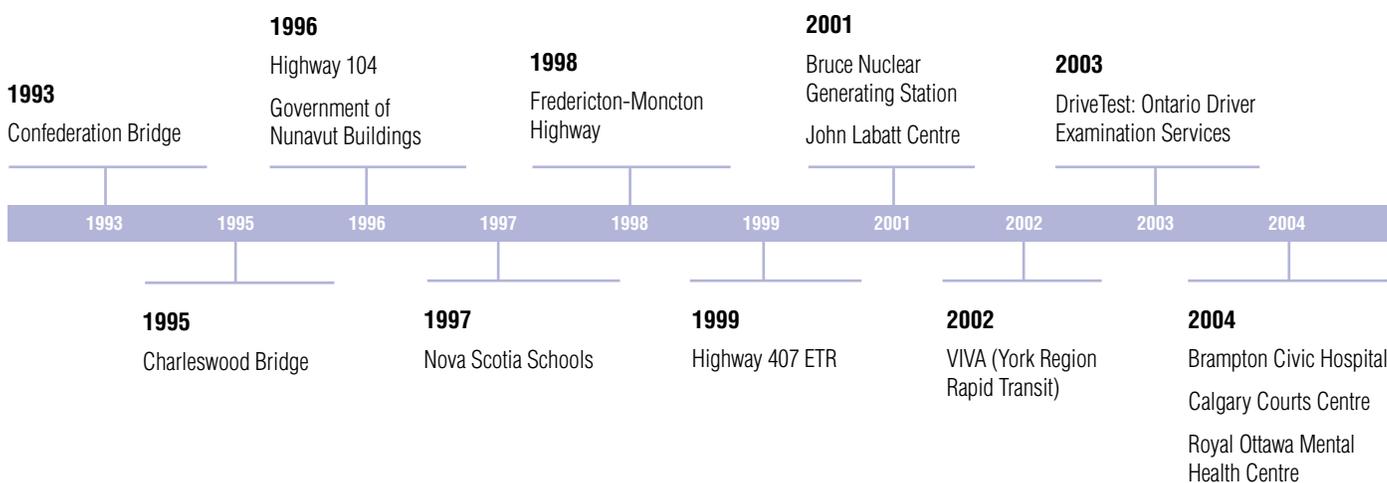
Third, the procurement process for the first wave of Canadian P3s was relatively ad hoc compared with that for the P3 procurements undertaken in the second wave. This is not surprising, since the first wave of projects was undertaken in a period when P3s were a relatively new phenomenon in both Canada and worldwide. Thus, many of the early first-wave P3 projects never had a value-for-money (VfM) assessment comparing the P3 option with a conventional procurement. Even where a VfM assessment was carried out on some of the subsequent first-wave P3s, it was not always done early enough in the process to inform changes in the procurement

5 In such cases, the affected public sector employees have usually been transferred at equivalent wage rates and working conditions to the private firms providing these services. In Quebec, this is required by the Quebec Government’s *Public Private Partnerships Framework Policy* of June 2004, p. 3.

6 This is not to suggest that these are the only P3s in Canada. All three levels of government are engaged in P3s of one form or another, such as Windsor Bridge (Transport Canada), Disraeli Bridge (City of Winnipeg), and the courthouse in Saint John (City of Saint John). However, we have focused on the P3 projects initiated by the four provincial jurisdictions, British Columbia, Alberta, Ontario, and Quebec, because these have set up specialized infrastructure agencies (or equivalent offices within central agencies) and because the projects in question are relatively similar in structure, enabling meaningful evaluation.

Exhibit 1

Timeline of P3 Projects Reaching Financial Close—The First Wave of Major P3 Projects



Note: The project year is based on the date of financial close of the project. These projects were drawn from the Canadian PPP Project Directory, but they exclude corporatizations, such as Nav Canada, and projects less than \$50 million in value at the time of closing. Note that the three projects listed under 2004 reached financial close prior to the establishment of Infrastructure Ontario and the Alternative Capital Financing Office of the Alberta Treasury Board.

Sources: The Canadian Council for Public-Private Partnerships, *Canadian PPP Project Directory*; The Conference Board of Canada.

process. (For example, see the Ontario Auditor General's discussion of the VfM assessment in the Brampton Civic Hospital P3.⁷)

In retrospect, these lapses occurred in an environment where many public sector owners—from hospitals to cities and even provincial departments—were required to act as their own P3 procurement authorities for the first time (and sometimes their only time). The procurement environment for the second wave of P3s has been markedly different: Most of these P3 projects have been managed, co-managed, or guided through the procurement process by a dedicated public sector P3 agency that has experience with multiple P3 transactions and the benefit of a relatively standardized procurement process, both within jurisdictions and increasingly across jurisdictions as well.

The first wave of Canadian P3 projects has already been reviewed in the literature. In contrast, the second wave of P3 projects has received much less attention. Moreover, while the first wave of P3s continues to provide valuable lessons for public sector owners and private sector participants, a review of the second wave of P3s is likely to provide more timely guidance for P3 procurements going forward.

METHODOLOGY

The objective of this report is to present a state-of-the-art assessment of P3s in Canada based on a critical review of the available evidence, combined with the latest thinking from practitioners, policy makers, and academic experts on the topic. The methodology supporting the results of this research project consisted of the following four elements:

- ♦ a review of the Canadian literature and publicly available documentation on P3s, as well as notable studies from other jurisdictions with extensive experience with this type of procurement, such as the United Kingdom and Australia;

7 Auditor General of Ontario, "Brampton Civic Hospital."

- ◆ approximately 20 interviews with P3 practitioners from the private and public sectors, as well as with academic experts in the field;
- ◆ the compilation of a database identifying key points in the procurement process and outcomes for the second wave of P3 projects that reached financial close by November 2009; and
- ◆ four case study pairs, with each pair consisting of a P3 project and a conventional project from each of the four provincial jurisdictions that have been most active in the second wave of P3s in Canada. The intent of the case studies is to enable comparison of the P3 and traditional approaches to procurement in each of these jurisdictions.

Lessons Learned From the First Wave of P3 Projects

The first wave of P3s in Canada reached financial close between the early 1990s and 2004, as indicated in Exhibit 1. These projects have already been reviewed by several authors,¹ based on information that was publicly available at the time. These case study reviews produced several findings:

First, the off-balance-sheet treatment of public sector liabilities was a widespread practice in the first-wave P3 projects. The Confederation Bridge and Highway 104 projects are two prominent examples of such public sector accounting treatment. However, this practice reduces the transparency of public sector accounts and provides no economic value. Further, the extra effort required to structure an off-balance-sheet transaction arguably leads to higher transaction costs and thereby destroys value. Fortunately, this accounting practice has been abandoned in the second wave of P3 transactions.

Second, many first-wave P3 transactions were also characterized by an attempt to transfer all the revenue risk inherent in a project (also known as “demand risk” or “use risk”) to the private consortia. Typically, this would mean that a private sector consortium was responsible for all the risk associated with any variation in revenues arising from the use of the facility, as was the case for toll revenues in the Confederation Bridge and Highway 104 projects. Vining and Boardman have argued that these attempts to transfer revenue risk were largely unsuccessful, because private sector consortia usually have only limited influence over traffic levels or infrastructure use levels.² As a result, the effective transfer of revenue risk was seldom achieved in the first-wave P3 transactions, because other features of these transactions were usually adjusted to lower the likelihood of reductions in traffic levels or to mitigate the commercial consequences thereof. For example, in the Highway 104 project, the Nova Scotia Auditor General

noted that “the final agreement required the Province to compel large trucks to use the road [and] to maintain a 30 km per hour speed differential between the old and new road.”³

The difficulty of transferring revenue risk arises in situations where the key variables determining traffic or demand levels remain largely under public sector influence, such as the management of network-wide traffic levels and economic activity levels in the regions surrounding the tolled facility. Since risks are managed most cost-effectively when they are allocated to the party best able to manage them, revenue risks in these situations are best allocated to the public sector, as has generally been done in second-wave P3 projects.⁴ The latter have been characterized by availability-based performance payments.

A third finding worth noting is that some first-wave P3 deals did not succeed in fully transferring financing risk to the private consortium, although the projects in question relied on private financing (e.g., Confederation Bridge). In such cases, the public sector owners incurred the higher costs of private financing (relative to public sector debt financing) without arguably enjoying its full benefits, because the financing was not at risk for the consortium.

1 See Allan, *Public-Private Partnerships*; Vining and Boardman, “Public-Private Partnerships”; Auditor General of Ontario “Brampton Civic Hospital”; Murphy, “The Case for Public-Private Partnerships”; Vining et al., “Public-Private Partnerships in the US and Canada”; Iacobacci, *Steering a Tricky Course*.

2 Vining and Boardman, “Public-Private Partnerships.”

Sources: Vining and Boardman, “Public-Private Partnerships”; Iacobacci, *Steering a Tricky Course*.

3 Auditor General of Nova Scotia, “Highway 104 Western Alignment Project,” p. 127, cited in Vining and Boardman, “Public-Private Partnerships,” p. 27. Non-compete clauses are also common risk-mitigating features in projects that attempt to transfer revenue risk (e.g., limitations on expanding the capacity of adjacent roadways, as in the case of State Route 91 in California). The limited success in transferring financing risk to the private consortium is another feature of P3 deals with substantial revenue risk, as was the case in the Confederation Bridge project and the construction of Highway 407 ETR.

4 Some second-wave P3s did transfer revenue risk to the private consortium; however, these projects involved either a limited transfer of revenue risk (e.g., sharing of toll revenues in the A25 and A30 highway projects) designed to provide the consortium with incentives to keep the facility open for service, or transferred revenue risks that tended to lie largely within the control of the consortium (e.g., the Sierra Yoyo Desan Resource Road).

CHAPTER 2

Assessing the Benefits and Drawbacks of P3s in Procuring Public Infrastructure

Chapter Summary

- ◆ Empirical evidence indicates that large infrastructure projects procured by governments are often over budget and behind schedule, but P3s are not always a solution to these problems.
- ◆ VfM studies constitute the key public interest test as to whether an infrastructure procurement should proceed as a P3 or as a conventional project.
- ◆ Nineteen of the 55 second-wave P3 projects have reached substantial completion, and interim results suggest a strong performance.
- ◆ Most of the 19 P3 projects were delivered either early or on schedule (two were delivered up to two months late), and none of the 55 projects have to date exceeded their respective public sector budgets.
- ◆ P3 procurement comes at a cost—the incremental cost of private financing, any additional costs of risks transferred to the P3 partner (i.e., the risk premium), and the incremental transaction costs—but these costs can be more than offset by the gains from transferring selected risks to the private partner.

In this chapter, we investigate whether (and under what conditions) procuring public infrastructure assets using P3s can generate efficiency gains relative to conventional forms of infrastructure procurement by the public sector.¹ Efficiency gains take the form of cost savings or time savings achieved in procuring a given quantity and quality of infrastructure. They can also take the form of any quantity or quality improvements in infrastructure for any given cost. The overall proposition is that P3 procurements provide private sector firms with strong incentives to deliver the infrastructure outcomes valued by the public sector owner, resulting in efficiency gains relative to conventional procurement methods. The efficiency gains from P3 procurements are achieved through one or more of the following mechanisms:

1. **Performance-based contracts**, which specify deliverables in terms of outputs (e.g., lane availability, skid resistance, smoothness, and snow-clearing requirements in the case of roads) rather than prescribing specific materials to be used. These types of contracts also encourage innovation, since private contractors have greater discretion over how to deliver the outcomes cost-effectively.
2. **Optimal risk allocation** between the public sector owner and the private sector partner, which means that many of the risks are transferred from the public sector to the private consortium if it can manage these risks more cost-effectively.

¹ The terms “benefits,” “efficiency gains,” and “savings” are used interchangeably in this report.

3. **Integrating the design, construction, and operation and maintenance phases** of a project to minimize total life-cycle costs for the infrastructure. For example, it can be more cost-effective to build a facility with features that are more expensive at the outset but will result in reduced maintenance costs over the whole life-cycle of the facility.² A private firm that is responsible for only one phase of the project does not have an incentive to incur these additional costs, even if those costs would be more than offset on a present-value basis by the savings achieved in a subsequent phase.
4. **Private financing**, which includes project-specific debt and equity, is one of the key mechanisms for ensuring that the risks transferred to the private partner are effectively assumed and managed by that partner. By requiring the private consortium to finance most of the development costs through to completion of the construction phase, the public sector owner ensures that the consortium has a compelling incentive to deliver on its contractual commitments and do so on a timely basis. This is because any delays in meeting the project commitments lead to higher debt-servicing costs, as the consortium must carry its debt load for a longer period. This incentive ensures that the private debt providers, which are usually banks or bond holders, exercise active project oversight over and above that provided by the equity holders. In contrast, under conventional construction contracts, private firms require only limited working capital, because they tend to be paid monthly and usually according to the percentage of the contract that is completed at the time. As a result, under conventional contracts, firms do not face as strong an incentive to meet schedule commitments on a timely basis, because they have more limited financial exposure in the event of any contractual delays.

The benefits of this procurement model are expressed through a combination of:

- ◆ **cost savings** or quality enhancements in the design or construction of a new facility, and in the operation and maintenance of the facility (i.e., in the service provision phase); and

2 The terms “infrastructure” and “facility” are used interchangeably throughout this report.

- ◆ **time savings** in the delivery of a public infrastructure facility fit and available for use.

It is also important to recognize that these benefits come at the expense of additional costs relative to conventional procurements. Specifically, P3s entail the following additional costs:

- ◆ **The costs of transferring selected risks to the private partner.** A P3 contract usually entails additional risks to the private partner compared with the risks that the partner would usually accept for the same infrastructure project under a conventional contract (e.g., risks of escalating construction costs and other such risks that are retained by the public sector under conventional contracts—see box “Risk Allocation Between Public and Private Partners”). The cost to the public sector of transferring these risks to the private partner is known as the “risk premium.” If the private partner has better control over the transferred risks than the public sector, which is often the case for design and construction costs, it can either avoid certain risks or mitigate their impact. As a result, the risk premium will be lower than the public sector’s risk exposure under a conventional approach, where it retains responsibility for the risks.³
- ◆ **The higher costs of private financing** used in P3s (primarily debt and usually a small tranche of equity) relative to the public financing (i.e., government bonds) of conventional procurements.⁴
- ◆ **The higher transaction costs** incurred in developing, monitoring, and managing P3 contractual agreements compared with those incurred in developing,

3 Note that this discussion of risk is from an ex ante perspective, which refers to the estimated value or cost of exposure to a certain risk in advance of the project. During the project execution, some of the contingencies that drive the risks (e.g., design errors, construction cost escalation) may turn out to be either better or worse than expected. If the risk in question is held by the private partner, a contingency that doesn’t arise or turns out better than expected will benefit the private partner’s bottom line (since the risk is already priced into the bid); however, a risk that turns out worse than expected has a negative impact on the private partner’s bottom line.

4 Some P3 practitioners consider the risk premium to be part of the private financing cost, perhaps because private financing is seen as the only way of effectively transferring risks to the private partner. However, we maintain the distinction between the risk premium and the incremental cost of private financing in this report, because the risk premium can take the form of a higher design-build price or higher operating costs. Infrastructure Ontario maintains a similar distinction in *Assessing Value for Money*, pp. 6–9.

monitoring, and managing a succession of contracts over the same period using a conventional approach to infrastructure procurement. These higher costs are the incremental transaction costs borne by the public sector, such as the additional due diligence and advisory costs incurred during the procurement process. However, it can be a tricky process to identify the incremental transaction costs, because many of the planning and management costs that occur at later stages under a conventional procurement approach are necessarily incurred upfront in a long-term P3 agreement. Thus, to accurately identify any incremental transaction costs in P3 approaches relative to conventional procurement approaches, we have to compare transaction costs incurred during the full P3 contract period with those incurred during an equivalent period characterized by a succession of conventional contracts. It should also be noted that the transaction costs of private sector bidders tend to be higher than they would be under a conventional approach and that one would expect these costs to be passed on to the public sector through the cost of the winning bid.

Risk Allocation Between Public and Private Partners

Risk exposure in an infrastructure project is allocated in one of the following ways:

- ◆ **Transferred risks.** Risks can be transferred fully to the private sector partner. For example, the risk of latent defects in a newly built asset is usually transferred to the private partner in a P3, whereas in a conventional project this risk can be borne by the public sector owner if it emerges after the warranty period, which usually lasts one year from the time of completion of the asset.
- ◆ **Retained risks.** Risks can be retained entirely by the public sector owner, such as the risks of a delay in obtaining environmental assessments, as often happens in P3 projects.
- ◆ **Shared risks.** Risks can also be shared between the public sector owner and the private consortium. For example, earthquake risk is often shared in a P3 project, because the private sector may be only partly responsible for repairing the infrastructure, depending on the extent of the damage.

This kind of risk allocation is considered explicitly in the context of a P3 procurement process. However, it also applies to a conventional procurement process, even though risk allocation may not be considered explicitly by the relevant public sector procurement authorities.

Source: Partnerships BC, "Draft Discussion Paper," p. 22.

If the three categories of costs described above are offset by the value associated with transferring selected risks to the private partner, the overall costs of the project will be lower under a P3 approach than under traditional project delivery.

Many costs that occur at later stages under a conventional approach are incurred upfront in a P3 agreement.

The benefits of a P3 procurement do not always outweigh the costs, which is why it is standard practice for public sector procurement bodies to undertake early screening of projects to determine the suitability of a project for a P3 procurement process. If the project is deemed suitable, a VfM assessment is done to compare the total costs of procurement (for construction, operation, and maintenance) under the P3 approach with those under a conventional approach.⁵ In principle, a P3 procurement should be used only if there is a positive VfM result, that is, a net benefit is expected from proceeding with a P3 procurement.

In the remainder of this chapter, we examine each of the benefits and costs discussed above: the cost and time savings resulting from P3 procurements and the additional or incremental costs of adopting a P3 procurement approach. (The four explanatory factors responsible for driving efficiency gains under P3 procurements are discussed in Chapter 3.) We also discuss additional factors that have been raised as potential benefits and costs of P3 procurements, such as debt reduction benefits and the potential costs resulting from reduced flexibility during the term of a P3 contract. These costs could be triggered by any change in infrastructure or service requirements due to changes in public requirements, changes in policy, or changes in technology. For each benefit or cost discussed below, we conduct a review of the relevant literature and summarize the available evidence, focusing on evidence from the second wave of P3s initiated by P3 procurement agencies since 2004.

5 Some VfM studies, such as those undertaken for Partnerships BC, also take into account qualitative factors, such as the ability of the procurement approach to support the achievement of the project objectives.

A SAMPLE VfM ASSESSMENT: THE DURHAM CONSOLIDATED COURTHOUSE

Before addressing the specific factors discussed above, it is worth reviewing an example of a VfM assessment. These assessments, which are usually undertaken for each P3 project as part of the procurement process, involve a detailed comparison of the total costs of both the P3 and conventional procurement options on an ex ante basis. VfM studies constitute the key public interest test as to whether the infrastructure procurement should proceed as a P3 (or be modified or proceed as a conventional project). The role of VfM studies in the procurement process for the second wave of P3s is discussed in Chapter 4.

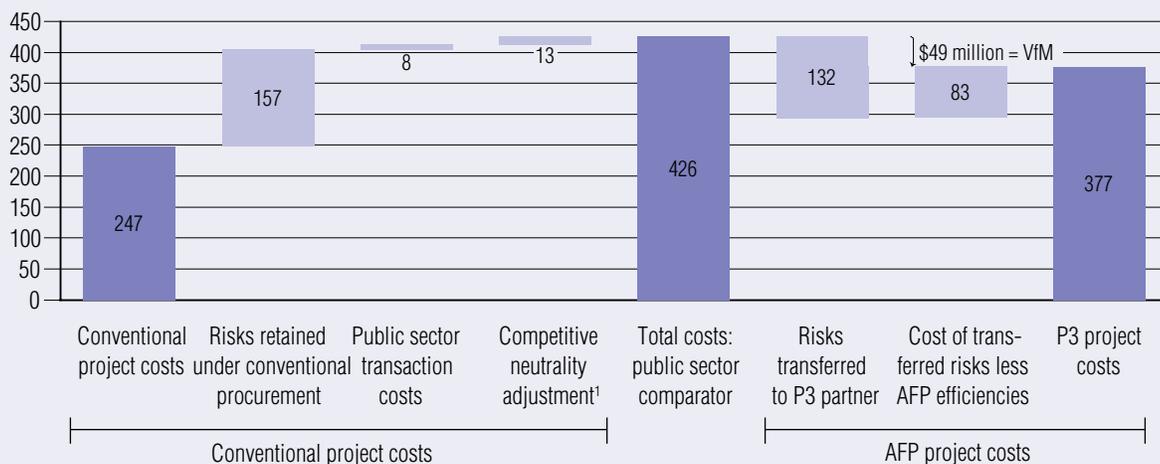
VfM studies constitute the key public interest test as to whether the procurement should proceed as a P3.

The Durham Consolidated Courthouse (DCC) was one of the first second-wave projects procured by Infrastructure Ontario as an alternative financing and procurement (AFP) project. The left-hand side of Chart 1 shows the estimated cost of undertaking the design, construction, financing, and maintenance of the DCC over a 30-year period using a conventional procurement process—that

is, a succession of conventional design, construction, and service contracts. These costs were estimated at \$247 million in 2007 dollars, but the VfM methodology—discussed in Chapter 4—also involves quantifying the risk exposure retained by the public sector under this conventional approach. These are the risks that typically lead to cost and budget overruns in public infrastructure projects, and this risk exposure was estimated at \$157 million. In addition, the total costs of implementing the DCC project using a conventional procurement included the transaction costs incurred by the public sector—that is, \$8 million in project management and advisory costs—as well as a “competitive neutrality” adjustment of \$13 million that took into account public sector revenue that would arise under the P3 but not under conventional procurement (e.g., tax revenues). These four cost components are the inputs into what is called the public sector comparator (PSC), that is, the total costs of procuring the DCC facility and maintenance services through a conventional procurement over the 30-year life of the facility.

The right-hand side of Chart 1 shows the total project costs under the AFP approach, based on the agreement signed with the private sector consortium, Access Justice Durham. It also shows how the AFP project costs compare with those of the PSC. First, we note that the AFP

Chart 1
Comparing Conventional and AFP Procurements—The Durham Consolidated Courthouse
(2007 \$ millions)



1 This adjustment includes items such as taxes paid under the P3 contract that flow back to the public sector but which are not taken into account in the conventional approach.

Source: Infrastructure Ontario, *Value for Money Assessment: Durham Consolidated Courthouse*.

project involves a transfer of risks estimated at \$132 million in 2007 dollars to the private consortium. In other words, most of the risk exposure that would have been retained by the public sector under a conventional procurement approach is transferred to the private consortium. The public sector retains exposure to project risks estimated at \$25 million. Chart 1 also shows that the cost of transferring the risk exposure to the private consortium less the value of any efficiencies resulting from the AFP procurement approach is \$83 million. Specifically, the \$83 million captures the following components:

- ◆ the risk premium, which is the cost to the public sector of the additional risks assumed by the private consortium;
- ◆ the incremental cost of the private financing under the AFP approach;
- ◆ the incremental transaction costs borne by the private consortium, including any provisions for covering its bid costs on losing bids;
- ◆ the incremental transaction costs borne by the public sector, which include due diligence and other advisory costs; and
- ◆ the value of any other efficiencies resulting from the AFP procurement approach (e.g., efficiencies arising from combining the design, construction, and maintenance phases).⁶

The VfM estimate captures both the savings arising from the transfer of risks and any other efficiencies arising from the AFP procurement.

The total cost of the DCC project under the AFP approach is \$377 million, including the risk exposure retained by the public sector. This represents a VfM savings of \$49 million relative to the total cost of the DCC under a conventional procurement approach (i.e., the PSC at \$426 million). The VfM estimate captures not only the savings or efficiencies arising from the transfer of risks to the private partner but also any other efficiencies resulting from the AFP procurement. The total cost of

the DCC project under the AFP approach can also be calculated from the PSC by removing the risk exposure transferred to the private consortium (\$132 million) and adding the cost to the public sector of transferring these risks (\$83 million).⁷

COST SAVINGS AND TIME PERFORMANCE OF P3s

There is a substantial body of empirical evidence indicating that large infrastructure projects procured by governments tend to result in cost overruns and significant delays in delivery schedules. This problem, which is not unique to Canada, has become so widely recognized and documented that it has become known in the literature as the problem of “optimism bias” in major infrastructure projects. For example, one of the original papers on this topic, by Flyvbjerg et al., found that 90 per cent of the 258 transportation infrastructure projects examined in over 20 countries had underestimated project costs by an average of 39 per cent.⁸ These cost overruns and time delays have also occurred in Canada in both social and transportation infrastructure procurement, and it is likely that these problems were important factors motivating governments to look for more effective ways of procuring large infrastructure projects.

There are several ways to measure the benefits or costs of P3s in Canada. Earlier in this chapter, we discussed the cost and time performance of P3s relative to comparable or equivalent conventional procurements. The best source for this comparison is the VfM studies, which capture the cost and time savings between P3 and conventional modes of procurement for an infrastructure project.

An alternative approach to evaluating the performance of infrastructure projects is to measure their cost and time performance against their own milestones. This performance measure is evaluated relative to the budgets and delivery targets set at different points in the infrastructure planning and procurement process—for example, the targets set when the budget is approved by the level of government responsible for the project, or the targets

6 The VfM assessment of the DCC project enables us to identify the *incremental* transaction costs borne by the public sector as \$9 million in 2007 dollars, or 2.1 per cent of the PSC budget. The four other components of the \$83-million figure amount to \$74 million, but cannot be broken down further.

7 Calculations are subject to rounding errors.

8 Flyvbjerg et al., “Underestimating Costs in Public Works Projects.”

set when the project reaches financial close. This type of project performance measure is the time and cost certainty with which projects are delivered, and is what we mean when we say that a project is “on time and on budget.” We examine the evidence regarding the cost and time certainty of P3s and conventional infrastructure projects below.

Although Canada has been among the most active jurisdictions in initiating P3 projects, it is still rather early to evaluate the operational or service phase outcomes of the second wave of P3 projects in Canada.

THE EVIDENCE BASE FOR CANADIAN P3s

The infrastructure projects that provide the evidence base for this report are listed in Table 2.⁹ They are in the four Canadian jurisdictions that have been most active in using a P3 procurement model for the delivery of infrastructure facilities and subsequent maintenance services—Alberta, British Columbia, Ontario, and Quebec. Only projects that had reached financial close as of the end of November 2009 are included.¹⁰ The earliest of the 55 projects listed reached financial close in 2004 under the guidance of Partnerships BC, the first of the P3 agencies. Most of these projects (32) provide facilities for the health and long-term care sector, 14 are in the transportation sector, 8 relate to other social infrastructure (such as schools, data centres, a courthouse, a sports centre, and a concert hall), and 1 is for a water treatment plant. The projects include three fixed-price design-build projects, which share many of the attributes of P3s but do not include private project-specific debt and equity financing.

The projects are at various stages of completion. About one-third of the projects (19) have reached their respective substantial completion date, that is, the date by which the new facility should be built and soon available to be

put in service as stipulated in the P3 partnership agreement. One other project—the Ottawa Hospital Regional Cancer Centre (Queensway Carleton Hospital)—is expected to reach substantial completion by the end of 2009. Only 12 of the projects have already entered their operational phase, where the private consortium is responsible for maintaining the infrastructure.¹¹ This suggests that although Canada has been among the most active jurisdictions in initiating P3 projects, it is still rather early to evaluate the operational or service phase outcomes of the second wave of P3 projects in Canada; such an evaluation is more easily carried out in pioneering jurisdictions such as the United Kingdom and Australia.¹²

The cost savings arising from P3 procurements are estimated in the first instance in the VfM studies that compare the total costs of P3 versus conventional procurement methods before the start of each P3 project. Table 2 shows that these savings can vary from just a few million dollars per project, as in the case of Edmonton’s Anthony Henday Drive Southeast Leg Ring Road or Vancouver’s Golden Ears Bridge, through to \$751 million in the case of the Autoroute 30 project just south of the Montréal area. When expressed as a proportion of the potential costs for procuring the projects through conventional contracting methods (i.e., in terms of the PSC), the savings range from 0.8 per cent through to 61.2 per cent of the PSC for each project.

These VfM estimates are a gauge of the cost savings expected at the outset of a project. For both procurement approaches, the total costs are estimated ex ante (i.e., before the costs are incurred by the government and private sector partners). The estimates are based on high-level comparisons with projects delivered through similar procurement methods as well as detailed cost analysis undertaken by the procurement authority and its advisors. Whether the actual savings match the expected savings by the end of the P3 project depends on the degree of cost and time certainty of P3 projects, as discussed below.

9 In Table 2, the Trillium Health Care Centre in Ontario counts as one project, although it has two components.

10 This refers to the date when the partnership agreement with the private sector consortium is signed and takes effect.

11 In a few cases, the consortium is also responsible for the operation of the facility, as in the case of the Britannia Mine Water Treatment Plant.

12 Over 900 P3 projects or “private finance initiatives” were initiated in the United Kingdom between 1987 and 2007, according to IFSL Research, “PFI in the UK.”

Table 2
Cost and Time Performance of P3s in Canada

Project name	Type	P3 public sector budget \$ millions (date)	Expected VfM savings \$ millions (date)	Financial close	Substantial completion date (project agreement)
Alberta					
Anthony Henday Drive Southeast Leg Ring Road (Edmonton)	DBFO	493 (2004)	4 (2004)	Jan. 2005	Oct. 22, 2007
Northeast Stoney Trail Ring Road (Calgary)	DBFO	650 (2007)	350–450 (2007)	Feb. 2007	Autumn 2009
Anthony Henday Drive Northwest Leg Ring Road (Edmonton)	DBFO	1,420 (2008)	240 (2008)	Jul. 2008	Autumn 2011
Alberta Schools Alternative Procurement Phase I (Calgary & Edmonton)	DBFM	634 (2008)	118 (2008)	Sep. 2008	Jun. 2010
British Columbia					
Abbotsford Regional Hospital and Cancer Centre	DBFOM	424 (2004)	39 (2004)	Dec. 7, 2004	May 6, 2008
Britannia Mine Water Treatment Plant	DBFO	27.2 (2005)	12.5 (2005)	Jan. 12, 2005	Jan. 1, 2006
Sierra Yoyo Desan Resource Road (SYD)	DBFO	n.a.	n.a.	Jun. 21, 2004	Bypass and bridge Nov. 30, 2004; SYD upgrade Nov. 30, 2005
Gordon & Leslie Diamond Health Care Centre	DBFM	64 (2004)	17 (2004)	Sep. 29, 2004	Aug. 18, 2006
Kicking Horse Canyon Phase 2 (Highway Improvement)	DBFO	166.3 (2005)	18.1 (2005)	Oct. 28, 2005	Aug. 30, 2007
William R. Bennett Bridge	DBFO	170 (2005)	25 (2005)	Jun. 30, 2005	Sep. 15, 2008
Charles Jago Northern Sport Centre	DB	n.a.	n.a.	Apr. 25, 2006	Aug. 11, 2007
Sea-to-Sky Highway Improvement	DBFO	789.9 (2005)	–46	Jun. 3, 2005	Aug. 31, 2009
Canada Line	DBFO	1,658 (2005)	92 (2005)	Jul. 29, 2005	Nov. 30, 2009
Golden Ears Bridge	DBFO	1,126.6 (2006)	6–10 (2006)	Mar. 3, 2006	Jul. 1, 2009
Pitt River Bridge and Mary Hill Interchange (Gateway)	DB	n.a.	n.a.	Feb. 9, 2007	Oct. 2009

Actual substantial completion date	Contract variations to date (Y/N)	Successful claims against the public sector (Y/N)	End of contract term	Results/comments
Oct. 22, 2007	N	N	2037	
Nov. 2, 2009	Y	N	2039	
n.a.	Y	N	2041	
n.a.	Y	N	2040	
May 6, 2008	Y	N	May 2038	On budget; net zero scope changes; P3 public sector budget excludes \$75-million capital contribution from local health authorities
Jan. 1, 2006	Y	N	Jan. 2026	On budget; interim operating period began 50 days earlier
Bypass and bridge Oct. 27, 2004; SYD upgrade Nov. 30, 2005	N	N	Jun. 2020	On budget; one component delivered 34 days ahead of schedule, remainder of project on time
Aug. 18, 2006	N	N	Aug. 2036	On budget
Jun. 16, 2007	Y	N	2032	On budget; delivered 77 days ahead of schedule
May 30, 2008	Y	N	2035	On budget; delivered 108 days ahead of schedule
Aug. 11, 2007	n.a.	n.a.	n.a.	On budget; VfM studies not undertaken for DB contracts
Aug. 31, 2009	Y	N	2030	B.C. Ministry of Transport asserts that the qualitative benefits demonstrate VfM
Sep. 2009	n.a.	n.a.	2040	On time, on budget
Jun. 16, 2009	n.a.	n.a.	2041	Operational Jun. 16, 2009, two weeks ahead of schedule
Oct. 25, 2009	Y	Y	n.a.	VfM studies not undertaken for DB contracts

(cont'd on next page)

Table 2 (cont'd)

Cost and Time Performance of P3s in Canada

Project name	Type	P3 public sector budget \$ millions (date)	Expected VfM savings \$ millions (date)	Financial close	Substantial completion date (project agreement)
Port Mann/Highway 1 (Gateway)	DB	n.a.	n.a.	Feb. 2009	Dec. 2010
Kelowna and Vernon Hospitals	DBFM	442.7 (2008)	25.4 (2008)	Aug. 20, 2008	UBCO Clinical Academic Campus and parkade: Dec. 2009; VJH Patient Care Tower: May 2011; KGH Patient Care Tower: Aug. 2012
Royal Jubilee Hospital Patient Care Centre	DBFM	340.8 (2008)	22.2 (2008)	Jul. 18, 2008	Dec. 2010
Surrey Outpatient Hospital	DBFM	234.2 (2008)	22.5 (2008)	Aug. 28, 2008	Apr. 2011
Fort St. John Hospital and Residential Care Facility	DBFM	n.a.	n.a.	Jul. 16, 2009	n.a.
Quebec					
Autoroute 25	DBFOM	143.1 (2007)	226.1 (2007)	Sep. 13, 2007	Oct. 2011
Autoroute 30	DBFOM	1,539 (2008)	751 (2008)	Sep. 25, 2008	Dec. 2012
Motorway Service Areas (Phase I)	DBFOM	-4 (2008)	17 (2008)	Sep. 30, 2008	Sep. 2010
Champlain Residential and Long-Term Care Centre (RLCC)	DBFOM	222 (2009)	98 (2009)	Apr. 3, 2009	Oct. 2010
Montréal Symphony Orchestra Hall	DBFOM	267 (2009)	47 (2009)	Apr. 22, 2009	May 2011
Ontario					
Hôpital Montfort	BF	220 (nominal)	19 (nominal)	Jun. 2006	May 2010
Durham Consolidated Courthouse	DBFM	377 (Mar. 2007)	49 (Mar. 2007)	Mar. 2007	Nov. 2009
North Bay Regional Hospital	BFM	592 (Mar. 2007)	57 (Mar. 2007)	Mar. 2007	Jun. 2010
Quinte Health Care	BF	86 (nominal)	9 (nominal)	Feb. 2007	Jan. 2010
Trillium Health Centre—Mississauga	BF	115 (nominal)	13 (nominal)	May 2007	Aug. 2009

Actual substantial completion date	Contract variations to date (Y/N)	Successful claims against the public sector (Y/N)	End of contract term	Results/comments
n.a.	N	N	n.a.	VfM studies not undertaken for DB contracts
n.a.	Y	Y	Dates range depending on the project: UBCO Clinical Academic Campus and parkade: 2039 VJH Patient Care Tower: 2041 KGH Patient Care Tower: 2042	
n.a.	N	N	2040	
n.a.	Y	N	2041	
n.a.	N	N	n.a.	VfM report under development
n.a.	Y	Y	2042	On budget; P3 budgets are net of \$198 million of estimated toll revenues
n.a.	N	N	2043	P3 budgets are net of \$21 million of estimated toll revenues
n.a.	N	N	2038	
n.a.	N	N	2034	
n.a.	N	N	2038	
n.a.	Y (see comments)	Y	Jul. 2010	All variations are within approved project budget; financial risk not transferred to private partner
Nov. 24, 2009	Y (see comments)	N	2039	All variations are within approved project budget
n.a.	Y (see comments)	N	2040	All variations are within approved project budget
n.a.	Y (see comments)	Y	May 2010	All variations are within approved project budget; claim against public sector due to a construction sector strike in summer 2007
Oct. 2009	Y (see comments)	Y	Oct. 2009	All variations are within approved project budget; completion delays due to risks retained by public sector; Financial impact of delays borne by public sector

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Table 2 (cont'd)

Cost and Time Performance of P3s in Canada

Project name	Type	P3 public sector budget \$ millions (date)	Expected VfM savings \$ millions (date)	Financial close	Substantial completion date (project agreement)
Trillium Health Centre—Queensway	BF	Results presented with Mississauga above		May 2007	Nov. 2008
Hôpital régional de Sudbury Regional Hospital	BF	153 (nominal)	17 (nominal)	May 2007	Dec. 2009
St. Joseph's Health Care—London	BF	38 (nominal)	3 (nominal)	May 2007	Sep. 2009
Roy McMurtry Youth Centre	BF	103 (nominal)	9 (nominal)	Apr. 2007	Apr. 2009
Sunnybrook—M-Wing/P&G Fit-Out	BF	154 (nominal)	14 (nominal)	Jun. 2007	Jun. 2010
Sault Area Hospital	BFM	458 (Aug. 2007)	102 (Aug. 2007)	Aug. 2007	Oct. 2010
Bluewater Health (Sarnia)	BF	248 (nominal)	16 (nominal)	Oct. 2007	Oct. 2011
Rouge Valley Health System—Ajax and Pickering Hospital	BF	77 (nominal)	11 (nominal)	Oct. 2007	Jul. 2010
Hamilton Health Sciences—Gen. Redevelopment	BF	54 (nominal)	7 (nominal)	Oct. 2007	Jul. 2009
Runnymede Healthcare Centre	BF	78 (nominal)	11 (nominal)	Oct. 2007	Jun. 2010
Hamilton Health Sciences—Henderson Hospital	BF	249 (nominal)	30 (nominal)	Dec. 2007	Mar. 2012
Ottawa Hospital Cancer Centre—Queensway Carleton Hospital	BF	81 (nominal)	11 (nominal)	Dec. 2007	Oct. 2009
Ottawa Hospital Cancer Centre—The Ottawa Hospital	BF	59 (nominal)	8 (nominal)	Dec. 2007	May 2011
MGS Data Centre	DBFM	386 (Apr. 2008)	64 (Apr. 2008)	Apr. 2008	Mar. 2010
Mississauga Credit Valley Hospital	BF	198 (nominal)	26 (nominal)	May 2008	May 2011
LHSC/SJHC London—M2P2—St. Joseph's Health Care (BP5)	BF	59 (nominal)	9 (nominal)	Jun. 2008	Aug. 2010
LHSC/SJHC London—M2P2—Victoria Campus Hospital (VC3)	BF	256 (nominal)	41 (nominal)	Jun. 2008	Mar. 2011
Kingston General Hospital	BF	173 (nominal)	20 (nominal)	Jul. 2008	May 2012

Actual substantial completion date	Contract variations to date (Y/N)	Successful claims against the public sector (Y/N)	End of contract term	Results/comments
Nov. 2008	Y (see comments)	N	Dec. 2008	All variations are within approved project budget
Oct. 2009	Y (see comments)	N	Mar. 2010	Project reached substantial completion 33 days ahead of schedule; all variations are within approved project budget
Sep. 2009	Y (see comments)	N	Jan. 2010	Project reached substantial completion 18 days ahead of schedule; all variations are within approved project budget
Jun. 2009	Y (see comments)	N	May 2009	Financial impact of late completion borne entirely by private partner; all variations are within approved project budget
n.a.	Y (see comments)	N	Oct. 2010	All variations are within approved project budget
n.a.	Y (see comments)	N	2040	All variations are within approved project budget
n.a.	Y (see comments)	N	Jan. 2012	All variations are within approved project budget
n.a.	Y (see comments)	N	Oct. 2010	All variations are within approved project budget
Jul. 2009	Y (see comments)	N	Aug. 2009	All variations are within approved project budget
n.a.	Y (see comments)	N	Aug. 2010	All variations are within approved project budget
n.a.	Y (see comments)	N	Jun. 2009	All variations are within approved project budget
n.a.	Y (see comments)	N	Oct. 2009	All variations are within approved project budget
n.a.	Y (see comments)	N	May 2011	All variations are within approved project budget
n.a.	N	N	2040	
n.a.	Y (see comments)	N	Sep. 2011	All variations are within approved project budget
n.a.	Y (see comments)	N	Sep. 2010	All variations are within approved project budget
n.a.	Y (see comments)	N	May 2011	All variations are within approved project budget
n.a.	Y (see comments)	N	May 2012	All variations are within approved project budget

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Table 2 (cont'd)
Cost and Time Performance of P3s in Canada

Project name	Type	P3 public sector budget \$ millions (date)	Expected VfM savings \$ millions (date)	Financial close	Substantial completion date (project agreement)
Toronto Rehabilitation Centre—University	BF	140 (nominal)	19 (nominal)	Aug. 2008	Sep. 2011
Woodstock General Hospital	BFM	337 (Oct. 2008)	71 (Oct. 2008)	Oct. 2008	Jun. 2011
Lakeridge Health Corp.	BF	112 (nominal)	11 (nominal)	Feb. 2009	May 2011
Royal Victoria Hospital	BF	317 (nominal)	44 (nominal)	Feb. 2009	Feb. 2013
Niagara Health System	DBFM	1,065 (Mar. 2009)	96 (Mar. 2009)	Mar. 2009	Nov. 2012
Windsor Regional Hospital	BF	n.a.	n.a.	Jun. 2009	May 2012
Bridgepoint Health	DBFM	820 (Aug. 2009)	95 (Aug. 2009)	Aug. 2009	Mar. 2012
Toronto South Detention Centre	DBFM	n.a.	n.a.	Oct. 2009	Sep. 2012

Notes:

Data correct as of November 2009.

Value-for-money estimates may not be strictly comparable across jurisdictions because of differences in methodology.

n.a. = Not available or not applicable.

Abbreviations:

BF: Build-finance

BFM: Build-finance-maintain

DB: Design-build

DBFM: Design-build-finance-maintain

DBFO: Design-build-finance-operate

DBFOM: Design-build-finance-operate-maintain

Sources: The Conference Board of Canada; Alberta Treasury Board; Infrastructure Ontario; Infrastructure Québec; Partnerships BC. Most of the data presented above are available from

We now examine the cost and time performance of the above transactions on an ex post basis. This performance is assessed by identifying whether projects have had contract variations after financial close (i.e., any changes to contract deliverables, such as the specifications of the facility) and by determining whether the projects have remained within their approved P3 budgets. Contract variations are relatively common in both P3s and conventional contracts, and can be initiated either by the private partner or by the public sector owner. The cost is usually incurred by the party that requests the change, subject to the terms of the contract. However, the main point here is to identify whether the cost impact of the contract variations on the public sector owner's P3 project budget exceeds the provisions for retained risks in the budget. Another indicator of whether the ex ante VfM cost savings are achieved is whether there are any successful claims by the P3 partner (or by any third parties)

and whether the impact of such claims exceeds the public sector's P3 budget. With regard to time performance, or time certainty, we identify whether the P3 partner has met the substantial completion date target stipulated by the project agreement.

Of the four Alberta P3 projects, two were completed on schedule and are now in the service phase, and the two other projects are under construction. Three of the four projects have had contract variations either for changes requested by the public sector or in order to address items for which the public sector retained the risks under the project agreement. The fourth project—the Anthony Henday Drive Southeast Leg Ring Road, which was Alberta's first project in the second wave of P3s in Canada—had no contract variations or successful claims against the public sector owner. All four projects remain within their public sector P3 budgets.

Actual substantial completion date	Contract variations to date (Y/N)	Successful claims against the public sector (Y/N)	End of contract term	Results/comments
n.a.	Y (see comments)	N	Oct. 2011	All variations are within approved project budget
n.a.	Y (see comments)	N	2041	All variations are within approved project budget
n.a.	N	N	Sep. 2011	
n.a.	N	N	Apr. 2013	
n.a.	N	N	2042	
n.a.	N	N	Jun. 2012	
n.a.	N	N	2043	
n.a.	N	N	2042	

m the websites of the respective P3 agencies or public sector departments.

British Columbia initiated the second wave of P3 projects in Canada. It has the most completed P3 projects and a very strong record to date in the time and cost certainty of its P3 projects. Of the 16 projects listed in Table 2, 11 have reached substantial completion, and in 6 cases the project (or a component thereof) reached substantial completion earlier than the date specified in the project agreement (the other 5 projects were delivered on time).¹³ Of the nine P3 projects where construction is complete (i.e., excluding the Charles Jago Northern Sport Centre and the Pitt River Bridge and Mary Hill Interchange), five experienced contract variations; however, we are not aware of any case where the financial impact of the variations resulted in additional costs in

excess of the public sector's approved P3 capital budget.¹⁴ There have also been contract variations in two of the five P3 projects where construction is not yet complete, but these are apparently minor changes, with no impact on costs. Finally, two of the projects have experienced a successful claim against the public sector owner.

In the case of Ontario, 30 AFP projects have reached financial close under the auspices of Infrastructure Ontario as the procurement authority. Most of these are build-finance hospital projects, and many are currently under construction. Six projects had reached substantial completion as of the end of November 2009. The Trillium Health Centre (Mississauga only) and the Roy McMurtry

¹³ Two of the projects—the Charles Jago Northern Sport Centre and the Port Mann / Highway 1 Project—were originally intended as P3 procurements but were executed as a fixed-price design build projects.

¹⁴ In one of the five cases, the Abbotsford Regional Hospital and Cancer Centre, the variations had no impact on public sector capital costs.

Youth Centre were completed approximately two months behind schedule, but the financial impact of the delays was borne by the respective private sector partners. The four other projects reached substantial completion either early or on schedule. All six projects were completed within the approved public sector budgets. One other project—the Ottawa Hospital Regional Cancer Program (Queensway Carleton Hospital)—is expected to reach substantial completion by the end of 2009, approximately two months behind schedule. Twenty-three of the 30 AFP projects have experienced contract variations to date, but any cost impact from these variations has remained within the approved AFP capital budgets. Three of the 30 projects have resulted in a successful claim against the public sector owner, with all the claims arising in relation to risks retained by the public sector in the respective project agreements.

Quebec is the most recent province to have set up a specialized infrastructure agency. The five P3 projects listed for Quebec in Table 2 are expected to reach substantial completion beginning in 2010. One of them—the Autoroute 25 project—has experienced contract variations and claims against the public sector. The variations were due to soil contamination levels greater than those the private partner had agreed to cover in the project agreement and to changes requested by the City of Montréal (i.e., all the variations related to risks retained by the public sector). However, the cost impact of these variations remains within the limits of the approved P3 budget.

INTERNATIONAL EVIDENCE

One of the early studies of the cost and time performance of large conventional infrastructure projects was undertaken by the engineering firm Mott MacDonald on a sample of 39 U.K. projects. The study found that the actual duration of project construction exceeded the original targets by 17 per cent on average and that construction budgets exceeded approved capital budgets by 47 per cent on average.¹⁵ As for P3 projects, a study by the U.K. National Audit Office indicated that 29 of the 37 projects surveyed did not experience any increase in

construction budgets after the start of the contract and that the cost increases in the remaining eight projects were due mainly to additional work requested by the public sector owners.¹⁶ In other words, any cost increases on the work specified in the original contracts were not passed on from the contractors to the public sector owners. However, both these studies were criticized in a report commissioned by UNISON, a public sector trade union in the United Kingdom, which pointed to problems with sampling methodology and measurement bias.¹⁷

A more recent study commissioned by the National PPP Forum in Australia attempted to address most of the criticisms in the UNISON report in its analysis of the cost and time performance of 67 Australian infrastructure projects. These projects consisted of 25 P3 projects and 42 conventionally procured projects delivering transportation and social infrastructure. The study generated the following findings:¹⁸

- ♦ P3 projects demonstrate greater cost certainty, with average cost increases of 4.3 per cent after contract award compared with 18 per cent for conventional projects. Comparative results are directionally similar for the period from original announcement of a project through to project commissioning, with a 24-per-cent cost escalation on average for P3 projects and a 52-per-cent cost escalation for conventional projects.
- ♦ The overall time performance of P3s and traditional contracts is similar over the whole period from initial announcement to project commissioning, with P3s and conventional projects delayed on average by 15 per cent and 17 per cent, respectively.¹⁹

16 United Kingdom, National Audit Office, *Construction Performance*.

17 For example, it has been argued that “cost and time overruns are measured at a much later stage in the procurement process” for P3 projects relative to non-P3 projects, thereby leading to cost and time performance results biased in favour of P3 projects. See Pollock et al., *The Private Finance Initiative*, p. 3.

18 Duffield, *National PPP Forum*.

19 The percentage delay is the amount of time a project overruns its initially scheduled commissioning date expressed as a ratio of the amount of time between the initial announcement and the scheduled commissioning date. For example, if a project was scheduled to be completed in 10 months at the initial announcement date, but it was actually completed in 11 months, it would have experienced a 10-per-cent delay.

15 MacDonald, *Review of Large Public Procurement*.

- ♦ In the period preceding financial close, P3 projects are delayed by about 15 per cent on average, with a further delay of 2.6 per cent on these projects from financial close through to commissioning. In contrast, conventional projects reached contract award 4 per cent early, but they were delayed by just over 19 per cent from contract award through to commissioning.

It is impossible to know whether the Australian results are also valid for infrastructure projects in Canada.

We are not aware of any comparative analyses of P3 and conventional infrastructure projects in Canada that are similar to the Australian one. Thus, it is impossible to know whether the Australian results are also valid for infrastructure projects in Canada. Translating such results to other jurisdictions is a highly speculative exercise, due to differences in procurement processes, market conditions, and regulations, to mention just three of the myriad potential factors that could yield different results.

SUMMARY AND OBSERVATIONS

The results of VfM studies of the second wave of Canadian P3 projects suggest that the public sector (i.e., taxpayers) can expect significant savings from having these major infrastructure projects procured using a P3 approach rather than a conventional approach. These savings can vary from just a few million dollars to over \$750 million in the case of the Autoroute 30 project south of the Montréal area. When the savings are expressed as a proportion of the cost of procurement through conventional contracting methods, they range from 0.8 per cent through to 61.2 per cent of the PSC. However, these savings are necessarily prospective in nature and represent a considered view of the savings at the outset of a project (i.e., at financial close). Whether the actual savings match the expected savings by the end of the P3 project depends on the degree of cost and time certainty of P3 projects.

The Canadian evidence on the cost and time certainty of P3 projects is limited—only 19 of the 55 second-wave P3 projects have reached substantial completion—but these early results point to a strong performance. Seventeen of the 19 projects have been delivered either early or

according to schedule. The other two projects were delivered no more than two months behind schedule. The interim results for the P3 projects that remain in the construction phase provide little reason to expect significant cost or time overruns, based on the information available regarding contract variations and claims against the public sector. Therefore, the preliminary evidence indicates that the second wave of Canadian P3 projects is providing a high degree of cost and time certainty for the period from financial close through to completion of construction.

These results are also consistent with the international evidence, which indicates that P3 projects have provided greater cost certainty than conventionally delivered projects over the entire period from project announcement through to commissioning. The time performance of P3s over the same period is not significantly different from that for conventional projects, but the P3s outperform for the period from financial close through to commissioning.

The reasons why P3s tend to outperform conventional procurements have much to do with the greater upfront effort required with P3s in the period before the financial close. This work includes detailed consideration of performance-based metrics and associated penalties and bonuses; of the potential risks and how these risks are allocated between the public and private sector parties (and in turn between the consortium and its contractor, designer, and operator); of life-cycle costs; and of the funding agreements that need to be put in place. However, P3 procurements can also be subject to procurement delays or even to aborted procurements, particularly where the procurement process is not clearly set out in advance or where the appropriate procurement expertise is not available.²⁰ These problems underline the

²⁰ Perhaps the most notable recent delays and failures in P3 procurements have occurred in U.S.-based P3 projects, such as the Port of Miami Tunnel, which finally reached financial close on October 15, 2009, after several years in the making, and the Bay Area Rapid Transit (BART) Oakland Airport Connector project, where the competitive procurement process was aborted in 2008 after some of the private consortia dropped out of the bidding process. However, these delays are not unique to the United States. The Australian benchmarking study discussed above found that P3s are delayed by about 15 per cent on average prior to financial close and that conventional projects reach contract award 4 per cent early.

importance of an efficient procurement process to ensure that the benefits of a P3 project delivery are not squandered through an extended procurement process. We examine this issue further in Chapter 3.

Penalties for non-compliance—not meeting minimum service levels—motivate P3 partners to deliver quality maintenance service to the facility.

WHOLE LIFE-CYCLE MAINTENANCE BENEFITS

One of the benefits of a P3 project that incorporates a service or operating phase is that the P3 partner is required to provide a specified level of service and to maintaining the facility in a satisfactory condition. In conventional procurement, maintenance and rehabilitation budgets have historically been subject to the vagaries of annual budget allocations and perennial budget constraints. However, by incorporating the maintenance and rehabilitation work within the P3 agreement, the public sector owner is essentially pre-committing future governments to providing the resources (through service payments to the P3 partner) for a specified level of maintenance and rehabilitation work on the facility over the term of the contract. If the P3 partner does not meet the minimum service levels, P3 contracts generally provide for penalties to be imposed on the P3 partner. At the end of the concession period, the P3 partner is contractually obliged to “hand back” the facility in satisfactory condition. Penalties for non-compliance serve as a powerful motivator to deliver quality maintenance services for the facility.

Delayed maintenance and rehabilitation have affected many types of infrastructure, including health facilities, transportation infrastructure, and social infrastructure. The benefit of providing for maintenance and rehabilitation services in long-term P3 agreements is sometimes quantified in VfM reports. This was done in the VfM reports carried out for British Columbia’s P3s and in some of the

VfM reports for more recent projects in other jurisdictions, such as the concert hall for the Montréal Symphony Orchestra. Otherwise, it is mentioned in qualitative terms, as in the VfM reports for the Autoroute 25 and Autoroute 30 projects.²¹ It is well known that roads and bridges in many parts of Canada have, historically, suffered from delayed maintenance and rehabilitation spending, which in turn has reduced the useful life of certain structures and led to higher capital spending. (See box “Delayed Bridge Maintenance.”) The poor condition of the road network in many parts of Canada (until recently) suggests that the maintenance and upgrade standards stipulated in P3 agreements, such as those for the A25 and A30 projects, are at least as high as and probably significantly higher than the quality standards delivered over the last decade. The observation of high P3 service standards relative to prevailing standards

Delayed Bridge Maintenance

The Commission of Inquiry into the Collapse of a Portion of the de la Concorde Overpass (the Johnson Commission) reported that between 46 per cent and 49 per cent of bridges in Quebec were considered structurally deficient in 2005. “Structural deficiency” is a standard indicator meaning that the bridge structure has deteriorated to the point where it needs to be rehabilitated or replaced within five years. In the case of Ontario, about 32 per cent of the province’s bridges were considered structurally deficient according to a 2004 report by the Ontario Auditor General. By comparison, the Johnson Commission reported that several north-eastern U.S. states had far lower proportions of bridges classified as structurally deficient (New Jersey: 11 per cent; New York: 12 per cent; and Pennsylvania: 25 per cent—all data for 2006). Interestingly, the average age of bridge structures in these three U.S. states was 50 years at the time, compared with 36 years in Quebec. Hence, the average age of the bridge structures did not explain the differences in condition observed between Quebec and the northeastern U.S. states.

Source: Commission of Inquiry Into the Collapse of a Portion of the de la Concorde Overpass, *Report of the Commission of Inquiry*, p. 190.

²¹ Transports Québec and Partenariats public-privé Québec, *Value for Money Report for the Design, Construction, Financing, Operation and Maintenance of the Completion of Autoroute 25*, p. 20; *Value for Money Report: The Completion of Autoroute 30*, p. 20.

for similar facilities is not unique to road networks.²² Anecdotal evidence suggests that there is little basis to the criticism that service standards suffer under a P3 relative to conventional maintenance contracts or even in-house provision.

A related benefit of having maintenance standards incorporated in a long-term P3 agreement is that the P3 partner responsible for the maintenance work on a facility operates at arm's length from the government department responsible for monitoring the facility. This means that the department is better able to identify lapses in service quality and impose penalties on the P3 partner when service levels fall below the thresholds specified in the maintenance contracts. When the same department of government is responsible for undertaking the maintenance and upholding the maintenance guidelines, lapses in service standards can more easily go unnoticed.

By way of example, it is worth noting that in 5 of the 12 P3 projects that have entered the service phase, the P3 partner has already incurred penalties for instances of substandard performance.²³ This occurred with the Abbotsford Regional Hospital and Cancer Centre (for a housekeeping and portering issue), with Phase 2 of the Kicking Horse Canyon Project (once for an unscheduled traffic stoppage during construction and once for lack of lane availability), with the Britannia Mine Water Treatment Plant Project (for failure to meet certain environmental criteria—the zinc concentration in the treated water exceeded permissible levels), and with the Anthony Henday Drive Southeast Leg Ring Road and the Sea-to-Sky Highway (for some aspect of the operational phase of the two projects). These episodes do not suggest persistent or endemic service problems, but they do provide some confidence that the contractual performance standards are being enforced. In principle, it is certainly possible to enforce similar performance standards in conventional facilities maintenance contracts; however,

it is unclear to what extent this happens in practice when the public sector outsources facilities maintenance. In cases of in-house provision by the public sector, we are not aware of any documented lapses in service standards. This does not mean that there are no such lapses in service standards with in-house provision.

OTHER FEATURES OF P3 PROCUREMENTS

In this section, we review two other features of P3 procurement methods, notably the economies of scale in procurement and the benefits of private financing for the public sector debt. It has been argued that these features represent benefits of P3s relative to conventional procurements. We explain below why these features should not be construed as benefits.

It is not essential to undertake a P3 procurement as defined in this report to capture these economies of scale.

ECONOMIES OF SCALE

Some observers have noted that economies of scale are one of the benefits of P3 procurements, because contractors are able to organize their work more efficiently.²⁴ For example, if a contractor is responsible for multiple bridges or overpasses in a section of highway, such as the Anthony Henday Drive Southeast Leg Ring Road, the contractor can have one crew install all the girders, moving from one structure to the next, with a second crew following with a different task, and so on.

There are indeed economies of scale from organizing construction work in large projects as opposed to undertaking the same work under multiple contracts awarded to different contractors. However, these economies of scale can be achieved in a single turnkey construction project or in a design-build project. It is not essential to undertake a P3 procurement as defined in this report in order to capture these economies of scale.

22 We have learned about one other instance—an Ontario P3 hospital from the first wave of P3s—in which the performance standards for the facility maintenance period were set very high relative to standards prevailing in hospitals at the time. The public and private sector partners are now considering adjusting the standards to be closer to levels prevailing elsewhere in the hospital sector.

23 These are the only performance penalties we are aware of among all the P3 projects in our evidence base.

24 For example, see Vining and Boardman, “Public-Private Partnerships,” pp. 12–13. At least one of the interviewees for this report also mentioned economies of scale as one of the benefits of P3s. (See Appendix D for the full list of interviewees.)

P3s DO NOT LEAD TO LOWER PUBLIC DEBT

One of the arguments sometimes advanced to explain why governments use P3 procurement is that it enables them to avoid increasing public sector deficits. The first wave of P3 projects in Canada and in Europe were often motivated in part by governments seeking off-balance-sheet treatment for their capital spending (e.g., Confederation Bridge). However, this type of accounting treatment provides no economic or fiscal benefits, and most governments in Canada have now recognized this. In fact, all the public sector capital obligations incurred under the second wave of P3s examined here are on balance sheet.

In this situation, governments are deferring the cost of borrowing by effectively borrowing through the P3 partner, which relies on private financing charged at higher interest rates than government-issued bonds.

This leaves the issue of whether governments derive any fiscal benefits from relying on private financing in P3s to fund some of their public infrastructure spending.²⁵ We explain here why there are no such benefits. For Canadian P3 projects based on availability payments, governments usually start paying for access to the facility only once it is open and fit for use.²⁶ This means that governments face lower disbursements during the construction phase than they would under a conventional procurement. In this situation, governments are deferring the cost of borrowing by effectively borrowing through the P3 partner, which relies on private financing charged at higher interest rates than government-issued bonds. When governments do pay the P3 partner for the use of the infrastructure through service payments over the

25 In one variation of this argument, former U.K. Prime Minister Tony Blair said in 2002: “The reason that we are engaged in this public-private investment [for the London Underground] is so that the infrastructure work, which is urgently needed in the Tube, can be done . . . there is no way Government through the general taxpayer can do it all.” Cited in Glaister, “Transport,” p. 220. Glaister goes on to write that “this view that PFI and PPP somehow entice the private sector to provide resources that the taxpayer will not provide, is plainly nonsense.”

26 Some projects allow for milestone payments to the consortium prior to the completion of construction.

term of the contract, these payments must reflect the cost of private financing. So it is misleading to suggest that P3s reduce the public debt by the end of the useful life of the asset.

Any efficiency gains or net benefits resulting from P3 procurements can contribute to a lower debt burden if they lead to lower public spending (e.g., through cost savings). However, the potential reductions in public spending (and in public debt levels) are modest compared with the public debt levels required to fund a P3 project.

POTENTIAL DRAWBACKS OF P3 PROJECTS

The benefits of procuring public infrastructure through P3 methods come at a cost. These drawbacks of undertaking a P3 procurement approach rather than a conventional procurement consist of three elements:

- ♦ the incremental cost of private financing;
- ♦ any additional costs of risks transferred to the P3 partner (i.e., the risk premium); and
- ♦ the incremental transaction costs.

If these costs are offset by the value associated with transferring selected risks to the private partner, the overall costs of the project will be lower under a P3 approach than under traditional project delivery.

INCREMENTAL COST OF PRIVATE FINANCING

The project financing used in P3 transactions consists primarily of privately sourced debt, which usually makes up over 80 per cent of the overall financing requirements, and a small equity tranche. Equity is the most expensive part, since it requires a return that exceeds the cost of private debt. This is why it is used sparingly in infrastructure investments that generate steady revenue streams for investors. It is widely accepted that equity financing plays a positive role by placing private investors at risk and providing a strong commercial motivation for effective project management. Some have argued that there is not enough equity in P3 transactions.²⁷ However, more

27 Glaister argued that “there simply wasn’t enough equity at risk to give incentives for Metronet to perform.” See Glaister, “Mind the Money Gap.”

equity would make private financing even more expensive and thereby reduce the scope for applying P3s to public infrastructure projects. Private debt financing can also be an important driver of efficiencies in a P3 transaction if the debt is not government-guaranteed.²⁸

The real controversy is about private debt financing and the incremental cost of this type of private financing relative to government bond issues of a similar term (i.e., the “spread”).

For example, the cost of bank debt is usually at least 100 basis points higher than equivalent-term Canadian Treasury bills, although the spread rose as high as 200 to 300 basis points during the financial crisis in 2008. When the public sector relies on financing obtained by the P3 partner, it pays for the higher cost of private financing through service payments to the P3 partner. This has led some authors to argue for P3s with debt financing from the public sector.²⁹ We discuss the role of private financing and private debt financing as drivers of efficiency gains for P3 projects in the next chapter.

COSTS OF RISKS TRANSFERRED TO P3 PARTNERS

One of the central features of a P3 procurement process is that both the public sector and the private sector partners conduct a detailed identification and assessment of all risk exposure for each stage of the project, from design and construction through to operations. The procurement authority then determines, after consultations with the three short-listed bidders, which risks are retained by the public sector, which risks are transferred, and which ones are shared between the private partner and the public sector owner and how they are shared.³⁰

As an example of how the economics of risk transfer works in a P3 procurement, we can go back to the Durham Consolidated Courthouse project discussed earlier in this chapter. In that design-build-finance-maintain (DBFM) project, the total risk exposure retained by the public sector (i.e., taxpayers) under the conventional procurement approach was estimated at \$157 million in 2007 dollars. The partnership agreement transferred 84 per cent of that risk exposure in value terms (i.e., \$132 million) to the P3 partner. Based on the price of the winning bid, the transferred risks cost the public sector \$74 million. This is the gross estimate of the cost to the public sector of the transferred risks (or risk premium), including the incremental cost of private financing, any incremental transaction costs borne by the private consortium, less the value of any other efficiencies resulting from the AFP procurement approach. The resulting gain is therefore \$58 million (\$132 million less \$74 million) or 44 per cent of the original value of the retained risks.³¹ This gain arises because the P3 partner is in a better position than the public sector to manage the transferred risks. In this case, the transferred risks consisted of:³²

- ◆ construction price certainty;
- ◆ scheduling risk (e.g., delays);
- ◆ building design, including coordination with the construction phase;
- ◆ benchmarking and market testing of the cost of providing soft facilities management services (e.g., cleaning and food services) every five years against prevailing market costs for such services;
- ◆ energy and environmental design obligations; and
- ◆ facilities maintenance risks.

Given the magnitude of the efficiency gains—44 per cent of the retained risks—it is clear why the risk transfer process is at the heart of the P3 procurement process. Further examples of the positive effects of risk transfer may be seen in the case studies at the end of this report.

28 Ninety per cent of the debt was government-guaranteed in the Metronet P3, which covered the infrastructure requirements for two-thirds of the London Underground network. See Iacobacci, *Steering a Tricky Course*, for a case study of the three London Underground P3s.

29 Palmer, “Contract Issues and Financing in PPP/PFI.”

30 The allocation of risks in a P3 procurement process starts with the allocation based on the standard language in the draft project agreement. This draft agreement is shared with the three proponents before they submit their final proposals. There are then collaborative discussions with all three bidders, under competitive pressure, in order to fine tune the risk allocation, after which the procurement authority issues the revised draft agreement. Final bids are based on the revised draft agreement.

31 Note that the net savings to the public purse (or the VfM savings) are obtained by subtracting the incremental transaction costs incurred by the public sector as a result of the P3 procurement method (i.e., \$58 million less \$9 million of incremental transaction costs borne by the public sector gives the VfM savings of \$49 million).

32 Infrastructure Ontario, *Value for Money Assessment: Durham Consolidated Courthouse*.

TRANSACTION COSTS

Another controversial area of P3s is the higher transaction costs—relative to conventionally delivered projects—incurred by both the public sector and the private sector bidders to execute the transaction and to manage the project and monitor outcomes through to the end of the contract term. In principle, higher transaction costs in P3s result from the same factors that drive the efficiency gains:

- ◆ greater due diligence in risk assessment and allocation effort, which is reflected in the provisions of the partnership agreement; and
- ◆ the private financing that needs to be put in place, including the additional due diligence undertaken by the equity investors and lenders, each of which has its own set of legal, commercial, and technical advisors for the project.

In principle, higher transaction costs in P3s result from the same factors that drive the efficiency gains.

Even public sector client departments tend to exercise more due diligence in P3 projects, perhaps because they are making long-term commitments that are difficult to change. However, critics argue that these transaction costs are too high and tend to erode the benefits of P3 procurement methods.³³

Transaction cost data on P3 projects are seldom available, particularly data on costs incurred by the bidders. However, a study by Dudkin and Valila based on 55 U.K. P3 projects from six different sectors (hospitals, schools, roads, prisons, government buildings, and information technology) found that the public sector's bidding and contract negotiation costs were on average 3.5 per cent of the capital value of projects. The winning bidders' costs averaged 3.8 per cent of the capital value of the projects while the failed bidders' costs averaged about 5 per cent.³⁴ These costs were limited to the procurement

period and did not capture the expected costs of project management and monitoring during the contract term. Nor was there any attempt to compare these figures with transaction costs for conventional procurements. It is worth noting that the transaction costs for winning and losing bidders are not necessarily additive, as implied in Dudkin and Valila. This is because a steady-state scenario suggests that the winning bidders would factor in more than the transaction costs of their current bid: They would also include the transaction costs arising from the likely number of losing bids required to secure the winning bid, subject to the competitive pressures of each bid contest.

By comparison, the second wave of Canadian P3s appears to have a similar level of transaction costs, at least for the AFP projects undertaken in Ontario. However, Canadian data also indicate that the incremental portion of transaction costs, attributable to undertaking P3 transactions rather than conventional procurements, is relatively modest. It is also important to note that transaction costs under P3 procurements are not simply higher than those under conventional procurements: These costs, notably those related to due diligence, tend to be incurred much earlier than in a conventional procurement process characterized by a succession of procurement exercises.

According to the VfM studies issued by Infrastructure Ontario, the public sector transaction costs for 28 AFP projects (see Table 3) for which data are available vary from 1.5 per cent of the AFP budget in the case of the Niagara Health System project to 6.7 per cent of the AFP budget in the case of the Sudbury Regional Hospital (unweighted averages). On average, these transaction costs are 3.5 per cent of the AFP budget (unweighted average) and, unlike costs in the U.K. study, include the advisory fees and project management costs for the entire contract term.³⁵ The Infrastructure Ontario VfM studies also provide an estimate of what the public sector transaction costs would have been for the same AFP projects if these had been procured conventionally. The incremental transaction costs attributable to the AFP

33 For example, Vining and Boardman argue that “the ten case studies [reviewed in their article] indicate that the potential benefits of P3s are often outweighed by high contracting costs.” See Vining and Boardman, “Public-Private Partnerships,” p. 9.

34 Dudkin and Valila, “Transaction Costs.” Note that the 5 per cent represents the costs not of one but all the failed bidders on an average project.

35 If seven of the projects that have an operating period are excluded, the transaction costs are 3.8 per cent of the AFP budget. The ratio of incremental transaction costs to the AFP budget rises slightly to 1.9 per cent when the same seven projects are excluded.

Table 3
Transaction Costs Reported on Infrastructure Ontario AFP Projects

	AFP public sector budget (\$ millions)	Public sector transaction costs (\$ millions)	Public sector transaction costs as share of AFP budget (per cent)	Incremental transaction costs (\$ millions)	Incremental transaction costs as share of AFP budget (per cent)
Hôpital Montfort	219.9	6.6	3.0	3.6	1.6
Durham Consolidated Courthouse	377.0	17.0	4.5	9.0	2.4
North Bay Regional Hospital	591.9	18.0	3.0	12.4	2.1
Quinte Health Care	85.6	3.5	4.1	2.3	2.7
Trillium Health Centre	115.2	4.2	3.6	2.1	1.8
Hôpital régional de Sudbury Regional Hospital	153.3	10.3	6.7	2.5	1.6
St. Joseph's Health Care— London (BP4-6)	37.7	1.6	4.2	1.0	2.7
Roy McMurry Youth Centre	102.8	1.9	1.8	1.8	1.8
Sunnybrook—M-Wing/P&G Fit-Out	154.1	5.4	3.5	2.7	1.8
Sault Area Hospital	458.1	11.5	2.5	6.8	1.5
Bluewater Health (Sarnia)	247.7	6.0	2.4	4.1	1.7
Rouge Valley Health System— Ajax and Pickering Hospital	77.0	3.0	3.9	1.5	1.9
Hamilton Health Sciences— Gen. Redevelopment	54.0	2.1	3.9	1.4	2.6
Runnymede Healthcare Centre	78.1	3.3	4.2	2.1	2.7
Hamilton Health Sciences— Henderson Hospital	249.4	5.9	2.4	3.9	1.6
Ottawa Hospital Cancer Centre— Queensway Carleton Hospital	80.8	3.8	4.7	1.5	1.9
Ottawa Hospital Cancer Centre— The Ottawa Hospital	59.4	2.8	4.7	1.3	2.2
MGS Data Centre	385.6	7.2	1.9	5.0	1.3
Mississauga Credit Valley Hospital	197.7	9.3	4.7	3.2	1.6
London Health Sciences Centre (St. Joseph's Health Care)	58.9	1.2	2.0	0.7	1.2
London Health Sciences Centre (Victoria Campus Hospital)	255.5	7.9	3.1	3.6	1.4
Kingston General Hospital	173.0	8.3	4.8	3.6	2.1
Toronto Rehabilitation Centre— University	139.6	5.2	3.7	3.2	2.3
Woodstock General Hospital	336.5	10.7	3.2	5.6	1.7
LakeridgeHealth Corp.	112.0	6.4	5.7	2.4	2.1
Royal Victoria Hospital	317.0	6.4	2.0	4.5	1.4
Niagara Health System	1,065.0	16.1	1.5	10.2	1.0
Bridgepoint Health	820.2	16.9	2.1	10.7	1.3
Average (unweighted)			3.5		1.8

Source: Infrastructure Ontario, Value for Money reports.

approach, which are calculated as the difference between the transaction costs incurred under the AFP approach and the (lower) transaction costs that would have been incurred under a conventional project delivery, are 1.8 per cent of the AFP budget (unweighted average). In other words, the incremental transaction costs attributable to the AFP procurement approach are relatively modest, at least when compared with the typical cost overruns in conventionally procured projects. Moreover, these incremental transaction costs have been declining over time because Infrastructure Ontario relies on standardized documentation and other savings from multiple transactions in similar asset classes.³⁶

The incremental transaction costs for the British Columbia P3s in our evidence base appear to be of a similar order of magnitude. In the two projects for which the incremental transaction data were published—the Abbotsford Hospital project and the Kicking Horse Canyon Phase 2—the incremental transaction costs were 1.9 per cent and 3.5 per cent of the respective public sector P3 budgets.³⁷

The transaction costs associated with the second wave of Canadian P3s appear quite reasonable relative to the U.K. levels, particularly since the United Kingdom has historically imposed a high degree of document standardization across its private finance initiative (PFI) project agreements (which would help keep down costs).³⁸ However, the United Kingdom does not have a specialized central agency to manage PFI procurements. (Partnerships UK does not manage PFI procurements.) Every line department has its own PFI unit and manages its own procurements.

In contrast, the second wave of Canadian P3s has benefited from the establishment of specialized provincial P3 agencies, including those within central agencies of provincial governments. This may have resulted in some standardization of P3 agreements, particularly within each province and within asset classes with many transactions, such as hospitals. More importantly, each of these agencies has introduced a standardized procurement process that is replicated for each transaction. Although any comparison with other jurisdictions such as the United Kingdom remains highly speculative, it is quite likely that the procurement processes for the second wave of Canadian P3 transactions have reduced transaction costs relative to those incurred by comparable first-wave Canadian P3s. Most of the first-wave procurements were managed as one-off processes, in some cases by local authorities for which the P3 deal represented the first and last procurement of its type.

OTHER COSTS OF P3 PROJECTS

There may also be additional costs associated with P3 projects that occur after project close because of unanticipated changes in public policy or public aspirations, as reflected in the electoral cycle, and that result in major changes to the requirements stipulated in the P3 agreements. These costs, which tend to arise in long-term P3 contracts rather than in the build-finance projects, can lead to contract renegotiations or even contract terminations.³⁹ The key point is that accommodating such major changes in long-term contracts can be more costly than doing so in a succession of shorter-term contracts.⁴⁰

36 By grouping the AFP projects based on the year in which they reached financial close, we find that the 16 projects that reached financial close in 2007 had incremental transaction costs that amounted to 2 per cent of the AFP budget. The average incremental transaction costs dropped to 1.7 per cent for the seven projects that reached financial close in 2008, and to 1.5 per cent for the four projects that closed in 2009. (VfM results are not yet available for the Windsor Regional Hospital and the Toronto South Detention Centre projects, which also closed in 2009.) All averages are unweighted.

37 The VfM reports issued by Partnerships BC usually include transaction cost data for the P3 project under review. However, they do not usually include an estimate of the transaction costs under the public sector comparator. The latter are required in order to identify the incremental transaction costs for each project.

38 See HM Treasury, *Standardisation of PFI Contracts*.

39 For example, if a newly elected government decides to eliminate tolls on a new P3 highway where the P3 partner collects and shares in the toll revenues, this would require renegotiating or even terminating the P3 agreement.

40 As one example of the costs resulting from unforeseen policy changes, or the loss of policy flexibility, Murphy ("The Case for Public-Private Partnerships," pp. 112–14) recounts the story of the P3 to build and operate terminals 1 and 2 of Lester B. Pearson International Airport between the T1T2 Limited Partnership and the federal government in the early 1990s. A newly elected government cancelled the contract and eventually settled on a payment of \$60 million to the consortium in 1997. This first-wave P3, a design-build-finance-operate-maintain project, was cancelled despite the lack of a voluntary termination clause. Second-wave P3s usually do include such clauses and are almost certainly in a better position to contain the costs of major unforeseen policy changes.

Modest changes in contractual requirements can usually be accommodated in both conventional and P3 contract settings in ways that maintain the cost discipline found in a competitive bidding process. For example, conventional contracts allow for change orders based on pre-set unit prices already incorporated in the contract. And in the P3 context, the facilities management components of the contract usually allow for market testing against prevailing rates for the same services, with the P3 partner taking the risk (or benefit) of any adjustment. P3 contracts also allow for any modifications to the facility under contract to be undertaken by third-party contractors (i.e., not by the P3 consortium).

Major changes in requirements, such as those arising from changes in the political cycle, are much more difficult to accommodate at a low cost in long-term P3 contracts. This is particularly the case in projects that exhibit a high degree of asset specificity, complexity, or uncertainty about the requirements. Vining and Boardman explain these costs as a form of unanticipated transaction costs:

Transaction cost theory suggests that contracting costs are likely to be raised when projects exhibit high asset specificity, high complexity/uncertainty and low competitiveness. Public-sector infrastructure—such as roads, hospitals and schools—usually involves considerable asset specificity. Most design work for a particular project is not usable for any other project and is,

therefore, sunk (although knowledge and expertise that can be used elsewhere is not sunk). The value of infrastructure in other uses is very low and often negative.⁴¹

Major changes in requirements are much more difficult to accommodate at a low cost in long-term P3 contracts.

These unanticipated transaction costs can be contained through contractual provisions that allow for voluntary termination, which are standard in P3 agreements. They can also be contained by designing P3 transactions in such a way as to exclude any part of the asset that is subject to relatively high uncertainty regarding future requirements.⁴² Nevertheless, these unanticipated transaction costs can be significant relative to those in conventional contract settings. The second wave of Canadian P3s has not yet experienced any major changes in requirements leading to renegotiations or terminations. However, it is still early to judge how the second wave of Canadian P3s is likely to handle major unforeseen changes in requirements.

41 Vining and Boardman, “Public–Private Partnerships,” pp. 18–19.

42 For example, road tolls are usually subject to more uncertainty regarding future requirements, including political and technological requirements, than the road or bridge structure itself.

CHAPTER 3

The Efficiency Drivers of P3 Procurements

Chapter Summary

- ◆ The efficiency gains in P3 procurements can come from up to four key sources.
- ◆ Performance-based contracts, which specify deliverables in terms of the outputs, can encourage innovation when contractors have discretion over how they deliver the outcomes.
- ◆ Most of the efficiency gains in a P3 procurement rest on a cost-effective allocation of risks between the public and private partners, if the private partner assumes the risks that it can manage at lower cost.
- ◆ A whole-life approach to the procurement of public infrastructure assets can also generate efficiency gains.
- ◆ Private financing in a P3 project is the glue that binds together the other efficiency drivers, notably the transfer of risks to private sector partners and performance-based contracts.

This chapter reviews the four key sources of efficiency gains that can arise in P3 procurements, depending on whether the transactions are designed to incorporate the relevant provisions.

PERFORMANCE-BASED CONTRACTS

Performance-based contracts specify deliverables in terms of the outputs (e.g., lane availability, availability of operating rooms) desired by end users rather than prescribing specific inputs or materials to be used in delivering the outputs. These types of contracts can encourage innovation where the tasks involved are sufficiently complex that contractors have discretion over how they deliver the outcomes. Performance-based contracts are feasible where the outputs are easily measurable using accepted metrics. In such cases, P3 contracts specify inspection requirements, and the service providers can be subject to penalties (i.e., deductions from their monthly service payments) or bonuses depending on the outcomes.

In practice, some participants in P3 markets believe that greater emphasis should be placed on moving away from prescriptive contracts toward those that specify deliverables in terms of desired outputs—a comment that applies to P3s and conventional contract settings. However, there are also projects where it is not possible to define performance requirements in ways that are easily verifiable (e.g., renovations or extensions to existing facilities, where it is not possible to distinguish the new work from any pre-existing or latent defects). In such cases, these projects are not appropriate for delivery as a P3.

Performance-based contract provisions are not unique to P3s and are already used in some conventional infrastructure procurement contracts. However, because these provisions can be more time-consuming to develop and calibrate for specific purposes, they may not be as common for certain types of conventional contracts (e.g., those for operation and maintenance services). More importantly, performance provisions tend to be more stringent in P3 contracts with a maintenance or service phase compared with those in conventional contracts, because they provide the equivalent of a long-term warranty on the infrastructure. Conventional infrastructure construction contracts usually provide a warranty of one year only.

Performance provisions tend to be more stringent in P3 contracts with a maintenance or service phase compared with those in conventional contracts, as they provide a “long-term warranty” on the infrastructure.

OPTIMAL RISK ALLOCATION

Most of the efficiency gains in a P3 procurement rest on a successful and cost-effective allocation of risks between the public and private partners. These gains (or benefits) arise from transferring selected project risks to the private partner, provided that the risks in question can be managed at a lower cost by the private partner, and part of this cost saving is transferred to the public sector owner in a competitive bid environment. Risks that may be worth transferring are those where the private partner has some control over how to achieve the desired outcomes, which puts it in a better position to manage the outcomes than the public sector partner. However, not all risks are worth transferring. For example, the risk of soil contamination that is undocumented and unknown prior to the start of the P3 project is sometimes retained by the public sector, because the private partner has no control over the outcome. Given that the private partner's discount rate is typically higher than that of the public sector, the cost to the private partner of dealing with such uncertain outcomes is higher than for the public sector partner and this would be reflected in the price of the bid.

The risks where value can be gained from transferring them to a private partner (in a competitive bidding process) include:

- ◆ financing risks;
- ◆ construction cost escalation risks;
- ◆ scheduling risks (e.g., delays);
- ◆ design coordination risks (i.e., the facility is not built according to the design—a risk that usually rests with the public sector in conventional procurements where the design is procured separately);
- ◆ commissioning and facility readiness risks; and
- ◆ operation, maintenance, and selected geotechnical and environmental risks.

A third category of risks consists of those that are best shared between the two parties to the extent that they both have significant influence over the outcomes. One such example is traffic risk. If a project includes a bridge or a roadway segment that is part of a larger network (as in the Autoroute 25 or Autoroute 30 projects), a private operator will certainly have some influence over traffic levels within a certain range, by virtue of the quality of maintenance work and lane availability. But traffic on the facility is also driven by the management of the overall road network and by economic activity levels in the region, both of which are outside the control of the private operator. This is the basis for sharing such traffic risk, but it can be a difficult balance to strike: The private operator needs to have the right operation and maintenance incentives without the public sector giving away too much of the benefit from higher traffic levels that would have occurred regardless of the private operator's behaviour.

In practice, there tend to be subjective elements in assessing the value of risks. However, several Canadian P3 procurement agencies have developed formal, quantitative risk assessment processes, which draw on past infrastructure procurement experience and on commercial cost evaluators to prepare risk templates for assessing which risks to transfer to the private partner. The very presence of a rigorous risk assessment process can also help both the public and private partners avoid certain risks altogether.

Private contractors always evaluate the relevant commercial, technical, and even political risks when bidding on a project, regardless of whether the project is a conventional one or a P3. What is unique to a P3 procurement process is the effort that the public sector owner (or procurement authority) devotes to identifying the wide range of possible risks and to assessing the value of such risks retained by the public sector under a conventional contract and under one or more potential P3-type contracts—such as a build-finance (BF) or a DBFM arrangement.¹

Private contractors always evaluate the relevant commercial, technical, and even political risks when bidding on a project, regardless of the procurement type.

Infrastructure Ontario has had construction cost valuation experts develop a detailed set of risk templates identifying up to 80 categories of material risks for large infrastructure projects. These templates have been developed for different stages of the project life cycle, from the policy and planning stage through to design, procurement, construction, operation, and maintenance.² The risk templates include an assessment of the value of each of the specific risks retained by the public sector under a conventional contract and under a BF (or DBFM) approach.³ For example, the cost consultant estimated that, in an average infrastructure project, the value of the risk exposure retained by the public sector under a Canadian Construction Documents Committee (CCDC) 2 construction contract amounts to 43.6 per cent of the base construction costs. The consultant further estimated that the value of these risks is reduced to 16.7 per cent on average under a BF contract. When the scope of the project includes the design,

build, and maintenance work, 76.5 per cent of the construction cost base is retained as risk by the public sector in a conventional approach, as opposed to 16.2 per cent of the construction cost base in a DBFM project.

The full case for efficiency gains from transferring (or sharing) a risk is made only after factoring in the costs of transferring the risks (i.e., the risk premium) and any other associated costs, such as the incremental costs of private financing. However, the risk templates above provide a good starting point for determining which risks should be transferred to the private partner in each project. The P3 agencies or public sector procurement authorities also meet with each of the short-listed (or pre-qualified) bidders for a project to discuss what changes, if any, should be made to the draft project agreement between the public sector owner and the eventual P3 partner. The draft agreement is finalized by the procurement authority in advance of the final bids, based on the comments received from the short-listed bidders, and these bidders then submit their proposals based on the draft project agreement. This approach ensures that the project agreement is not subject to any negotiations between the procurement authority and the winning bidder, thereby minimizing a potentially important source of transaction costs.

INTEGRATING DESIGN, CONSTRUCTION, AND FACILITIES MAINTENANCE

A whole-life approach to the procurement of public infrastructure assets generates three potential efficiency gains. Each of these is discussed below.

The main argument for integrating the three phases of a project is that it creates incentives for the consortium to minimize the total capital and facilities maintenance costs over the economic useful life of the asset. This is a challenging task that requires bringing together different disciplines (notably architects, builders, facilities managers, and commercial experts) to decide which changes are likely to improve financial performance and which are not. In a conventional procurement process, the public sector owner manages the synergies between the requirements of each stage of the project with a view to minimizing the whole life-cycle costs. However, it is far from

1 The value of a specific risk can be expressed as the relevant cost base (e.g., a \$100-million construction capital cost at time of planning) multiplied by the probability that the particular risk in question will occur (e.g., 10-per-cent probability of a cost escalation event), multiplied in turn by the impact of that event (e.g., a 20-per-cent cost increase), which in this case would value the risk at \$2 million or 2 per cent of the cost base.

2 For example, see Altus Helyar Cost Consulting, “Infrastructure Ontario Build Risk Finance Risk Analysis and Risk Matrix.”

3 Infrastructure Ontario has also developed risk templates for specific sectors, such as transportation.

clear that public sector managers are well equipped to deal with such a task, and in many cases it is not even part of the procurement strategy. But most importantly, public sector managers are not incented to take the risks that can lead to innovations. In other words, public sector managers are not incented to trade off higher costs in the design and/or construction stages for lower costs during the construction and operating period.

A procurement approach that introduces incentives to innovate could lead to significant efficiencies.

Operations, facilities maintenance, and rehabilitation spending over the lifetime of an asset can be as large as the original capital cost of the asset. Hence, a procurement approach that introduces incentives for the consortium to innovate could lead to significant efficiencies. If the consortium is already aware of some of these efficiencies, it is very likely to share them with the public sector partner through a lower bid price to increase its chances of winning the bid. After the start of the project, the consortium is strongly incented to identify and implement any potential innovations, to the extent that these reduce whole life-cycle costs, and the efficiency gains can be captured in the firm's bottom line. This is why it is important for the term of the P3 contract to include a substantial part of the economic useful life of the asset. Without this, the consortium cannot capture the benefits of innovation.

In practice, long-term P3 contracts tend to benchmark and market test facilities management services every five years, with the consortium taking the risk of any downward adjustment in service payments that is not fully offset by a reduction in the cost of providing the service.⁴ This means that as facilities management innovations become more widely adopted in the marketplace, a consortium that was an early adopter of an innovation eventually loses some of the benefits from early adoption.

⁴ The consortium could also enjoy the benefit of an upward adjustment in service payments that is not fully offset by an increase in the cost of providing the service.

And if a consortium has not already adopted the innovation, it is forced to do so as the benefits of the innovations become fully reflected in the going market rates for facilities management services.

A second benefit that comes with integrating construction and maintenance phases is that the public sector owner obtains the equivalent of a long-term warranty on the performance of the new asset, in contrast to the one- or two-year warranty typical under a conventional construction contract. This benefit is relevant to all build-finance-maintain (BFM) and DBFM projects such as the Anthony Henday Drive Southeast Leg Ring Road in Edmonton, the Durham Consolidated Courthouse just east of Toronto, or the Autoroute 25 project in the Montréal area. It depends, of course, on having the appropriate output-based performance measures in the partnership agreements.

The third benefit of whole life-cycle procurement is that future governments with responsibility for maintaining the new asset are essentially pre-committed to providing an appropriate level of maintenance and upgrade work, as discussed in Chapter 2. This ensures not only that the service levels stipulated in the partnership agreement are met by the P3 partner, but also that the asset is in good working order when it is returned to the public sector at the end of the term.

As a final observation, one could ask whether the benefits of a whole-life approach to procurement can be achieved through a conventional form of contracting. This is tantamount to asking about the role of private financing in P3s, since that is the main element—in addition to a design-build-maintain contract—required to form a P3 as defined in this report. We address this issue below.

PRIVATE FINANCING

A significant portion of the capital spending on a P3 infrastructure project is privately financed and at risk, since service payments begin only after construction. (The publicly financed portion of P3 infrastructure projects takes the form of government contributions paid to the

private partner at key milestones in the delivery of the project.) Based on our observations of both conventional and P3 procurements, private financing in P3 projects brings:

- ♦ discipline to the procurement process, forcing both parties to stipulate the project requirements and consider the full cost and risk allocation implications before the start of the project;
- ♦ additional commercial and technical due diligence before financial close, followed by monitoring of progress during the construction and operating term of the project agreement; and
- ♦ private sector stewardship of the project during the delivery stage, including strong incentives to build the facility as efficiently as possible within the specified delivery time frames while meeting the contractual requirements.

A DISCIPLINED PROCUREMENT PROCESS

With private financing at stake and most cost-escalation risks borne by the P3 partner, all bidders have an obvious interest in considering upfront all the costs and risks associated with delivering on each stage of the project. However, this also has the beneficial effect of forcing the public sector owner to do the same—that is, to consider upfront all its requirements for the facility and the associated services. This is because the public sector owner is committing to a long-term contract in which major changes in project requirements can be costly to implement.⁵

In contrast, in conventional procurements it is not uncommon for difficult parts of a project to be postponed for future consideration or for a project to kick off even before the full requirements have been specified. Nor is it uncommon for private firms to undertake projects where budgets have been underestimated by the public sector, as was the case with the extension of the Montréal metro to the City of Laval (reviewed as one of our case

studies in Chapter 5). It is very unlikely that a private sector consortium would bid on, let alone commit to, a P3 project to deliver a facility at a grossly underestimated budget⁶ if the consortium also bore the risk for the majority of project financing. In other words, it is the presence of substantial private financing, and the risk that entails, that forces both parties in a P3 procurement to take full account upfront of all the requirements and risks entailed by the project. By “upfront” we mean before going out to the market with a request for expressions of interest (RFEOI) or a request for qualifications (RFQ) and certainly no later than the proposal submission stage.

The establishment in the last five years of the P3 agencies (or equivalent units in a central government agency) that specialize in the procurement of infrastructure has also contributed to a disciplined procurement process. These agencies advise the public sector owner (e.g., the hospital authority or provincial ministry) as it prepares for a potential P3 procurement, and in some cases they are also responsible for managing the procurement process and construction. The agencies have also sought to ensure a clear, predictable procurement process beginning with the RFQ/RFEOI through to proposal stage (including workshops with short-listed bidders to discuss various aspects of the draft partnership agreements) and on to preferred bidder selection and financial close. This kind of disciplined procurement process is necessary to attract international bidders and to ensure that the P3 market remains competitive.⁷

5 Modest changes in contractual requirements can usually be accommodated in P3 contracts through the process for contract variations, as noted in Chapter 2. In fact, there is often a more stringent process for undertaking contract variations in P3s than in a conventional contract (e.g., not all changes require contract variations). As a result, some participants argue that there tend to be fewer contract variations in a P3 project than in a conventional project. However, it has not been possible to verify this argument using the evidence base collected for this report.

6 Or the equivalent, such as an incomplete functional specification for a facility.

7 There is reason to believe that Canadian jurisdictions active in P3s have had a better track record than their U.S. counterparts in achieving consistent and predictable procurement processes. This is because there have been a number of failed or extended procurements in the U.S., including the BART Oakland Airport Connector, Texas State Highway 121 (taken from Cintra and given to NTTA), Pennsylvania Turnpike Lease, Oregon Bridge Program, Jacksonville Outer Beltway, and Port of Miami Tunnel (which closed in October 2009 after a first failed attempt). According to Bob French of Flatiron Constructors Canada, the U.S. P3 market is characterized by “owners doing one-off projects (i.e. not a long-term P3 interest), a lack of knowledge and expertise, and procurement processes that are not well defined at the outset.” See French, “Public-Private Partnerships.” In contrast, the few failed procurements in Canada in recent years (e.g., the Union Station revitalization project in 2003) were projects where there was no specialized infrastructure procurement agency to advise the public sector clients.

Therefore, the question arises as to whether these P3 agencies could achieve the same discipline in the procurement process without the private financing. It is difficult to answer this question with certainty, but there is reason to believe that private financing—even before it is committed to a project—raises the stakes for all parties in a transaction. Potential bidders have more reason to concentrate their bid resources in jurisdictions that have a reputation for delivering on project procurements, in part because P3 procurements are more costly than conventional ones. Public sector owners are compelled to consider the full project requirements and costing upfront, because the projects are unlikely to reach the starting point otherwise. In this context, P3 agencies have stronger incentives to ensure a clear and predictable procurement process, but they also have greater leverage with the public sector infrastructure owners during the procurement process.

Potential bidders have more reason to concentrate their bid resources in jurisdictions that have a reputation for delivering on project procurements, as P3 procurements are more costly than conventional ones.

PROJECT DUE DILIGENCE

Private financing also brings greater commercial and technical due diligence to an infrastructure project during the procurement phase. This due diligence is carried out by the equity partners in the project consortium and also by the lenders, who sometimes provide over 80 per cent of the project financing requirements. Lenders receive a fixed rate of interest on their money, but they tend to have much more funding at stake than equity providers. In turn, this tends to result in more stringent due diligence standards on the part of lenders than on the part of equity investors.⁸ Each lender usually has its own set of commercial, technical, and legal due diligence advisors on each project.

⁸ Lenders' claims to interest and capital repayments have priority over the claims of the equity providers (i.e., the private partner). The latter assume higher risks than lenders and therefore expect higher returns.

Lenders continue to monitor the progress of the project after financial close. Moreover, significant changes to the project after financial close usually require approval from the lenders. This is one of the factors that make it more costly to introduce major contract variations after the start of the project.

PRIVATE SECTOR PROJECT STEWARDSHIP

An often-neglected characteristic of P3 projects is the fact that the private sector partner is the project steward with overall responsibility for organizing the work and delivering on the project requirements. This project stewardship feature arises from the structure of the P3 agreement and the presence of private project financing. It is not about private sector versus public sector provision, since the same private sector firms are usually involved in carrying out the work, whether the project is a conventional one or a P3.

In a conventional procurement, the public sector owner has project architects and engineers on site to inspect and approve the work and to initiate payment for acceptable work completed. In a P3, it is the responsibility of an independent certifier to check that the work is delivered according to the contract specifications. This means that the public sector authority no longer has day-to-day responsibility for supervising project delivery, even though it retains overall responsibility and control over the delivery of the project. It is the responsibility of the private sector consortium and its contractors to organize and coordinate their work so as to deliver the project on schedule and in accordance with agreed-upon specifications. The role of private financing is to give the consortium powerful incentives to deliver an asset with long-term sustainability, to expedite the work, and even to complete construction early, in which case the service payments (and any milestone payments) can start ahead of schedule.

WHY NOT PENALTIES INSTEAD OF PRIVATE FINANCING?

In theory, it might be possible to conceive a contract with performance penalties and bonuses that provide equivalent incentives to those of private financing. In practice, there are several problems with this. For example, the

financial impact of a delivery delay measured in additional interest costs on a loan to a P3 consortium is several orders of magnitude higher than the kinds of penalties for delays found in conventional contracts. For example, a \$50,000 interest charge for an extra day of carrying a \$250-million loan is not unusual. Although it is possible to introduce penalties of an equivalent order of magnitude, it may be much more difficult to enforce these penalties in practice—that is, without litigation regarding the sources and responsibilities for the delays.

This suggests that it may not be possible to devise contracts for large infrastructure projects in which the private partners have the same powerful incentives as they do in P3 contracts. However, observers should monitor the results of large-scale design-build projects that are being procured without private financing—such as the Port Mann/Highway 1 project in British Columbia. These types of projects may prove to be interesting natural experiments in “DBFMs without the F,” since both are being undertaken in jurisdictions with extensive P3 procurement experience.

P3s WITHOUT PRIVATE DEBT FINANCING?

Many observers recognize the positive incentives that arise from relying on private financing in the form of equity. This has led some to ask whether P3s can be executed without private debt financing, thereby presumably maintaining the same performance incentives but without the incremental cost of private debt financing relative to public debt financing. In practice, this would mean having public financing replace some or all of the private debt, since it would be much more expensive to have equity replace the private debt in its entirety.

In a limited way, this type of financing—known as the “wide equity” model⁹—has already started to happen. It began with the first signs of the credit crisis in 2007, when bond markets seized up, and continued with the full-blown credit crisis in 2008, when the cost of credit soared and credit availability collapsed. As a result, governments have in some cases made greater upfront

contributions to the project financing—usually through payments at key delivery milestones—to reduce the private financing requirements to more manageable levels and thereby facilitate the financial close.¹⁰

These kinds of responses to the credit crisis have nevertheless retained a significant role for private debt financing, without which it would not be possible to have the kinds of penalty clauses for delays and non-performance issues that have characterized the second wave of P3s. Moreover, the prospect of totally replacing private debt with public debt financing, coupled with the continued participation of private equity, raises significant issues. In this case, the public sector would act both as an owner and as a debt provider on a project. In addition to the potential conflict between the two roles,¹¹ this kind of financial structure could also make it more difficult to attract equity providers, who may have concerns about potential opportunistic behaviour on the part of the public sector partner.

IMPLICATIONS OF THE CREDIT CRISIS

The paradox of the credit crisis is that debt financing for P3s became more difficult to secure at just the time governments were promoting infrastructure spending as an important tool for short-term stimulus. As we saw in Chapter 2, the second wave of P3 projects in Canada has a strong record to date in terms of cost certainty and time performance. Although these large infrastructure projects can take years to prepare for procurement, the infrastructure stimulus imperative suggests that the projects already in the pipeline should not be delayed. If anything, these projects should be accelerated, provided the quality of the project is not compromised and the spending is expected to occur during the current downturn.

9 Under this type of financing model, private equity provides a higher share of the total private financing required for the project, usually with the public sector owner making greater contributions during the early stages of the project.

10 In several Canadian jurisdictions, P3 projects included significant public sector funding contributions from both provincial and federal governments well before the first signs of the credit crisis in 2007. In some cases, public sector contributions make up a large share of the total P3 project funding (e.g., regional health district funding in British Columbia makes up 40 per cent of the total funding for hospital projects).

11 This alone would suggest that a public lender may behave quite differently from a private lender, because it would not have the same incentives to perform due diligence and monitor the delivery of the project. Additional contract provisions outlining the rights of each party could minimize this conflict.

There is little doubt that the increased cost and reduced availability of credit slowed the process of closing certain P3 deals from mid-2007 through to early 2009. Bond markets were closed from mid-2007 to mid-2009, and the number of bank lenders available to Canadian P3s dropped to a fraction of those available before the credit crisis. However, P3 projects have continued to reach financial close during the credit crisis in all four jurisdictions examined here.¹²

Credit market conditions have improved substantially over recent months, and bond markets have reopened for P3s and other types of corporate financing. However, there remain substantially fewer bank lenders to P3 projects compared with the number active in the Canadian market before August 2007.

Governments and P3 agencies have responded in several ways to move the P3 transactions already in the pipeline through to financial close and to ensure that other planned P3 projects can continue to benefit from this type of procurement tool. These initiatives included:

- ♦ reducing the level of private debt financing required in individual projects to more manageable levels, while ensuring that incentives and penalties remain to guarantee performance over the term of the project. As indicated earlier, this is being done through increased reliance on contributions by governments at key milestone dates at or before completion of construction;
- ♦ shortening the period between the selection of the preferred bidder and financial close, in order to reduce the period during which credit spreads need to be locked in (i.e., guaranteed) before financial close; and
- ♦ attracting new types of lenders to P3 markets, such as Canadian pension funds.¹³

12 For example, Infrastructure Ontario brought seven AFP projects worth approximately \$2 billion to financial close between October 2008 and November 2009.

13 Pension funds have occasionally participated as equity providers to P3 projects (e.g., by buying into P3 projects after construction has been completed), but they have not generally provided debt financing at project inception.

Other potential solutions have been considered and even implemented in a few P3 projects, but many of these either compromise the incentive properties of P3s or create other problems and costs. For example, some analysts have suggested relying on semi-permanent debt financing based on five- to seven-year terms (instead of 20- to 30-year terms that match the P3 contract term). However, this could compromise the performance incentives inherent in debt financing, because under-performing P3s could have difficulty renewing their loans, thereby leading to a default by the project consortium.

Many potential solutions either compromise the incentive properties of P3s or create other problems and costs.

Some observers have suggested that governments could act as commercial lenders to P3 consortia. However, this is tantamount to governments lending to themselves indirectly (with the added cost of extra advisory fees for arranging the loans), rather than simply issuing sovereign bonds and making their contributions to projects as per the agreed milestones.

Other potential solutions include obtaining credit from federal institutions, such as the Export Development Corporation or the Business Development Bank of Canada, which have recently been mandated to provide credit to commercial entities that have been unable to obtain secure credit from banks. This could also be characterized as governments lending to other governments, even if some of these institutions have their own access to capital markets. However, these lending institutions tend to operate on a more commercial basis and hence are more likely to behave like private lenders and impose a similar discipline on project delivery.

In summary, it appears that the most viable interim solution to the problem of credit availability is for governments to increase their contributions to P3 funding while retaining sufficient private capital at stake to maintain the powerful performance incentives that appear to have worked well for the second wave of Canadian P3s.

CHAPTER 4

Assessing Key Elements of P3 Procurement Processes

Chapter Summary

- ◆ Most Canadian jurisdictions active in P3 procurements have an explicit framework in place for assessing procurement options for public infrastructure.
- ◆ The VfM test is the main tool used by all Canadian jurisdictions active in P3s to assess whether procurements are suitable for the P3 approach.
- ◆ Some observers question whether the VfM test is a genuine test or whether it can be arbitrarily managed to generate desired results.
- ◆ Procurement authorities should consider comparing the P3 procurement option with the next best available procurement option (which is not always the typical “design-bid-build” approach of conventional contracts), developing a pan-Canadian evidence base of conventional infrastructure projects covering key outcomes, and updating VfM studies after completion of major milestones.
- ◆ The procurement processes for the second wave of P3 projects have been far more transparent than the procurement processes for conventional public infrastructure projects.

In this chapter we examine three questions about the integrity of P3 procurement processes for the second wave of Canadian P3s:

- ◆ How do governments choose projects suitable for P3 procurement?
- ◆ Are VfM tests based on a rigorous methodology?
- ◆ How transparent are P3 procurement processes compared with conventional procurements?

It is widely recognized that P3 procurements are not appropriate for all infrastructure projects. For example, in many of the jurisdictions with active P3 procurement programs, these types of procurements account for 20 per cent or less of total capital spending on public infrastructure.¹ Thus our first two questions deal with the issue of whether a rigorous process is in place to select the right infrastructure projects for P3 procurements. The last question addresses the practices in place to ensure transparency of P3 procurement processes vis-à-vis those for conventional contracts.

1 According to Grimsey and Lewis, P3s account for between 10 per cent and 14 per cent of public sector investment in the United Kingdom and about 10 per cent of public sector capital investment in the State of Victoria, Australia's largest market for P3s. See Grimsey and Lewis, “Public Private Partnerships,” p. 76. We are not aware of data showing the importance of P3s relative to total capital spending by governments across Canadian jurisdictions. One of the leading participants in the P3 market in Canada noted that he “couldn’t imagine more than 10 or 20 percent of all the capital projects that the [B.C.] government does being done in a P3 way.” See Blain, *Partnerships BC*. This is also consistent with a statement by the Chair of the Conseil du Trésor of Quebec, Monique Gagnon-Tremblay, who noted that only about 10 per cent of the province’s infrastructure spending is for P3 projects, as mentioned in Chapter 1. See Dougherty, “Quebec Renames Agency.”

SCREENING POTENTIAL P3 PROJECTS

The VfM test is the main evaluation tool used by all Canadian jurisdictions active in P3 project delivery to ensure that the appropriate infrastructure projects are chosen as P3s. These are the projects where there is value for money from executing a project as a P3 rather than a conventional project. First, we examine what kind of framework policies are being used to assess procurement options in general and P3s in particular. Second, we examine whether any specific guidelines exist to help public sector bodies determine whether a P3 is an appropriate delivery mechanism without having to conduct a full VfM analysis of the two procurement scenarios.

Most of the jurisdictions active in P3 procurements have an explicit framework in place for assessing procurement options for public infrastructure. The first and most elaborate of these is British Columbia's Capital Asset Management Framework (CAMF), which was issued in May 2002, at the same time as Partnerships BC was set up to facilitate implementing P3s at arm's length from the provincial government.² It prescribes in the first instance an analysis of whether there is a true need for the capital spending or whether that need can be met through better management or more efficient use of existing assets. If the need for a specific capital outlay is established, it prescribes a "strategic options analysis" of a full range of options for meeting the identified service need, including:

- ◆ alternative service delivery options;
- ◆ P3s;
- ◆ asset disposal or leveraging; and
- ◆ traditional procurement.

Capital procurement frameworks introduced by other jurisdictions active in P3s include Alberta's Capital Plan, which includes a role for P3s—a procurement option that is first evaluated by the provincial ministry responsible for the project.³ The Plan also calls for an external, private sector Advisory Committee on Alternative Capital Financing, which provides advice

on the projects referred by the Alberta Treasury Board Committee. The Government of Quebec introduced the Public Private Partnerships Framework Policy in 2004. This policy institutes a 10-step business case analysis to identify whether a P3 is an appropriate procurement tool for meeting an identified capital need.⁴ It is worth noting that the policy does not interpret private financing as one of the essential requirements for P3s. Moreover, the Quebec government has recently instituted a business case analysis as a requirement for any other type of major capital procurement, including conventional procurements. In Ontario, the infrastructure planning, financing, and procurement framework is presented in *Building a Better Tomorrow*.⁵

SPECIFIC GUIDELINES FOR IDENTIFYING P3s

Most of the Canadian jurisdictions active in P3s have published specific guidelines to help public sector bodies determine whether a P3 is worth considering as an appropriate delivery mechanism.⁶ These guidelines typically include:

- ◆ the feasibility of developing output specifications and performance requirements for the project, without which effective risk transfer to the private partner is unlikely;
- ◆ a deal size, including construction and operations and maintenance costs, that exceeds a minimum threshold, which varies between \$40 million and \$100 million, depending on the jurisdiction;
- ◆ sufficient project complexity in the design, construction, or operations and maintenance phases, which can allow for more cost-effective risk transfer to the private partner because of opportunities for innovation, including potential synergies from integrating the work across the different phases of the project; and
- ◆ a competitive market that is likely to produce at least three bids for the project.

2 Government of British Columbia, *Capital Asset Management Framework*.

3 Government of Alberta, *Building Tomorrow*.

4 See Government of Quebec, *Public-Private Partnerships Framework Policy*, p. 12. See also Gouvernement du Québec, *Politique-cadre sur la gouvernance*.

5 See Government of Ontario, *Building a Better Tomorrow*.

6 See the following documents for the specific guidelines: Partnerships BC, "Capital Project Public Private Partnership"; Government of Quebec, *Public-Private Partnerships Framework Policy*, p. 2; and Alberta Infrastructure and Transportation, *Management Framework*, p. 12. Ontario also has initial screening criteria that are shared directly with public sector entities.

If any one of these guidelines is not met, a P3 procurement is unlikely to generate any value for money and could indeed do the opposite. For example, the United Kingdom has ruled out PFI projects covering information technology (IT) assets because of the difficulty of specifying output-based performance requirements over long periods when technology is changing rapidly. The U.K. experience with P3 projects in the IT sector was characterized by relatively high transaction costs because of this performance measurement problem. Other infrastructure projects that are also typically rejected for P3 procurement are those where renovation work constitutes a substantial share of construction costs or where construction would interfere with existing operations. Performance measurement is also an issue in such projects because of the relatively high levels of latent risk associated with the existing structure and design.

The preliminary choice of P3 projects is neither arbitrary nor ad hoc. Early screening is supported by explicit criteria that are applied to potential projects.

However, one criterion that is seldom considered is whether there is project and policy certainty over the 20- to 30-year period of the contract term.⁷ By this we mean that governments tend to change policies and the public at large can also change preferences. As discussed in Chapter 2, if the project requirement is particularly sensitive to a change in policy over the contract term, this can lead to substantial unanticipated costs under a P3 (but not necessarily under a conventional contract). An example would be the costs of early termination.

Our review of P3 screening practices by each of the Canadian jurisdictions active in this type of procurement has found several examples of projects that were initially considered for P3 treatment but were subsequently rejected because they failed to meet one of the above guidelines. This suggests that the preliminary choice of P3 projects is not an arbitrary or ad hoc process. Early screening is supported in most cases by explicit criteria that are applied to potential infrastructure projects.

7 This potential obstacle to P3s is raised by Murphy in “The Case for Public-Private Partnerships.”

THE VALUE-FOR-MONEY METHODOLOGY

The value-for-money test that compares the cost of P3s with conventional procurements lies at the heart of the P3 procurement process. This is because it helps the public sector procurement authorities determine not only which projects should be pursued as P3s but also how a project should be structured (e.g., which risks should be retained, transferred to the private partner, or shared between the two parties) in order to deliver the most value to the public sector. However, there is some skepticism, including in the academic literature, as to whether the VfM test is a genuine test or whether it can be arbitrarily managed to generate desired results. This section reports the results of a high-level review of selected VfM studies in the four jurisdictions considered here, including any guidance documents regarding the methodology used for these studies.

First, we should note that VfM studies have been conducted for every Canadian P3 project undertaken as part of the second-wave of P3s. This is considered standard practice for P3s in most countries in Europe as well as in other pioneering jurisdictions in this area, such as Australia. However, it represents a significant achievement when viewed in the context of conventional infrastructure procurement, which is not usually subject to a VfM assessment that compares the chosen method of procurement with alternatives.

Second, we should note that the VfM test is a process that begins well before the request for proposal (RFP) is issued and culminates in a final report issued after the financial close. The first VfM test for a project is finalized before the RFP is issued in order to confirm the procurement decision before engaging the market in a competitive bid process. The VfM test is then finalized after financial close of the project, based on the financial information contained in the proposal of the winning bidder.

Our review of the available VfM studies and guidance documents suggests that each of the four jurisdictions under consideration has developed a rigorous methodology for comparing the costs of P3s and traditional procurements. (VfM studies are not published for P3 transactions in Alberta, but the VfM methodology is available through

Alberta Infrastructure and Transportation.)⁸ This means that it is generally clear which data inputs have been used, what analysis was undertaken, especially regarding the assessment of risks, and what key assumptions were made (e.g., regarding the choice of discount rate for the two options). In addition, the choice of methodology and underlying assumptions are generally conservative.⁹ Although there are some differences in methodology between jurisdictions (e.g., the method of determining the appropriate discount rates for the analysis), we have not undertaken a detailed assessment to determine whether the methodological differences have a material impact on the VfM results.

A recent review of P3s suggested that VfM studies should be based on a full cost-benefit analysis of the difference between the two procurement options.

The results of the VfM studies have in some cases been reviewed by the provincial auditor general, as in the case of British Columbia's P3s.¹⁰ In Ontario, the internal audit division of the provincial Ministry of Finance reviewed the VfM methodology, which was "found to be sound."¹¹

8 See Alberta Infrastructure and Transportation, "Management Framework."

9 For example, Infrastructure Ontario's VfM methodology assumes the same base capital costs under the PSC and the shadow bid (with the exception of the risk premium under the shadow bid). In other words, it assumes that the private partner does not bring any innovations to the project, although in practice this would likely occur in a well-designed project. See Infrastructure Ontario, *Assessing Value for Money*; Partnerships BC, "Draft Discussion Paper"; and Alberta Infrastructure and Transportation, "Management Framework." A shadow bid refers to the financial model of the costs of undertaking the project in question as a P3 procurement. This model is developed by the P3 agency (or procurement authority) for the purpose of comparing the cost of a P3 against its PSC prior to receiving final bids from the private partners.

10 The B.C. Auditor General reviewed the VfM documents for the Abbotsford Regional Hospital and Cancer Centre Project, the Sea-to-Sky Highway Improvement Project, and the Canada Line Project. See Partnerships BC, *Project Report: Achieving Value for Money—Abbotsford Regional Hospital*; Partnerships BC, *Project Report: Achieving Value for Money—Sea-to-Sky Highway*; and Canada Line Rapid Transit, *Canada Line Final Project Report*.

11 Auditor General of Ontario, "Brampton Civic Hospital," p. 121.

A recent review of P3s suggested that VfM studies should be based on a full cost-benefit analysis of the difference between the two procurement options, which we discuss in the box "The Role of Cost-Benefit Analysis in the Evaluation of P3 Projects."¹²

Our review of the VfM studies and the methodology leads us to the following observations:

- ◆ It would be worth comparing the P3 procurement option with the next best available procurement option.¹³ In many cases, this is the conventional procurement option, which is the usual reference point for these studies (e.g., CCDC 2 contracts and conventional maintenance contracts when the P3 includes a maintenance phase). However, in some cases it may be a different type of conventional contract, such as a construction management contract. This modification of the methodology, when relevant, would be consistent with provincial capital management frameworks that indicate that all procurement options should be evaluated.
- ◆ The risk assessment process is at the heart of the VfM methodology and is necessarily based on historical outcomes regarding the cost and timing outcomes of both conventional and P3 infrastructure projects. We think it would be worthwhile developing and maintaining an evidence base of pan-Canadian infrastructure projects covering key outcomes such as public sector project costs and key milestones relative to their respective budgets and delivery timelines. This can already easily be done for the second wave of P3 projects. However, it is likely to be more challenging, but more valuable, to undertake for conventional infrastructure projects.
- ◆ As we noted earlier in this report, a VfM test is necessarily *ex ante*. It could therefore be valuable to update the VfM study after completion of the project or after a major milestone such as completion of the construction phase. The resulting data could provide some valuable lessons regarding best practices for infrastructure procurement.

12 Vining and Boardman, "Public-Private Partnerships," pp. 14–15.

13 This is already the standard in British Columbia, as set out in the CAMF.

The Role of Cost-Benefit Analysis in the Evaluation of P3 Projects

Several authors have argued that cost-benefit analysis should play a more important role in the evaluation of major infrastructure projects in Canada. For example:

Steven Globerman and Aidan Vining suggest that ultimately the effectiveness and desirability of P3s and related instruments depend on their ability to meet the needs of society as a whole, that is, whether the net social benefits of P3s are likely to be higher (or are actually higher) than government provision. This criterion has a strong normative rationale and has been used to evaluate the privatization of state-owned enterprises.¹

We fully agree that major infrastructure projects must be subject to a rigorous and comprehensive cost-benefit analysis and that the results of the analysis should be an important factor in deciding whether to proceed with the project (or what version of the project to proceed with). The analysis must include not only the financial costs and benefits but also other quantifiable social costs and benefits that fall in the public domain and are not captured in financial business cases (e.g., health, environmental, and safety impacts). However, this type of study must be undertaken at the project evaluation stage (i.e., well before the procurement stage) in order to contribute meaningfully to the decision about whether the project is in the public interest and worth undertaking. In the passage below, we explain what the role of cost-benefit analysis should be in transportation infrastructure projects. However, the same rationale applies to all publicly owned infrastructure projects, from hospitals to concert halls:

... the planning process should favour those transportation projects with the highest benefits per unit of cost. The public sector is the only participant in a position to ensure that projects that generate significant net benefits in the public domain (e.g., environmental or even journey-time benefits, which are reflected in the benefit-cost analysis but not in the financial business case) are prioritized and realized. Private firms' investment decisions are based on the financial case, which necessarily ignores the costs and benefits that

fall in the public domain. It is therefore the unique and sole responsibility of governments (and planning agencies) to identify and promote transportation projects with relatively high benefit-cost ratios.²

Once a project proceeds to the procurement stage, it is worth revisiting the cost-benefit analysis undertaken at the project planning stage to assess whether the social costs and benefits (i.e., the external impacts that fall in the public domain) would vary depending on the procurement option. But it is not clear to us whether the type of procurement tool materially alters the social costs and benefits resulting from a project.³ Vining and Boardman argue that the procurement decision (i.e., P3 or conventional project) should be based on the following criterion:

... recognizing the importance of externalities and quality differences, Anthony Boardman and Erica Hewitt argue that governments should minimize the sum of total social costs defined as production costs incurred by government or paid to third parties, plus transaction costs, plus (net) negative externalities, holding quality constant.⁴

We note that the VfM methodologies discussed above take into account all the factors in the quote above, with the exception of the externalities (i.e., the social costs and benefits in the public domain). But we have no evidence to suggest that externalities differ significantly between procurement options, as noted above. Nor do we believe it is the role of VfM studies to serve as a full cost-benefit analysis in any instance where a cost-benefit study may not have been undertaken at the planning stage.⁵

1 Vining and Boardman, "Public-Private Partnerships," p. 14.

2 Iacobucci, *Steering a Tricky Course*, p. 9.

3 This is particularly true when comparing conventional procurement approaches with P3 approaches based on availability payments. Projects that transfer substantial use risk (or demand risk) to the private sector could affect the balance of social costs and benefits, but second-wave P3 projects do not typically do so.

4 Vining and Boardman, "Public-Private Partnerships," pp. 14–15.

5 Such a case would be considered a planning failure and should be corrected prior to completing a procurement process for the project in question.

TRANSPARENCY OF P3 AND CONVENTIONAL PROCUREMENT PROCESSES

The transparency of a procurement process helps determine whether the public sees the results as legitimate and is particularly critical for major public infrastructure projects. In this section, we provide a few observations on the transparency of P3 and conventional procurement processes.

Transparency has several dimensions. Here we focus on two: first, the availability of information to the public regarding the procurement process and outcomes—information that is sufficient to allow any third party to form an independent view of the process but which excludes commercially confidential data; and, second, the transparency of the process for all the bidders at every stage of the process.

P3 procurements typically include a fairness advisor who provides an opinion on the fairness and transparency of the process for all participants. However, we understand that this is not the norm for conventional infrastructure projects of equivalent scale in any of the four Canadian jurisdictions most active in the P3 market.

We have also found that there is little or no publicly available information on major conventional public infrastructure procurements, including information on any cost

overruns (e.g., causes, amounts, recipients of any additional payments made by governments) unless the procurement in question has been reviewed by an auditor general or a commission of inquiry. We understand that some of this information would be available through access-to-information channels.¹⁴ However, this type of availability does not come close to the standards of transparency employed in a P3 procurement process, where the RFQ, RFP, and a redacted form of the partnership agreement is always posted on the relevant public agency websites. In most cases, the VfM report is also made available to the public.

The second wave of P3s has been subject to greater scrutiny than that applied to similar conventional projects.

Therefore, we conclude that the procurement processes for the second wave of P3 projects have been considerably more transparent than the procurement processes for conventional public infrastructure projects. This has meant that this second wave of P3s has been subject to greater scrutiny than typically applies to conventional infrastructure projects of equivalent scale.

¹⁴ Access-to-information legislation differs by province. For example, in British Columbia, the legislation is called the *Freedom of Information and Protection of Privacy Act*.

CHAPTER 5

Case Studies

Chapter Summary

- ◆ This chapter presents case studies of a pair of infrastructure projects—one a P3 and the other a conventional procurement—from each of the four Canadian jurisdictions most active in the second wave of P3s.
- ◆ Alberta's southeast and southwest Edmonton ring roads are the most comparable pair, with the P3 project being delivered two years earlier than the conventionally procured project.
- ◆ In British Columbia, the P3 procurement process forced a detailed upfront assessment of the full capital costs and associated risks for a regional hospital, thereby providing a solid basis for informed public sector decision making.
- ◆ A key feature of Quinte Health Care, a P3 hospital project in Ontario, is a “change order protocol,” addressing what is often an important source of cost overruns in conventional infrastructure projects.
- ◆ In Quebec, the conventionally procured Montréal metro extension to Laval cost over four times the original budget and was 16 months late.

INTRODUCTION

This chapter presents four case study pairs: a P3 project and a conventional project from each of the four provincial jurisdictions that have been most active in the second wave of P3s in Canada. The P3 case studies were selected based on the following criteria. They had to:

- ◆ be among the first of the second-wave P3 projects initiated by the provincial infrastructure agencies, thereby providing more time over which the results of the project could be observed;
- ◆ involve a type of asset that is broadly representative of the asset types for which most P3s have been undertaken in that jurisdiction (e.g., a hospital project in Ontario); and
- ◆ allow access to data and interviews with project managers.

The case studies are not strictly representative of their respective P3 or conventional procurement populations.

The case studies are intended only to be illustrative of both conventional and P3 procurement experiences. They are not strictly representative of their respective P3 or conventional procurement populations.

One could ask why we have not chosen some of the first-wave projects, which are all well into their operating phases and should provide more data and outcomes to evaluate. The reason is that the structure of the first wave of P3 transactions differs in many respects from that of the more recent P3 projects, as we explained in Chapter 1. Moreover, second-wave P3s are more relevant to the kinds of P3 projects that are likely to be undertaken in the near future, and they have received less attention in the policy literature than the first wave.

The well-documented conventional projects tend to be those that have been reviewed by auditors or external experts, and are often the ones that have gone wrong.

For each case study pair, we originally intended to choose a conventionally delivered infrastructure project that would provide a good comparison with the P3 project for the same jurisdiction. However, this was not possible in most cases, because of the limited information about conventional projects available in the public domain. (This paucity of information is also a by-product of the lower levels of public scrutiny and transparency for conventional projects.) In fact, the well-documented conventional projects tend to be those that have been reviewed by provincial auditors or external experts, which are often the ones that have gone wrong. Therefore, it should be no surprise that the conventional projects reviewed here are in many (but not all) cases poster-children for some glaring procurement failure. These are not necessarily representative of the overall population of large conventional infrastructure projects, but they do illustrate how procurement and project execution can differ from those in P3 projects. In instances where there are some elements of comparability, we point these out.

ALBERTA: THE SOUTHWEST AND SOUTHEAST EDMONTON RING ROADS

The large-scale infrastructure projects covering these two southern portions of the Edmonton Ring Road have recently been completed, the southwest leg of the ring road under a conventional approach and the southeast

leg under a P3 project. These represent the two most comparable of the four case study pairs and have a substantial overlap in project time frames.

The Province of Alberta started planning for a transportation utility corridor around both Edmonton and Calgary beginning in the late 1970s and acquired the relevant lands over the next two decades. The Edmonton Ring Road was part of a long-standing provincial and city commitment to “create a highway trade corridor linking Alberta to the United States and Mexico.”¹ The ring road was also expected to relieve congestion on the city centre’s arterial roads, particularly by diverting heavy commercial vehicles from those roads.

Several points of comparison between the two projects are worth noting. First, according to the public sector owner, now that both the southwest and southeast legs of the ring road are open to traffic, it is very difficult to tell them apart or to determine which one was delivered conventionally and which one was procured as a DBFO.

The Anthony Henday Drive Southwest— A Construction Management Approach

The southwest leg was the first section of the Edmonton Ring Road to be completed and consists of 18 kilometres of freeway-standard roads from Highway 2 in the south to Highway 16 on the western outskirts of the city. The project also included:

- ◆ 12 bridges, including a major bridge across the North Saskatchewan River and bridges over three ravines;
- ◆ portions of a major systems interchange where the ring road meets Highway 2 (Calgary Trail), the main north-south highway that crosses Edmonton; and
- ◆ four other interchanges.

The functional planning study for this project was completed in July 2000, with two prime engineering consultants chosen to provide detailed design and construction management services. About 35 construction contracts were issued over the course of the project, and total project costs amounted to \$310 million in nominal terms. The project was completed over a period of six years and five months and opened to traffic in October 2006.

Source: Alberta Infrastructure and Transportation.

1 “Ring Road, Air Service Constant Irritants.”

The Anthony Henday Drive Southeast—Alberta’s First DBFO Highway

The business plan for the southeast section of the Edmonton Ring Road was first developed by the Alberta Ministry of Transportation and presented to the Alberta Treasury Board in July 2003. The plan was then referred to the Advisory Committee on Alternative Capital Financing—composed of private sector members—which recommended proceeding with a P3. The request for qualifications was issued in September 2003, with six consortia responding. The request for proposal was issued to the three qualified candidates in April 2004, with the draft contract and related schedules issued shortly thereafter.¹ (Pre-qualification of the proponents avoids potentially protracted negotiations after the selection of the preferred bidder.)

The three proponents were asked for their input on the draft contract, including their views about which risks would be expensive for these firms to assume, after which a final contract was released. Thus, all proponents submitted bids on the same contract, and the lowest bidder was selected. In January 2005, the contract was awarded to Access Roads Edmonton Ltd. (AREL), which was headed by ABN AMRO Bank, PCL Construction Management Inc., and TSMI.²

1 The milestones noted in this paragraph are based on the 2003–04 annual report of the Alberta Auditor General, which reviewed the Calgary Courts Centre and the Anthony Henday Drive Southeast P3 procurements.

2 In December 2005, ABN AMRO sold 81 per cent of its equity stake in AREL to Macquarie Essential Assets Partnership, which took over responsibility for project management. TSMI, a division of Lafarge Canada, is responsible for operating and maintaining Anthony Henday Drive Southeast.

Sources: Auditor General of Alberta, *Annual Report*; Alberta Treasury Board (Alternative Capital and Financing Office); The Canadian Council for Public-Private Partnerships, “Anthony Henday Drive.”

The project consisted of 11 kilometres of roadway between Highway 2 and Highway 14, varying in width from four to six lanes. It also included 20 bridges, some of which were required for completion of the Calgary Trail interchange, as well as five new interchanges and four new flyover crossings. The total budget for the project was \$493 million, which provided a value-for-money saving of \$4 million when compared with the cost of a conventionally procured project. However, the project also had a compressed design and construction schedule, which meant that the new roadway was expected to open by October 2007, or two years earlier than would have been the case under a conventional approach.

AREL assumed most of the design and construction risks, although the risks associated with unknown pre-existing pollution sources and latent defects of existing structures were assumed by Alberta Transportation. The private consortium also assumed most of the financing and operating risks. The type of private financing used was relatively new for Canadian P3s, because the debt portion relied on bond financing, with a \$150-million bond issued in January 2005 and a second \$140-million bond issued in November 2005. In addition, the federal government provided \$75 million in funding through the Canada Strategic Infrastructure Fund, which was paid during the construction phase. The Government of Alberta’s monthly payments to AREL were scheduled to begin only when the road opened, and these payments would depend on the availability of the road and not on traffic levels.

The roadway opened in October 2007 as scheduled. It also provided cost certainty to the Government of Alberta, which did not incur any costs above those already budgeted. To date, the project has experienced no contract variations or any successful claims against the public sector. However, the operator has faced some deductions for non-performance relative to targets stipulated in the contract.

Second, the public sector has also argued that the DBFO project was delivered two years earlier than it would have been under a conventional approach: The Anthony Henday Drive Southwest (AHDSW) project, which was of similar scope to the DBFO project, took six years and five months to complete from the functional specification stage. By comparison, the Anthony Henday Drive Southeast (AHDSE) project took just over four years to complete from the same point. This time saving can be attributed to several aspects of the DBFO process:

- ◆ The design and build stages can proceed concurrently, which is not possible in a conventional project, where the design stage must be completed first.²

2 According to one project manager, “At the outset of the work . . . the design activity is always on the critical path. The key challenge . . . is for the design to get ahead of construction at the soonest possible date. [. . .] there is a simple need to design first what the contractor will build first. [. . .] As the work progresses, unforeseen circumstances will arise. Because of this, the design and the construction schedule needs to be fluid to fit available design resources, the contractor priorities and unexpected field circumstances.” Cited in Gauer, “Design and Construction,” p. 4. Gauer argues that these design and construction process efficiencies can be achieved only through effective coordination of design and construction tasks.

- ♦ A single project manager can coordinate all the work. In a conventional project, different contractors and consultants carry out different parts of the work, creating coordination issues that have to be resolved either by the public sector managers or by their construction management firm.
- ♦ The public sector owner cannot call back the funds already allocated to the project, as it can in a conventional project. This removes a potential source of delay.
- ♦ The private consortium is incented to actively manage the construction delay risks. In the case of the AHDSE project, Access Roads Edmonton Ltd. assumed the cost of the bond financing. Thus, if the project completion had been delayed, the consortium would have lost service payments. These payments started only when the roadway opened to traffic and will end at the fixed end-term date in 2037. By comparison, under the AHDSW procurement, the penalties imposed on the contractor appear to be less than 10 per cent of the AHDSE delay penalties.³

One time-saving measure of the DBFO process is that a single project manager can coordinate all the work.

Third, the DBFO project provided the public sector owner with time and cost certainty. The construction schedule was met at no additional cost to the public sector over and above what was in the original budget. It is not clear whether the same can be said for the conventional AHDSW project. We do not have information about the original budget and timelines for this project, but there are some indications that both of these original targets were exceeded.⁴ For example, there were references in

3 According to a letter to the *Edmonton Journal*, “Anthony Henday Behind Schedule,” the contractor on the AHDSW project was subject to a potential \$1,500 per day “site occupancy charge . . . until the entire roadway is open” and a “\$3000 per day liquidated damages charge for each calendar day after the final contract completion date.” By comparison, if the AHDSE project had been late, the implied penalty would have been about \$48,000 per day, assuming an interest rate of 6 per cent on the \$290 million of AHDSE bonds.

4 According to the letter to *Edmonton Journal* cited above, “At the time the work was tendered, the southwest leg of Anthony Henday Drive had a completion date of Nov. 15, 2005. This was for the entire road from 45th Avenue to Calgary Trail. [. . .] I consider this project to be a year behind schedule.” See “Anthony Henday Behind Schedule.”

the press to a \$245-million cost for the AHDSW project,⁵ which would mean that the final cost of \$310 million represents a 26.5-per-cent increase relative to the \$245-million budget. However, this is likely to be an understatement of the actual cost increase for the AHDSW project over the period from 2000 through to 2006.⁶

Fourth, anecdotal evidence suggests that the quality of routine maintenance services provided under the DBFO contract is not lower and may well be higher than the standards observed under conventional maintenance contracts. The AHDSE DBFO project provides routine maintenance (but not rehabilitation work) for the southwest leg of the ring road.

BRITISH COLUMBIA: THE VANCOUVER CONVENTION CENTRE EXPANSION AND THE ABBOTSFORD REGIONAL HOSPITAL AND CANCER CENTRE

The Abbotsford Regional Hospital and Cancer Centre (ARHCC) Project was the first B.C. hospital procured as a P3. Managed by Partnerships BC, it was also one of the first of the second-wave P3 projects in Canada.⁷ The Vancouver Convention Centre Expansion Project (VCCEP) was also chosen as a case study, because of the availability of a recent review by the B.C. Auditor General. Both projects are considered social infrastructure, but there are several factors that preclude a strict comparison of the outcomes, including public sector commitments to a potentially unrealistic time frame for completing the VCCEP. Nevertheless, several insights and lessons can be drawn from both projects.

There are several issues worth highlighting for the two projects. First, the P3 procurement process forces an upfront consideration of all the project requirements

5 See “Ring Road Extension.”

6 According to one presentation to the Van Horne Institute, construction costs on conventional projects were subject to increases in excess of 25 per cent during the period from 2004 to 2007. See slide 6 in McQuay, “Design Build Finance.”

7 The Sierra Yoyo Desan Resource Road reached financial close before the ARHCC project, but it is not representative of the types of infrastructure assets that have been procured as P3s in British Columbia.

The Abbotsford Regional Hospital and Cancer Centre—The First P3 Hospital for British Columbia

The Abbotsford Regional Hospital and Cancer Centre (ARHCC) was designed to increase the local health authority's capacity to provide health-care services for a growing population, including certain health-care services that were not previously available. Four procurement options were evaluated for the hospital project, in line with the provincial Capital Asset Management Framework issued in 2002:

- ◆ A conventional project in which the public sector owns, finances, operates, and maintains the facility, with private partners carrying out design and construction under separate contracts.
- ◆ A design-build-maintain (DBM) project, where a private firm delivers the design, construction, and building maintenance, while the public sector retains ownership, financing, and operations tasks.
- ◆ A design-build-operate-maintain (DBOM) project, which is like the second option except that the private firm also provides selected facilities management services.
- ◆ A design-build-finance-operate-maintain (DBFOM) project, where the private firm is responsible for all the above tasks.

Total costs under the four options were reportedly similar, but the procurement authority concluded that the "DBFOM model offered the best potential to deliver value for money through innovation, timely delivery and the most effective risk transfer to the private sector."¹

Four respondents to the initial request for expressions of interest were qualified. Two of these agreed to submit proposals, but one subsequently withdrew. Partnerships BC decided to continue with the request for proposal, because it was able to place increased weighting on the public sector comparator (PSC) as a test of whether the single bid provided value for money.

The cost of the project if done conventionally would have been \$463 million in 2004 dollars (excluding capital contributions of approximately \$75 million from local hospital and health authorities), which was reportedly similar to the cost of the P3 project. Based on the final agreement with the consortium, Access Health Abbotsford, the cost of the P3 project

to the public sector fell to \$424 million in 2004 dollars (also excluding the \$75 million in capital contributions). As a result, the P3 project provided value-for-money savings of 8 per cent relative to the PSC.

The partnership agreement transferred risks to the private consortium in several areas: financing, design (fit for purpose), construction cost and scheduling, facilities management services and building maintenance, and latent defects.² Some other risks—such as equipment procurement and installation—were shared, with the agreement specifying exactly how this would be done. The risk transfer was ensured through output-based performance specifications, performance payments to the consortia that began only at substantial completion (and varied depending on penalties and bonuses), and private financing. Thus, any delay in the actual substantial completion date would result in fewer performance payments to the consortium (since the end-of-term date is fixed) and higher debt-servicing charges.

During the procurement, the capital cost component of the project under the PSC rose from an estimate of \$211 million in 2001 to \$369 million at financial close in December 2004. The difference between the two figures was attributed to construction cost inflation (40 per cent), a more realistic estimate of risks (31 per cent), and changes in project scope (29 per cent).

The project reached substantial completion according to schedule and without any additional liabilities incurred by the public sector. The contract variations during the design and construction stage had no net impact on the project budget. Since the hospital has opened, the service payments have been subject to performance deductions related to house-keeping and portering.

1 Partnerships BC, *Project Report: Achieving Value for Money—Abbotsford Regional Hospital*, p. 6.

2 Interestingly, two facilities management services (biomedical engineering and medical record transcription) were removed from the services to be provided by the private partner during the proposal stage, because it was not deemed cost-effective to transfer risks for facilities management services where there is little private sector experience to date.

Source: Partnerships B.C., *Project Report: Achieving Value for Money—Abbotsford Regional Hospital*.

The Vancouver Convention Centre Expansion Project—A Conventional Project by Default

An expansion of the Vancouver Convention and Exhibition Centre was proposed in 2000 based on the findings of a task force. The project had an estimated capital cost of \$495 million and involved a new waterfront facility integrated with the existing facility at Canada Place, which was also to be renovated. The initial procurement strategy chosen by the provincial government in early 2002 was to build and operate the project as a P3. However, the government cancelled the P3 procurement by the fall of 2002, because it could not reach an agreement with the preferred P3 bidder. In February 2003, a provincial Crown agency (VCCEP Ltd.) was set up to design, build, and own the new facility.

After Vancouver was chosen in mid-2003 to host the 2010 Olympic and Paralympic Winter Games, the provincial government decided to complete the expanded facility by July 2008 and use it to house the broadcast and press activities for the Games. The first budget for the project, \$565 million, was approved by the provincial government in June 2004. This budget was based on a preliminary design but did not incorporate a full assessment of risks. This was followed by five additional provincial budget approvals for the project, the last of which was for \$883 million in July 2007.

It is worth quoting the B.C. Auditor General's review of the procurement process to show the interactions between the time constraints, the procurement strategy, and the failure to transfer construction risks to the private sector:

[Due to the time constraints, the] VCCEP's choices regarding a procurement approach were somewhat limited. Instead of proceeding with a traditional staged procurement approach such as a design-bid-build, VCCEP felt obliged to proceed concurrently with construction of the marine and platform works while design of the building was being completed and retain a private sector construction management company to provide pre-construction services. Second, the procurement approach assumed that VCCEP would be able subsequently to negotiate a stipulated lump-sum contract with the construction management company. None of the early cost estimates reflected any risk premium that would be needed to compensate the construction manager for accepting the transfer of risk that would be the result of a stipulated lump-sum contract. The stipulated lump-sum contract was not completed until the first part of 2007, by which time most of the large contracts (specifically \$360 million) had already been let by VCCEP. This has left the VCCEP to bear the originally unanticipated cost escalations.¹

The expansion of the convention centre was completed in September 2009, and the final cost appears to have come in under the \$883 million budget.²

1 Auditor General of British Columbia, *Review of the Vancouver Convention Centre*, p. 3.

2 Vancouver Convention Centre, *Convention Centre's Harbour Concourse*.

Source: Auditor General of British Columbia, *Review of the Vancouver Convention Centre*.

and associated costs and risks. This is partly due to the presence of a specialized procurement manager, such as Partnerships BC (which is able to impose this kind of discipline on the procurement process), and partly to the fact that private sector bidders will factor the cost of the risks they expect to bear in to the partnership agreement. As a result of this upfront consideration of comprehensive project requirements and costs, the ARHCC's capital cost estimates rose from \$211 million in 2001 to \$369 million in December 2004, with 60 per cent of the increase due to a combination of project scope changes and a more complete risk assessment. This cost increase is often cited as a drawback of P3s,⁸

but in fact the reverse is true. By ensuring that policy makers have a full picture and a conservative view of the total costs of the project at the outset, it provides the basis for informed decision making, which can include modifying the project options to fit the original budget or even cancelling the project in advance of the formal procurement process.

In contrast, there was no comprehensive upfront consideration of all the costs and risks for the VCCEP project. Hence, as the project costs escalated during the design and construction, the government and procurement authority were no longer able to reconsider the full range of project options (including cancellation), because substantial portions of the capital budget were already spent and not recoverable. Sometimes some of the spending may

8 For example, see "Premier Shops Around for Expensive Theme," in the *Vancouver Sun*, for a recent reference to the capital cost increase of the ARHCC project.

be salvaged under an alternative project option, but the decision makers will almost invariably face a more restricted range of options in doing so.

Second, the process of risk transfer appears to have been effective in the ARHCC P3 project. Not only were the design and construction components of the project delivered within the public sector budget for the P3 (i.e., there were no additional successful claims on the public sector, despite some contract variations during the project), but the facility was also delivered on schedule. It is important to note that the construction phase for both the ARHCC and VCCEP projects overlapped during the 2005–08 period, and that in the first two years of this period the rate of construction cost inflation more than doubled.⁹ This risk was effectively transferred to the private sector consortium that built the ARHCC. However, it was not transferred to the private builder of the VCCEP project in large part because the stipulated sum contract was not signed until 2007, when \$360 million of the capital spending had already occurred. Moreover, by 2007, the escalation in the rate of construction cost inflation had already occurred and would have been fully factored into the private builder's bid, even if that builder could have managed the inflation risk more cost-effectively than the public sector.

A third issue worth highlighting is the competitive nature of the procurement process. This feature is one of the key drivers of efficient procurement outcomes for both P3s and conventional procurements.¹⁰ However, the necessary competitive underpinnings of major infrastructure projects were compromised for both the ARHCC and VCCEP projects, albeit for different reasons and with different results. In the ARHCC case, the withdrawal of one of the two bidders at the proposal stage led Partnerships BC to emphasize the VfM element of the

selection criteria in the procurement process.¹¹ This may have been the best response in the circumstances—a response that is not available in conventional procurements, since there is no VfM analysis comparing the cost of the project to that under the next-best procurement option. However, it did compromise the competitive part of the procurement process and this likely reduced the VfM savings achievable under the project. In the VCCEP project, the competitive nature of the procurement process was compromised, because a substantial part of the design and construction work was already completed by the time of the contract award and because of the hard deadline¹² noted by the Auditor General. Both of these factors likely increased the leverage of the incumbent contractor on the project.

A fourth issue relates specifically to the ARHCC project, where the facilities management services provided under the P3 project include some services that are being provided by public sector employees in other hospital contexts. In this case, it is worth asking whether the workers have suffered a drop in pay rates or working conditions and whether the patients have suffered a decline in the quality of the facilities management services. Our review of press reports since the opening of the hospital in August 2008 suggests that neither workers nor patients have been shortchanged in the area of facilities management services, despite considerable scrutiny from P3 critics such as the B.C. Health Coalition. The only issue to surface in the press is the shortage of discounted parking spaces for ARHCC staff, but it is not clear whether hospital management would have dealt with this issue differently if it had retained direct management responsibility for parking services.¹³

9 The B.C. Auditor General noted that the cost consultants for the initial VCCEP budget had projected 4-per-cent annual construction cost inflation and that “by 2006, the actual inflation rate was at 11 per cent per year, almost three times the expected rate.” See Auditor General of British Columbia, *A Review of the Vancouver Convention Centre*, p. 2.

10 This efficiency driver was not discussed in Chapter 3, because it is applicable to all procurement approaches.

11 This is perhaps not entirely surprising, given that the P3 marketplace in Canada was still in its infancy in 2003 and the ARHCC was one of the first P3 projects managed by a specialized procurement agency or office within a central agency. It does, however, underscore the importance of nurturing the development of P3 markets, which has been one of the objectives pursued by the P3 agencies in recent years.

12 According to the Auditor General of British Columbia, “after the convention centre was named a venue [for the Vancouver 2010 Winter Olympic Games], the completion date in 2008 became a hard deadline.” See Auditor General of British Columbia, *A Review of the Vancouver Convention Centre*, p. 36.

13 The private contractor managing the parking services issued a limited number of discounted monthly parking passes on a first-come, first-served basis.

ONTARIO: THE SUDBURY REGIONAL HOSPITAL (PHASE 1) AND THE QUINTE HEALTH CARE AFP

The Quinte Health Care (QHC) project was one of the first hospitals built in Ontario to be procured as an alternative financing and procurement project. It is also one of the first of 20 build-finance hospital projects to have been undertaken by Infrastructure Ontario, with substantial completion expected by January 2010. The Sudbury Regional Hospital project (Phase 1) was chosen as a case study of a conventional approach to hospital procurement in Ontario, because it was the only such project for which we could find publicly available third-party documentation.

According to the report of the Health Capital Planning Review conducted for Ontario in 2004, the problems with the Sudbury Regional Hospital redevelopment project were not unique.¹⁴ The report suggested that the planning and procurement challenges were endemic to major hospital procurement projects across Ontario. Specifically, the report found that:

- ♦ there was inadequate attention to capital projects at the planning stage and a lack of standards and guidelines for the planning and procurement process;
- ♦ these problems occurred primarily with large capital projects (i.e., projects in excess of \$1 million);¹⁵ and
- ♦ capital planning for long-term care facilities was better managed:

Financial risk is assessed early in the process and before any funding is provided to eligible operators, and managed by not providing funding until the facility is built and the Ministry is satisfied that it is ready to be occupied. The need to receive part of a facility's funds from the market provides market discipline.¹⁶

14 Decter, *Health Capital Planning Review*.

15 According to the Health Capital Planning Review report, the MoHLTC had 760 requests for capital funding, but only a small number of these (17 projects over \$50 million each) "account for a large proportion of outstanding funding pressures." See Decter, *Health Capital Planning Review*, p. 15.

16 Decter, *Health Capital Planning Review*, p. 39.

As a result, the report made several recommendations that included creating a separate capital planning agency and carrying out a business case and life-cycle costing analysis for all major hospital capital projects.¹⁷

The Sudbury Regional Hospital Capital Redevelopment Project (Phase 1)—Snapshot of a Conventional Hospital Procurement

The capital development plans for the Hôpital régional de Sudbury Regional Hospital (HRSRH) were a product of the Ontario-wide Health Services Restructuring Commission (HSRC), which recommended closing the three acute-care hospitals in the region in 1996 (Laurentian, Memorial, and Sudbury General) and amalgamating all acute in-patient, rehabilitation, and chronic-care services at a renovated and expanded facility on the site of the original Laurentian hospital. The HSRC estimated the capital cost of this project at \$85 million.

The next few years were spent developing the proposal, functional program, preliminary designs, and procurement approach for the HRSRH redevelopment plans. By March 2000, the Ministry of Health and Long-Term Care (MoHLTC) had approved a budget of \$143 million based on a construction management approach to the procurement. However, "with little experience of the construction management approach being sought by the hospital, [the MoHLTC] asked the [hospital] board to sign a waiver of liability [for cost overruns], which it did in February of 2000."¹ By the end of Phase 1 of the project two years later, the entire budget had already been spent, but the total cost of the project (i.e., phases 1 and 2) had risen to an estimated \$363 million, or over four times the amount originally estimated by the HSRC. The operational review of the HRSRH concluded in November 2002 that these cost and time overruns were due to lack of project "oversight and adequate supervision at all levels,"² including:

- ♦ the lack of policies and procedures for capital planning and procurement;
- ♦ poorly specified tendering documents, which "resulted in unrealistic tenders being accepted";³ and
- ♦ inadequate project management, with the hospital lacking the resources and expertise to track the project outcomes and critically review the decisions made by the construction management firm. This problem was partly due to a province-wide policy at the time, which limited project management resources to \$65,000, regardless of project size.

1 Canadian Healthcare Management and THiNC iMi, *Operational Review*, p. 14.

2 Ibid., p. 15.

3 Ibid., p. 16.

Source: Canadian Healthcare Management and THiNC iMi, *Operational Review*.

17 Ibid., p. 28.

The Quinte Health Care Project—A Build-Finance AFP Project

The Quinte Health Care (QHC) project had its roots in the amalgamation of the four Belleville-area hospitals proposed by the Health Services Restructuring Commission (HSRC). The capital project was approved for delivery as an alternative financing and procurement (AFP) project under the Ontario government's 2005–06 capital plan, which was part of the province's \$30-billion infrastructure investment plan known as ReNew Ontario 2005-2010. The project involves adding a new wing to the Belleville General site (155,000 square feet) and renovating an additional 22,000 square feet. The total cost for this project under the AFP is \$85.6 million, with the provincial government covering 90 per cent of the cost under the new hospital funding policy announced in June 2006.

The risks transferred to the private sector contractor include:

- ◆ construction price certainty, based on a guaranteed maximum price of \$72.2 million, including financing costs;
- ◆ project scheduling delays, based on QHC's payments to the contractor beginning at the point of substantial completion, which is expected in January 2010;
- ◆ design coordination risk, which refers to "the risk that change orders are required during construction due to design coordination/design completion/design gaps" that can be

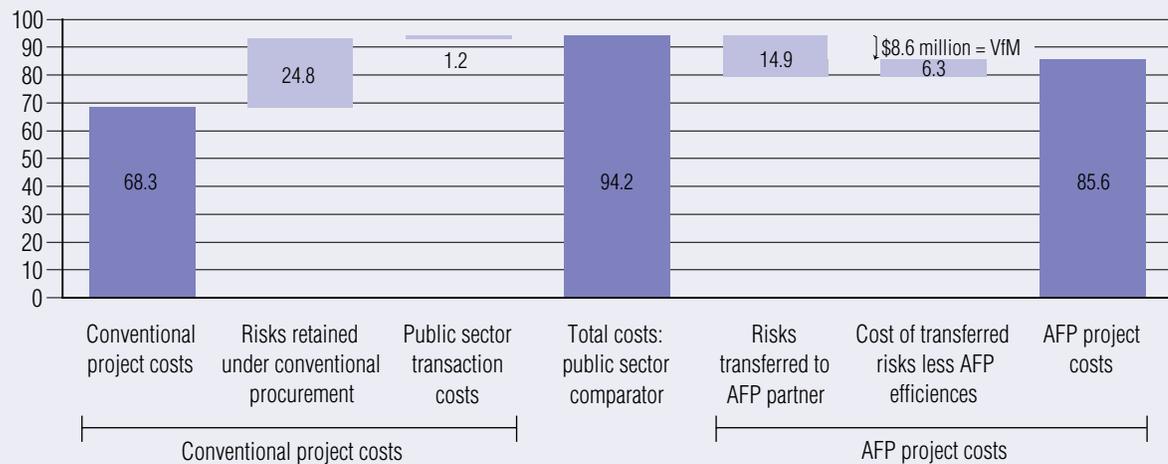
reasonably inferred.¹ This risk was transferred even though the private partner was not responsible for the design of the facility, which was undertaken prior to the AFP project;

- ◆ financing risk;
- ◆ a schedule contingency, which shields QHC from the costs arising from up to 30 days of delays attributable to QHC; and
- ◆ commissioning and facility readiness.

Some of the risks are shared between QHC and the contractor, including project scope changes by the owner and design errors and omissions.

One key aspect of the project is the "change order protocol" agreed between Infrastructure Ontario and QHC.² It sets out the principles governing any changes in project scope, including the "limited criteria under which change orders will be processed" and the conditions under which Infrastructure Ontario's approval is required.³ This protocol addresses an important source of cost overruns in conventional infrastructure projects. In addition, it provides a good example of an area where the project risks are mitigated by improved public sector management of the procurement process rather than being transferred to the private sector.

The Quinte Health Care Project—Project Costs Under Conventional and AFP Approaches (\$ millions)



Source: Infrastructure Ontario, *Value for Money Assessment: Quinte Health Care Belleville General*.

1 Altus Helyar Cost Consulting, "Infrastructure Ontario Build Finance Risk Analysis and Risk Matrix," p. 15.
 2 This protocol is in addition to the provisions governing contract variations in the partnership agreement, some of which require lender approval (for changes greater than a pre-set threshold).
 3 Infrastructure Ontario, *Value for Money Assessment: Quinte Health Care*, p. 13.

(cont'd on next page)

The Quinte Health Care Project—A Build-Finance AFP Project (*cont'd*)

The estimated VfM resulting from the AFP approach is \$8.6 million or 9.2 per cent of the cost of the project using a conventional procurement approach. The chart summarizes how the VfM estimate is derived. Project costs under a conventional procurement approach consist of the conventional project costs (or the base project cost, which is the same under the AFP approach) of \$68.3 million, the project risks retained by the public sector under a conventional procurement, which are valued at \$24.8 million, and the transaction costs borne by the public sector (\$1.2 million), for a total of \$94.2 million. Under the AFP approach, 60 per cent of the risks retained by the public sector under a conventional procurement are transferred to the private contractor (i.e., \$14.9 million). The cost of transferring these risks to the private contractor is \$6.3 million. This sum is made up of the risk premium (\$4 million) that the contractor requires for managing the additional risks and the

incremental transaction costs incurred under the AFP approach (\$2.3 million), which partly serve to carry out additional due diligence under the AFP approach. The result is an AFP project cost to the public sector of \$85.6 million, which represents a savings of \$8.6 million relative to the cost of the traditional approach. (Note that the difference between the \$85.6 million figure and the \$72.2 million capital cost paid to the contractor is the value of the risks retained by the private sector, \$9.9 million, and the total transaction costs borne by the public sector, \$3.5 million.⁴)

As of December 10, 2009, the QHC project was 98-per-cent complete, with substantial completion scheduled for January 2010. The project has also been subject to contract variations and to claims against the public sector owner, but public sector spending has remained within the approved project budget of \$85.6 million.

⁴ The \$1.2 million in transaction costs referred to above are the estimated public sector transaction costs under conventional delivery. The public sector transaction costs under the AFP approach are \$3.5 million.

Source: Infrastructure Ontario, *Value for Money Assessment: Quinte Health Care*.

QUEBEC: AUTOROUTE 25 AND THE MONTRÉAL SUBWAY EXTENSION TO LAVAL

The Autoroute 25 project was the first P3 project to reach financial close (September 2007) in Quebec, following the establishment of Partenariats public-privé Québec in 2005. We have selected the extension of the Montréal metro to the City of Laval as the case study of a project using a conventional approach to procurement, because it was the only recent major transportation infrastructure project in Quebec that has been the subject of third-party reviews in the public domain. Although outcomes of the two projects are not directly comparable, the two case studies have led to several valuable observations.

First, performance penalties and bonuses can be introduced in conventional contracts, but these will not necessarily force an upfront consideration of all the project requirements, costs, and risks. In this case, the contractor had communicated the under-budgeting to the procurement authority, but either it was willing to bear the penalties from exceeding the budget as a cost

of securing the contract (e.g., if the penalties would be more than offset by the additional payments from increased project scope), or the penalties in question were not applicable or enforceable.

Cost certainty is an essential part of effective and transparent public sector planning when public funds are at stake.

The second point is about the importance of cost certainty in budgeting and public infrastructure planning. Cost certainty is not an end in itself. It is an essential part of effective and transparent public sector planning when public funds are at stake. In this case, one could legitimately ask whether the government of the day could have justified a decision to proceed with a budget four times the size of the original budget. In the absence of such a justification—which would usually require a cost-benefit analysis of the project—the government could have chosen to modify the project scope in order to fit a reduced budget or to cancel the project altogether.

The Montréal Subway Extension to Laval— A Construction Management Project

The extension of the Montréal subway to the City of Laval on the North Shore was first announced by the Quebec government at a cost of \$198 million just prior to the 1998 provincial election. A second order-in-council was passed by the government in June 2000 authorizing a new budget of \$379 million for a modest expansion of the project scope (three subway stations instead of two and the addition of an underground maintenance depot). The delivery date for the expansion was set for January 2006. By July 2003, when 90 per cent of the revised \$379-million budget had been spent, the government passed a third order-in-council extending the budget to \$548 million. A fourth order-in-council was later passed for a budget of \$804 million. The project was completed in April 2007 at a cost of \$745 million, which was over four times the original budget and 16 months late.

This project relied on a construction management approach to procurement, or what is known more specifically as an engineering procurement construction management (EPCM) contract. The EPCM contract was awarded to a leading engineering firm for a fixed fee of \$38 million, although it also included a bonus/penalty structure if the project came in under/over budget. The two expert reports that reviewed the events surrounding this project both noted a lack of upfront planning and estimation of the full project costs, as well as a number of other project management and monitoring failures.¹ However, it is also worth noting that the bonus and penalty provisions in the EPCM contract did not stop the engineering firm from taking on the EPCM contract, even though it knew the project budget was unrealistically low.²

1 Québec, Vérificateur Général, "Rapport de vérification"; Comité des experts, *Rapport du comité d'experts*.

2 It was widely known that the original budgets for the project were grossly underestimated. Other comparable subway construction projects in North America had cost between \$166 million and \$207 million per kilometre according to Pierre Anctil in "Can P3s Effectively Address the Infrastructure Gap."

Source: Iacobacci, *Steering a Tricky Course*, pp. 28–31.

However, the failure to consider the full costs of the project upfront essentially precluded a rational and transparent approach to the choice of public infrastructure projects. Once a substantial portion of the budget had been spent (and the full financial costs were finally estimated), the money was a sunk cost and the government of the day was poorly positioned to modify or cancel the project. This finding underlines the importance for the public interest of a procurement process that forces an upfront consideration of all costs and risks associated with a project.

The additional cost from the discovery of soil contamination is within the range of risks to be rightly assumed by the public sector; it is not usually cost-effective to transfer such risks to the private partner.

The A25 project is currently under construction, and 40 per cent of the project was completed as of April 2009. However, there have been a number of significant contract variations to date. One of these relates to the cost of disposing of contaminated soil, which was not known at the time the partnership agreement was signed. This risk, which was assumed by the public sector, has turned out to cost \$14.8 million. The other variation relates to several modifications requested by the City of Montréal in relation to bicycle paths and wider sidewalks and other cosmetic changes for a total cost of \$8.7 million.¹⁸

The additional costs resulting from the discovery of soil contamination is within the range of risks that was rightly assumed by the public sector, since it is not usually cost-effective to transfer such risks to the private partner. However, it is less clear why the changes requested by the City of Montréal were agreed to at this late stage.¹⁹ These kinds of requirements should

18 See Radio-Canada, "Dépassement des coûts."

19 According to one source, the City of Montréal was opposed to the A25 project and chose not to participate in the planning. Once the procurement process for the project had been completed, the City of Montréal requested further changes to the project, and these were agreed to by the Ministère des Transports du Québec.

be possible to identify in advance of the procurement process through appropriate consultation with the interested parties. Nevertheless, the A25 project remains on schedule and within the original approved budget for the P3 project.

One of the potential future challenges that could compromise the VfM savings from the A25 project on an ex post basis relates to the toll system for the A25 bridge, which has varying toll rates designed in part to manage traffic levels. Should a future provincial government decide to alter the toll policy (to make it more acceptable

to the public or to enable coordination of tolling on adjacent roads), some of the toll-related provisions in the partnership agreement might have to be renegotiated. Such an eventuality would constitute an important test of whether the partnership agreement was structured in a way that minimizes future transaction costs related to unexpected negotiations. In general, it is advisable for the public sector to retain control of those aspects of a facility that are subject to a high degree of uncertainty regarding future requirements, because contractual changes can be more expensive to execute under a long-term agreement than under a conventional short-term contract.

Completion of Autoroute 25 in the Montréal Region—A First Major P3 Project for Quebec

The completion of the Autoroute 25 has been in the planning stages since the 1970s, and more recently it has been identified as a priority project under Transports Québec's Greater Montréal Area Traffic Management Plan. The project involves completing a 7.2-kilometre portion of the A25 from Henri-Bourassa Boulevard in Montréal to the interchange with the A440 in Laval, including a new 1.2-kilometre bridge and an electronic toll system with a collection point on the north side of the bridge. The completed link will provide for more efficient road access between the east end of Montréal and Laval as well as the Lanaudière region. It will also reduce congestion on the A40, which crosses Montréal and is currently used by cars and trucks that need to travel between the northeast of Montréal and the Laval/Lanaudière region. A socio-economic cost-benefit study conducted by Transports Québec indicated that the quantified benefits were estimated at more than three times the project costs. Specifically, the ratio was 3.4, which is a clear indication of the need for the project, even after taking into account environmental and road safety impacts.

The private sector partner selected through the competitive two-stage procurement was Concession A25 S.E.C., with Macquarie Infrastructure Partners as the equity provider. The contract term is 35 years, including 31 years for operation,

maintenance, and rehabilitation of the facility. The partner has the following responsibilities and risks:

- ◆ design and construction of the facility, including construction cost and schedule risks, commissioning of the facility, selection of the tolling system, and geotechnical risks (the public sector retains responsibilities for any undocumented soil contamination and the acquisition and ownership of the rights-of-way);
- ◆ operation of the electronic tolling system, including setting the toll rates within the maximum and minimum toll rates prescribed by the agreement. It shares the toll revenue and collection risks with the public partner;¹
- ◆ operation, maintenance, and rehabilitation of the facility and the tolling system; and
- ◆ financing.

The private partner is paid through an annual availability payment of \$13.4 million (without any indexation) beginning at the date of commissioning, with deductions for non-availability of the facility or for other non-performance issues related to maintenance and rehabilitation requirements specified in the agreement. In addition, the private partner receives \$80 million staggered across certain construction milestones. The latter payments reduce the financing requirements but do not materially affect the incentives to commission the facility by the scheduled date in the third quarter of 2011.

¹ The toll system was designed to give the private partner the pricing tools needed to keep traffic levels within a maximum flow of 68,000 vehicles per day, which was a condition of the environmental assessment process. Thus, the private partner can set tolls in excess of the maximum level prescribed by the agreement if actual traffic levels—calculated as an annual moving average—exceed the 68,000 threshold in any month. See The Canadian Council for Public-Private Partnerships, "Autoroute 25 (Montréal)."

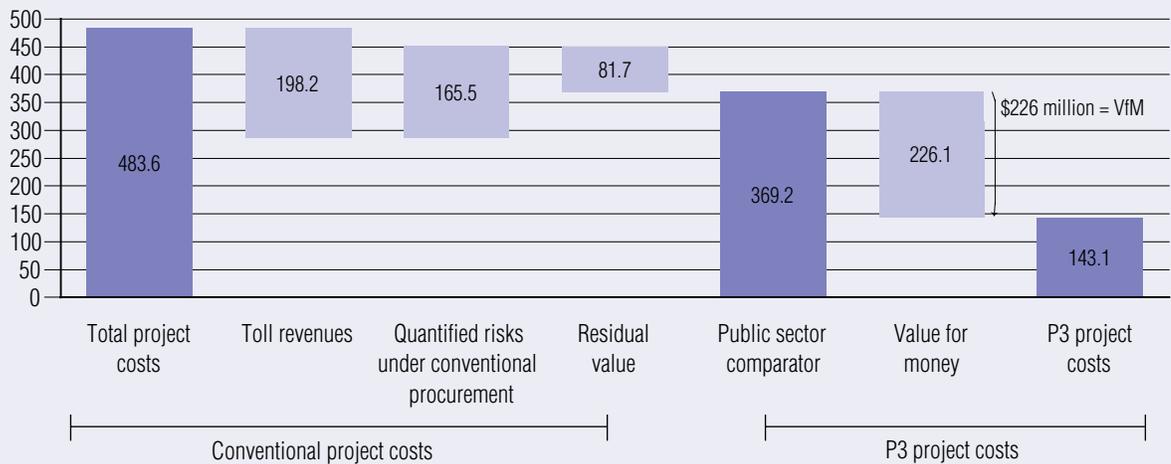
(cont'd on next page)

Completion of Autoroute 25 in the Montréal Region—A First Major P3 Project for Quebec (cont'd)

A comparison of the costs of the A25 project under a conventional procurement and a P3 procurement approach is shown in the chart. The public sector comparator (PSC) is calculated starting with the total cost of the project to the public sector over the 35-year term, which was estimated at \$483.6 million in 2007 dollars. We then subtract the expected value of the toll revenues (\$198.2 million) and add the value of the quantified risks retained by the public sector, which include \$68.7 million for cost overruns and \$85.7 million for risks related to toll

revenues. We also add the residual value of the facility at the end of the contract term, when it is returned to the public sector, giving a PSC of \$369.2 million. In contrast, the net cost of the project under the P3 option is \$143.1 million, thereby giving VfM savings of \$226.1 million, or 61 per cent of the net costs under the PSC. The magnitude of the VfM savings is due to the transfer of risks to the private partner and to the fact that the private partner estimated higher toll revenues than those estimated as part of the PSC (i.e., \$198.2 million).

Autoroute 25—Project Costs Under Conventional and P3 Approaches
(2007 \$ millions)



Source: Transports Québec and Partenariats public-privé Québec. *Value for Money Report for the Design, Construction, Financing Operation and Maintenance of the Completion of Autoroute 25.*

Sources: Transports Québec and Partenariats public-privé Québec, *Value for Money Report for the Design, Construction, Financing, Operation and Maintenance of the Completion of Autoroute 25*; The Canadian Council for Public-Private Partnerships, "Autoroute 25 (Montréal)."

Conclusions

Chapter Summary

- ◆ The second wave of P3s initiated under the guidance of specialized infrastructure procurement agencies (or offices) has delivered important efficiency gains relative to conventional procurement approaches.
- ◆ The Canadian results are broadly consistent with international evidence from the United Kingdom and Australia.
- ◆ British Columbia, Alberta, Ontario, and Quebec have all developed a rigorous VfM methodology for comparing the costs of P3s and traditional procurements.
- ◆ Several factors drive the efficiency gains that arise from P3s, the most important of which is the optimal risk allocation process.
- ◆ The procurement process for the second wave of P3s has been considerably more transparent than that for conventional infrastructure projects of equivalent scale.

This pan-Canadian assessment of public-private partnerships for the procurement of public infrastructure has found that the second wave of P3s initiated under the guidance of specialized infrastructure procurement agencies (or offices within central government agencies) have to date delivered important efficiency

gains relative to conventional procurement approaches. These efficiency gains take the form of cost savings and time savings. The expected value of these savings is well documented before the start of each project based on value-for-money assessments undertaken as part of the procurement process. They can also be verified on an ex post basis—that is, after project completion—as in the case of the construction of the southeast and southwest legs of the Edmonton Ring Road. These two projects were broadly comparable, but the P3-procured project took two years less to deliver than the conventionally procured project.

None of these 19 projects has experienced construction cost overruns that were borne by the public sector.

The time and cost performance of P3 projects can also be evaluated against the targets set within each of the respective projects, that is, for their time and cost certainty. Although most of the second wave of Canadian P3 projects have not completed the construction phase, the 19 projects that have passed this milestone have mostly been delivered either early or on schedule, with only two projects delivered up to two months late (with financial penalties resulting from the delays borne by the private partner or by the public sector partner in the case where delays were due to risks retained by the public sector). With regard to cost certainty, none of these 19 projects (or others that are being completed) has experienced construction cost overruns that were

borne by the public sector (unless the cost overruns were related to items where the public sector retained the risks).

These Canadian results are also broadly consistent with international evidence from the United Kingdom and Australia—the jurisdictions that have the most experience with P3s. Finally, it is worth noting that cost certainty in a project is vital from a public interest perspective, because it enables public decision makers to allocate public funds to the right projects. Without cost certainty, the public sector is often compelled to channel additional funds midway through a project regardless of any value-for-money considerations. This occurred in the Vancouver Convention Centre Extension Project, the Sudbury Regional Hospital (Phase I) project, and the Montréal subway extension to Laval, all of which were conventional procurements.

Each infrastructure project requires a rigorous VfM assessment to ensure that a P3 procurement option delivers value relative to a conventional procurement method, as is standard practice for all second-wave P3s.

Despite the successes to date, not all P3 infrastructure projects generate efficiency gains, because in some cases the gains can be more than offset by a combination of the incremental cost of private financing, any additional costs arising from transferring the risks to the private consortium (i.e., the risk premium), and the incremental transaction costs. This is why each infrastructure project requires a rigorous VfM assessment to ensure that a P3 procurement option delivers value relative to a conventional procurement method, as is standard practice for all second-wave P3s.

VfM tests are designed to ensure that the risk transfer effected in a P3 agreement is cost-effective for the public sector owner of the infrastructure. Our review of the available VfM studies and guidance documents suggests that each of the four jurisdictions under consideration—British Columbia, Alberta, Ontario, and Quebec—has developed a rigorous VfM methodology for comparing the costs of P3s and traditional procurements. The VfM test is not undertaken as an afterthought. Rather, a first pass of the

test is done before the start of the procurement process (i.e., before the RFQ stage), and the test is then finalized after the financial close. We also believe there is value in updating the VfM studies ex post at key milestones, such as at completion of construction and periodically thereafter. Interestingly, conventional infrastructure procurements are normally not subject to any VfM-type tests to inform procurement strategy.

Several factors drive the efficiency gains that arise from P3s. The first is the optimal risk allocation process, which is at the heart of the P3 procurement process adopted by the P3 agencies and offices across Canada. The optimal risk allocation process involves identifying and valuing project risk exposure upfront and transferring to private consortia those risks for which these firms have the requisite risk management and mitigation experience. This risk transfer process also has the considerable advantage of forcing an upfront consideration (i.e., before or during procurement) of all the project requirements and associated costs. Without such upfront assessments, there is a much higher risk of cost overruns, as evidenced in several of our case studies of conventional infrastructure procurement.

Performance-based contract provisions, which specify desired outputs rather than prescribed inputs, are another driver of efficiencies in P3 contracts. These contract provisions encourage private consortia to consider the most cost-effective delivery practices. The integration of the design, construction, operation, and maintenance phases of a project is yet another potential driver of efficiencies, because it allows private firms to adopt innovations that can reduce whole life-cycle costs, even if they involve more investment in the design or construction stages. However, there is little empirical evidence of the relative importance of these two efficiency drivers. Moreover, both these efficiency drivers can be adopted in conventional forms of contracting, provided that care is taken to specify the desired outputs and to design an appropriate contract over a substantial part of the expected useful life of the infrastructure asset.

Private finance is the fourth efficiency driver in P3 projects. By virtue of this feature of P3s, the public sector pays the private consortium only upon delivery of the facility (although some milestone payments are sometimes

made before completion of construction). This provides a powerful incentive to ensure that the facility is built in a timely manner and in a way that meets the contractual requirements. This payment by results forces consortia to carry most of the financing requirements for the project, which includes sizable debt obligations. Without these financing requirements, some private firms would have little incentive to complete their contractual obligations should they encounter significant cost overruns that they cannot pass on to the public sector. Therefore, private financing can be considered the glue that binds together the other efficiency drivers mentioned above, particularly the optimal risk allocation process and the performance-based contract provisions.

It is also worth noting that private financing provides some of the discipline that ensures that the public sector owners consider all the project requirements and associated costs upfront. Bidders already have an obvious interest in doing this, particularly with respect to the risks being transferred to them in the contract. However, it appears that private financing may also encourage public sector owners to do the same, because these contracts can be more difficult and expensive to modify than conventional contracts. Part of this procurement discipline is due to the fact that the process is managed by specialized infrastructure agencies that attempt to ensure that the public sector owners do all the required planning upfront. But the private financing provides these agencies with additional leverage to ensure a disciplined and efficient procurement process.

Competitive procurement is also an important driver of efficiency gains in P3s. However, we have not discussed this feature at length, because it is not specific to P3s and is arguably important in all types of procurement.

We also found that the procurement process for the second wave of P3s has been considerably more transparent than that for conventional infrastructure projects of equivalent scale. This is because the key procurement documentation, including a redacted form of the partnership contract, is publicly available and a fairness advisor provides an opinion on the fairness and transparency of the process for all bidders. Neither of these features are typically characteristic of conventional public infrastructure procurements.

The anecdotal evidence suggests that service standards do not suffer under a P3 as critics have claimed.

We also take this opportunity to dispel a few myths about P3s in Canada. First, P3s in Canada are not about the privatization of public assets. Ownership of the new infrastructure facilities either remains with the public sector or is transferred back to the public sector at the end of the contract term. Second, the anecdotal evidence in this report suggests that there is little basis to the criticism that service standards suffer under a P3 relative to conventional maintenance contracts or even relative to in-house provision.

APPENDIX A

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APPENDIX B

Evidence Base for Second Wave of Canadian P3s

Project Name	Project Description				Bid Phase Milestones		
	Type	P3 public sector budget \$ millions (date)	Public sector comparator \$ millions (date)	Expected VfM savings \$ millions (date)	RFQ/RFE01 issued	RFP issued	Preferred bidder announced
Alberta							
Anthony Henday Drive Southeast Leg Ring Road (Edmonton)	DBFO	493 (2004)	497 (2004)	4 (2004)	Sep. 2003	Apr. 2004	Dec. 2004
Northeast Stoney Trail Ring Road (Calgary)	DBFO	650 (2007)	1,000–1,100 (2007)	350–450 (2007)	Feb. 2006	May 2006	Dec. 2006
Anthony Henday Drive Northwest Leg Ring Road (Edmonton)	DBFO	1,420 (2008)	1,660 (2008)	240 (2008)	Jul. 2007	Oct. 2007	May 2008
Alberta Schools Alternative Procurement Phase I (Calgary & Edmonton)	DBFM	634 (2008)	752 (2008)	118 (2008)	Nov. 2007	Feb. 2008	Jul. 2008
British Columbia							
Abbotsford Regional Hospital and Cancer Centre	DBFOM	424 (2004)	463 (2004)	39 (2004)	Jan. 23, 2003	May 26, 2003	Jul. 22, 2004
Britannia Mine Water Treatment Plant	DBFO	27.2 (2005)	39.7 (2005)	12.5 (2005)	Jan. 21, 2004	May 6, 2004	Nov. 4, 2004

Design, Construction, and Operating Phase Milestones							
Financial close	Substantial completion date (project agreement)	Actual completion	Contract variations to date (Y/N)	Non-performance penalties (Y/N)	Successful claims against public sector (Y/N)	End of contract term	Results/comments
Jan. 2005	Oct. 22, 2007	Oct. 22, 2007	N	Y	N	2037	Performance penalties related to the operational phase
Feb. 2007	Fall 2009	Nov. 2, 2009	Y	N	N	2039	
Jul. 2008	Fall 2011	n.a.	Y	N	N	2041	
Sep. 2008	Jun. 2010	n.a.	Y	N	N	2040	
Dec. 7, 2004	May 6, 2008	May 6, 2008	Y	Y	N	May 2038	On budget; net zero scope changes; P3 public sector budget excludes \$75-million capital contribution from local health authorities
Jan. 12, 2005	Jan. 1, 2006	Jan. 1, 2006	Y	Y	N	Jan. 2026	On budget; interim operating period began 50 days earlier

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Project Name	Project Description				Bid Phase Milestones		
	Type	P3 public sector budget \$ millions (date)	Public sector comparator \$ millions (date)	Expected VfM savings \$ millions (date)	RFQ/RFE01 issued	RFP issued	Preferred bidder announced
Sierra Yoyo Desan Resource Road (SYD)	DBFO	n.a.	n.a.	n.a.	Jul. 18, 2003	Sep. 29, 2003	Dec. 15, 2003
Gordon & Leslie Diamond Health Care Centre	DBFM	64 (2004)	81 (2004)	17 (2004)	Oct. 1, 2002	Jun. 1, 2003	Jan. 1, 2004
Kicking Horse Canyon Phase 2 (Highway Improvement)	DBFO	166.3 (2005)	184.4 (2005)	18.1 (2005)	Jul. 21, 2004	Oct. 27, 2004	Sep. 23, 2005
William R. Bennett Bridge	DBFO	170 (2005)	195 (2005)	25 (2005)	Dec. 30, 2003	May 31, 2004	Jun. 1, 2005
Charles Jago Northern Sport Centre	DB	n.a.	n.a.	n.a.	Jun. 29, 2005	No RFP issued; early partnering process	Sep. 23, 2005
Sea-to-Sky Highway Improvement Project	DBFO	789.9 (2005)	744 (2004)	-45.9	Mar. 3, 2004	May 26, 2004	Mar. 2, 2005
Canada Line	DBFO	1,658 (2005)	1,750 (2005)	92 (2005)	Nov. 1, 2002	Aug. 25, 2003	Dec. 1, 2004
Golden Ears Bridge	DBFO	1,126.6 (2006)	1,132.9 (2006)	6.3 (2006)	Oct. 15, 2004	Jan. 1, 2005	Dec. 7, 2005
Pitt River Bridge and Mary Hill Interchange (Gateway)	DB	n.a.	n.a.	n.a.	Feb. 22, 2006	Jun. 15, 2006	Feb. 9, 2007
Port Mann/Highway 1 (Gateway)	DB	n.a.	n.a.	n.a.	May 22, 2007	Aug. 7, 2007	Aug. 19, 2008
Kelowna and Vernon Hospitals	DBFM	442.7 (2008)	468.1 (2008)	25.4 (2008)	May 7, 2007	Sep. 25, 2007	May 8, 2008

Design, Construction, and Operating Phase Milestones							
Financial close	Substantial completion date (project agreement)	Actual completion	Contract variations to date (Y/N)	Non-performance penalties (Y/N)	Successful claims against public sector (Y/N)	End of contract term	Results/comments
Jun. 21, 2004	Bypass and bridge Nov. 30, 2004; SYD upgrade Nov. 30, 2005	Bypass and bridge Oct. 27, 2004; SYD upgrade Nov. 30, 2005	N	N	N	Jun. 2020	On budget; one component delivered 34 days ahead of schedule, remainder of project on time
Sep. 29, 2004	Aug. 18, 2006	Aug. 18, 2006	N	N	N	Aug. 2036	On budget
Oct. 28, 2005	Aug. 30, 2007	Jun. 16, 2007	Y	Y	N	2032	On budget; delivered 77 days ahead of schedule
Jun. 30, 2005	Sep. 15, 2008	May 30, 2008	Y	N	N	2035	On budget; delivered 108 days ahead of schedule
Apr. 25, 2006	Aug. 11, 2007	Aug. 11, 2007	n.a.	n.a.	n.a.	n.a.	On budget; on schedule; VfM studies not undertaken for DB contracts
Jun. 3, 2005	Aug. 31, 2009	Aug. 31, 2009	Y	Y	N	2030	B.C. Ministry of Transport asserts that the qualitative benefits demonstrate positive VfM
Jul. 29, 2005	Nov. 30, 2009	Sep. 2009	n.a.	n.a.	n.a.	2040	Operational three months ahead of schedule; on budget
Mar. 3, 2006	Jul. 1, 2009	Jun. 16, 2009	n.a.	n.a.	n.a.	2041	Operational Jun. 16, 2009, two weeks ahead of schedule
Feb. 9, 2007	Oct. 2009	Oct. 25, 2009	Y	n.a.	Y	n.a.	VfM studies not undertaken for DB contracts
Feb. 2009	Dec. 2010	n.a.	N	n.a.	N	n.a.	VfM studies not undertaken for DB contracts
Aug. 20, 2008	UBCO Clinical Academic Campus and parkade: Dec. 2009; VJH Patient Care Tower: May 2011; KGH Patient Care Tower: Aug. 2012	n.a.	Y	n.a.	Y	2042	

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Project Name	Project Description				Bid Phase Milestones		
	Type	P3 public sector budget \$ millions (date)	Public sector comparator \$ millions (date)	Expected VfM savings \$ millions (date)	RFQ/RFE01 issued	RFP issued	Preferred bidder announced
Royal Jubilee Hospital Patient Care Centre	DBFM	340.8 (2008)	363 (2008)	22.2 (2008)	May 11, 2007	Sep. 19, 2007	Apr. 7, 2008
Surrey Outpatient Hospital	DBFM	234.2 (2008)	256.7 (2008)	22.5 (2008)	Mar. 21, 2007	Sep. 17, 2007	May 23, 2008
Fort St. John Hospital and Residential Care Facility	DBFM	n.a.	n.a.	n.a.	May 6, 2008	Oct. 17, 2008	Mar. 31, 2009
Ontario							
Hôpital Montfort	BF	220 (nominal)	239.4 (nominal)	19 (nominal)	Mar. 2005	Sep. 2005	May 2006
Durham Consolidated Courthouse	DBFM	377 (Mar. 2007)	426 (Mar. 2007)	49 (Mar. 2007)	Mar. 2005	Feb. 2006	Dec. 2006
North Bay Regional Hospital	BFM	592 (Mar. 2007)	648.5 (Mar. 2007)	57 (Mar. 2007)	Sep. 2005	Mar. 2006	Dec. 2006
Quinte Health Care	BF	86 (nominal)	94.2 (nominal)	9 (nominal)	Mar. 2006	May 2006	Jan. 2007
Trillium Health Centre—Mississauga	BF	115 (nominal)	128 (nominal)	13 (nominal)	Mar. 2006	Jun. 2006	Mar. 2007
Trillium Health Centre—Queensway	BF	Results presented with Mississauga above			Mar. 2006	Jun. 2006	Mar. 2007
Hôpital régional de Sudbury Regional Hospital	BF	153 (nominal)	170.1 (nominal)	17 (nominal)	Mar. 2006	Jun. 2006	Feb. 2007

Design, Construction, and Operating Phase Milestones							
Financial close	Substantial completion date (project agreement)	Actual completion	Contract variations to date (Y/N)	Non-performance penalties (Y/N)	Successful claims against public sector (Y/N)	End of contract term	Results/comments
Jul. 18, 2008	Dec. 2010	n.a.	N	n.a.	N	2040	
Aug. 28, 2008	Apr. 2011	n.a.	Y	n.a.	N	2041	
Jul. 16, 2009	n.a.	n.a.	N	n.a.	N	n.a.	VfM report under development
Jun. 2006	May 2010	n.a.	Y (see comments)	n.a.	Y	Jul. 2010	All variations are within approved project budget; financial risk not transferred to private partner
Mar. 2007	Nov. 2009	Nov. 24, 2009	Y (see comments)	N	N	2039	All variations are within approved project budget
Mar. 2007	Jun. 2010	n.a.	Y (see comments)	N	N	2040	All variations are within approved project budget
Feb. 2007	Jan. 2010	n.a.	Y (see comments)	n.a.	Y	May 2010	All variations are within approved project budget; claim against public sector due to a construction sector strike in summer 2007
May 2007	Aug. 2009	Oct. 2009	Y (see comments)	n.a.	Y	Oct. 2009	All variations are within approved project budget; completion delays due to risks retained by public sector; financial impact of delays borne by public sector
May 2007	Nov. 2008	Nov. 2008	Y (see comments)	n.a.	N	Dec. 2008	All variations are within approved project budget
May 2007	Dec. 2009	Oct. 2009	Y (see comments)	n.a.	N	Mar. 2010	Project reached substantial completion 33 days ahead of schedule; all variations are within approved project budget

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Project Name	Project Description				Bid Phase Milestones		
	Type	P3 public sector budget \$ millions (date)	Public sector comparator \$ millions (date)	Expected VfM savings \$ millions (date)	RFQ/RFE01 issued	RFP issued	Preferred bidder announced
St. Joseph's Health Care—London	BF	38 (nominal)	40.8 (nominal)	3 (nominal)	Mar. 2006	Aug. 2006	Feb. 2007
Roy McMurtry Youth Centre	BF	103 (nominal)	112.1 (nominal)	9 (nominal)	Mar. 2006	Aug. 2006	Feb. 2007
Sunnybrook—M-Wing/ P&G Fit-Out	BF	154 (nominal)	168.2 (nominal)	14 (nominal)	Nov. 2001	Feb. 2002	Apr. 2007
Sault Area Hospital	BFM	458 (Aug. 2007)	559.8 (Aug. 2007)	102 (Aug. 2007)	Apr. 2006	Nov. 2006	Aug. 2007
Bluewater Health (Sarnia)	BF	248 (nominal)	263.8 (nominal)	16 (nominal)	Mar. 2006	Oct. 2006	Aug. 2007
Rouge Valley Health System—Ajax and Pickering Hospital	BF	77 (nominal)	88.3 (nominal)	11 (nominal)	Nov. 2006	Feb. 2007	Aug. 2007
Hamilton Health Sciences—Gen. Redevelopment	BF	54 (nominal)	61.2 (nominal)	7 (nominal)	Nov. 2006	Mar. 2007	Sep. 2007
Runnymede Healthcare Centre	BF	78 (nominal)	89 (nominal)	11 (nominal)	Nov. 2006	Apr. 2007	Aug. 2007
Hamilton Health Sciences—Henderson Hospital	BF	249 (nominal)	279.2 (nominal)	30 (nominal)	Nov. 2006	Mar. 2007	Dec. 2007
Ottawa Hospital Regional Cancer Program—Queensway Carleton Hospital	BF	81 (nominal)	91.5 (nominal)	11 (nominal)	Nov. 2006	May 2007	Dec. 2007
Ottawa Hospital Regional Cancer Program—The Ottawa Hospital	BF	59 (nominal)	67.3 (nominal)	8 (nominal)	Nov. 2006	May 2007	Dec. 2007
MGS Data Centre	DBFM	386 (Apr. 2008)	449.8 (Apr. 2008)	64 (Apr. 2008)	Feb. 2007	Jul. 2007	Feb. 2008

Design, Construction, and Operating Phase Milestones

Financial close	Substantial completion date (project agreement)	Actual completion	Contract variations to date (Y/N)	Non-performance penalties (Y/N)	Successful claims against public sector (Y/N)	End of contract term	Results/comments
May 2007	Sep. 2009	Sep. 2009	Y (see comments)	n.a.	N	Jan. 2010	Project reached substantial completion 18 days ahead of schedule; all variations are within approved project budget
Apr. 2007	Apr. 2009	Jun. 2009	Y (see comments)	n.a.	N	May 2009	Financial impact of late completion borne entirely by private partner; all variations are within approved project budget
Jun. 2007	Jun. 2010	n.a.	Y (see comments)	n.a.	N	Oct. 2010	All variations are within approved project budget
Aug. 2007	Oct. 2010	n.a.	Y (see comments)	n.a.	N	2040	All variations are within approved project budget
Oct. 2007	Oct. 2011	n.a.	Y (see comments)	n.a.	N	Jan. 2012	All variations are within approved project budget
Oct. 2007	Jul. 2010	n.a.	Y (see comments)	n.a.	N	Oct. 2010	All variations are within approved project budget
Oct. 2007	Jul. 2009	Jul. 2009	Y (see comments)	n.a.	N	Aug. 2009	All variations are within approved project budget
Oct. 2007	Jun. 2010	n.a.	Y (see comments)	n.a.	N	Aug. 2010	All variations are within approved project budget
Dec. 2007	Mar. 2012	n.a.	Y (see comments)	n.a.	N	Jun. 2009	All variations are within approved project budget
Dec. 2007	Oct. 2009	n.a.	Y (see comments)	n.a.	N	Oct. 2009	All variations are within approved project budget
Dec. 2007	May 2011	n.a.	Y (see comments)	n.a.	N	May 2011	All variations are within approved project budget
Apr. 2008	Mar. 2010	n.a.	N	n.a.	N	2040	

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Project Name	Project Description				Bid Phase Milestones		
	Type	P3 public sector budget \$ millions (date)	Public sector comparator \$ millions (date)	Expected VfM savings \$ millions (date)	RFQ/RFE01 issued	RFP issued	Preferred bidder announced
Mississauga Credit Valley Hospital	BF	198 (nominal)	223.8 (nominal)	26 (nominal)	Apr. 2007	Jul. 2007	Mar. 2008
LHSC/SJHC London—M2P2—St. Joseph's Health Care (BP5)	BF	59 (nominal)	68.1 (nominal)	9 (nominal)	Nov. 2006	Aug. 2007	Apr. 2008
LHSC/SJHC London—M2P2—Victoria Campus Hospital (VC3)	BF	256 (nominal)	296.7 (nominal)	41 (nominal)	Nov. 2006	Aug. 2007	Apr. 2008
Kingston General Hospital	BF	173 (nominal)	192.8 (nominal)	20 (nominal)	Apr. 2007	Oct. 2007	Jun. 2008
Toronto Rehabilitation Centre—University	BF	140 (nominal)	158.5 (nominal)	19 (nominal)	Apr. 2007	Oct. 2007	Jul. 2008
Woodstock General Hospital	BFM	337 (Oct. 2008)	407.5 (Oct. 2008)	71 (Oct. 2008)	Jun. 2007	Jan. 2008	Aug. 2008
Lakeridge Health Corp.	BF	112 (nominal)	123 (nominal)	11 (nominal)	Oct. 2007	May 2008	Feb. 2009
The Royal Victoria Hospital	BF	317 (nominal)	361 (nominal)	44 (nominal)	Oct. 2007	Jun. 2008	Feb. 2009
Niagara Health System	DBFM	1,065 (Mar. 2009)	1,161 (Mar. 2009)	96 (Mar. 2009)	Nov. 2006	Aug. 2007	Aug. 2008
Windsor Regional Hospital	BF	n.a.	n.a.	n.a.	Oct. 2007	Oct. 2008	May 2009
Bridgepoint Health	DBFM	820.2 (Aug. 2009)	915.2 (Aug. 2009)	95 (Aug. 2009)	Nov. 2007	Jul. 2008	Jun. 2009
Toronto South Detention Centre	DBFM	n.a.	n.a.	n.a.	Jun. 2008	Oct. 2008	Aug. 2009
Quebec							
Autoroute 25	DBFOM	143.1 (2007)	369.2 (2007)	226.1 (2007)	Dec. 22, 2005	Jul. 20, 2006	Jun. 9, 2007
Autoroute 30	DBFOM	1,539 (2008)	2,289.8 (2008)	751 (2008)	Nov. 5, 2006	Jun. 20, 2007	Jun. 19, 2008

Design, Construction, and Operating Phase Milestones							
Financial close	Substantial completion date (project agreement)	Actual completion	Contract variations to date (Y/N)	Non-performance penalties (Y/N)	Successful claims against public sector (Y/N)	End of contract term	Results/comments
May 2008	May 2011	n.a.	Y (see comments)	n.a.	N	Sep. 2011	All variations are within approved project budget
Jun. 2008	Aug. 2010	n.a.	Y (see comments)	n.a.	N	Sep. 2010	All variations are within approved project budget
Jun. 2008	Mar. 2011	n.a.	Y (see comments)	n.a.	N	May 2011	All variations are within approved project budget
Jul. 2008	May 2012	n.a.	Y (see comments)	n.a.	N	May 2012	All variations are within approved project budget
Aug. 2008	Sep. 2011	n.a.	Y (see comments)	n.a.	N	Oct. 2011	All variations are within approved project budget
Oct. 2008	Jun. 2011	n.a.	Y (see comments)	n.a.	N	2041	All variations are within approved project budget
Feb. 2009	May 2011	n.a.	N	n.a.	N	Sep. 2011	
Feb. 2009	Feb. 2013	n.a.	N	n.a.	N	Apr. 2013	
Mar. 2009	Nov. 2012	n.a.	N	n.a.	N	2042	
Jun. 2009	May 2012	n.a.	N	n.a.	N	Jun. 2012	VfM report under development
Aug. 2009	Mar. 2013	n.a.	N	n.a.	N	2043	
Oct. 2009	Sep. 2012	n.a.	N	n.a.	N	2042	VfM report under development
Sep. 13, 2007	Oct. 2011	n.a.	Y	n.a.	Y	2042	On budget; P3 budgets are net of \$198 million of estimated toll revenues
Sep. 25, 2008	Dec. 2012	n.a.	N	n.a.	N	2043	P3 budgets are net of \$21 million of estimated toll revenues

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Project Name	Project Description				Bid Phase Milestones		
	Type	P3 public sector budget \$ millions (date)	Public sector comparator \$ millions (date)	Expected VfM savings \$ millions (date)	RFQ/RFEOI issued	RFP issued	Preferred bidder announced
Motorway Service Areas (Phase I)	DBFOM	-4 (2008)	13.1 (2008)	17 (2008)	Nov. 9, 2006	Mar. 23, 2007	Jan. 9, 2008
Champlain Residential and Long-Term Care Centre (RLCC)	DBFOM	222 (2009)	320 (2009)	98 (2009)	Jul. 6, 2007	Jun. 25, 2008	Feb. 13, 2009
Montréal Symphony Orchestra Hall	DBFOM	266.8 (2009)	313.6 (2009)	46.8 (2009)	Dec. 15, 2006	Dec. 21, 2007	Mar. 19, 2009

Notes:
 Data correct as of November 2009.
 Value-for-money estimates may not be strictly comparable across jurisdictions because of differences in methodology.
 n.a. = Not available or not applicable.
 Abbreviations:
 BF: Build-finance
 BFM: Build-finance-maintain
 DB: Design-build
 DBFM: Design-build-finance-maintain
 DBFO: Design-build-finance-operate
 DBFOM: Design-build-finance-operate-maintain
 Sources: Alberta Treasury Board; Infrastructure Ontario; Partnerships BC; Infrastructure Québec. Most of the data presented above are available from the websites of the respective P

Design, Construction, and Operating Phase Milestones							
Financial close	Substantial completion date (project agreement)	Actual completion	Contract variations to date (Y/N)	Non-performance penalties (Y/N)	Successful claims against public sector (Y/N)	End of contract term	Results/comments
Sep. 30, 2008	Sep. 2010	n.a.	N	n.a.	N	2038	
Apr. 3, 2009	Oct. 2010	n.a.	N	n.a.	N	2034	
Apr. 22, 2009	May 2011	n.a.	N	n.a.	N	2038	

3 agencies or public sector departments.

APPENDIX C

Interview Guide

Please answer the following questions and ignore those not relevant to your organization. For the purpose of this interview, public-private partnerships (P3s) are long-term contractual arrangements wherein a public sector entity procures the design, construction, operation, and/or maintenance of an asset, usually from a consortium of private sector firms, and privately financed over a time period approaching the useful economic life of the asset. P3s may not include all of the elements above, but they are likely to include a construction phase and private financing.

Question 1—Specifically, what is your organization's role, responsibility, involvement with or interest in P3s in Canada?

BENEFITS AND DRAWBACKS OF P3s

This section is intended to discuss the benefits and drawbacks of P3s, including criticisms voiced by various groups. The objective is to dispel any misconceptions about the PPP procurement process.

Question 2—Can the procurement of an asset (i.e., construction, maintenance) through a P3 provide **significant efficiencies (or net benefits)** for the public sector owner of the asset as compared to a conventional procurement of the same asset? If so, please explain why or under what conditions (e.g., cost-effective allocation of risks between

the public and private sector; synergies between design, construction, and facilities management or operation private consortium is the project steward in a P3.)

Question 2a—Can you provide examples or evidence of efficiencies (or inefficiencies) specific to any P3 projects (compared with conventional projects)?

Question 3—One of the arguments made in favour of P3s is that these types of procurements are more likely to be **on time and on budget** and if budgets or milestones are not met, the private consortia bears the costs (or penalties). Can you provide any evidence—on a project-by-project basis—of whether or not major budget, scheduling, and delivery milestones were met?

Question 4—Have there been any P3 projects that have exceeded the original budgets or timelines (or where the assets were not delivered as specified in the contract) and where the associated **cost overruns were borne by the public sector**? If so, please explain the circumstances (e.g., post-closing revisions ordered by the public sector).

Question 5—Some critics claim that **service levels have suffered under P3s**. Is there any evidence that service levels stipulated in the operational or maintenance phases of P3 contracts have not been

met? Or that the service levels stipulated in the contracts are inferior to those observed through conventional delivery of services? If so, please explain.

Question 6—In contrast, some have argued that P3s are a way to ensure that the public sector pre-commits to **maintaining a minimum level of service** (e.g., facilities maintenance) during the whole life of the contract, as compared with conventional service delivery, which has been more erratic. Please comment and provide examples if you agree.

Question 7—One criticism of P3s is that the cost of the **private financing**, particularly debt financing, in these deals is greater than the cost of public sector borrowing. Please discuss the role of private financing in P3s; whether there are any benefits or savings that offset the higher financing costs; and what guarantees there are, if any (e.g., value-for-money tests), that the benefits exceed the costs.

Question 8—P3s are relatively complex, long-term contracts and it is often argued that the **transaction costs** of preparing, negotiating, finalizing, and possibly even managing these contracts are greater than the transaction costs for conventional procurements of equivalent assets and services. Do you agree? Are there any offsetting benefits (e.g., due diligence)? What are the implications (e.g., minimum deal size thresholds)? Please comment.

Question 9—Labour unions have argued that P3 efficiencies are achieved at the expense of **workers' pay and working conditions**, especially if the operational or service delivery phase involves non-union staff while comparable services are normally

delivered by union staff. Is there any evidence of such sources of savings in Canadian P3s? Are there any safeguards in your jurisdiction requiring private sector P3 consortia to hire existing public-sector employees at the same terms and conditions stipulated in their respective employment contracts?

Question 10—If P3 savings during the operational or service delivery phase are achieved through **fewer hours worked**, has this materially affected service levels or were these savings achieved through smarter work practices and more flexible working arrangements? Please provide examples.

Question 11—Cost implications of contract revisions. P3s are long-term contracts, but public policy and governments are subject to change and this can entail changes in the public sector's requirements under P3 contracts. In principle, these changes can usually be achieved through contract revisions or, at the limit, through the termination of the P3 contract. Is there any evidence that revisions under P3 contracts are more (or less) costly to achieve than under conventional service delivery contracts? Or are contract revisions more (or less) likely to arise under P3 contracts, since these are longer-term contracts?

Question 12—Are P3s a procurement **device for reducing public sector deficits**? While some early Canadian P3 deals were off-balance-sheet transactions, please indicate when (i.e., what year?) P3 transactions in your jurisdiction became fully recognized in public accounts.

Question 13—Some opponents liken P3s to **privatization in disguise**, especially in the health sector. Does this claim have any merit? Discuss in terms asset ownership, service delivery, and public policy responsibilities.

COMPARING P3s AND CONVENTIONAL PROCUREMENT

PROCESSES

Question 14—What are the main **differences (and similarities) between a P3 and a conventional procurement** in your jurisdiction (or in your experience)? Please discuss contract length and risk allocation between the parties. Please provide examples and stipulate what you mean by a conventional procurement for goods or services (e.g., an engineering procurement construction management contract).

Question 15—P3 contracts in recent years have been subject to a **value for money (VfM) test** to ensure that the public sector can reasonably expect to achieve savings relative to a conventional procurement of the same assets and services. If you are familiar with the methodology for these VfM tests in your jurisdiction, are these tests carried out in a rigorous manner and based on conservative assumptions? Are conventional procurements in your jurisdiction subject to any similar tests (i.e., must they demonstrate value for money relative to other procurement options)?

Question 16—Are P3s subject to any other tests or requirements that are not typically imposed on conventional procurements? Are P3s exempt from any requirements that prevail under conventional procurements?

Question 17—Transparency of process—bid phase. What information is made available to the public (and what remains confidential) during the competitive phase of a P3 procurement, from expressions of interest through to financial close? How does this differ relative to conventional procurements?

Question 18—Transparency of process—construction and operational phases. What information is made available to the public (and what remains confidential) during the construction and operational phases of a P3 procurement? How does this differ relative to conventional procurements?

P3 SCREENING CRITERIA

Recent literature indicates that only a minority of infrastructure projects is delivered as P3s (usually less than 20 per cent) and that P3s can generate significant benefits only if the right project is selected for a P3 procurement. Some of the characteristics that describe the “right project” include:

- ◆ measurable outputs for the project;
- ◆ the feasibility of cost-effective risk transfer to the private sector;
- ◆ project and policy certainty over a 20- or 30-year period (i.e., during the contract term);
- ◆ a deal size of at least \$75 million to \$100 million in order to attract private sector bidders; and
- ◆ a competitive market that should produce at least three bids.

Question 19—Please comment on the validity of the above project selection criteria. Are these or any other criteria used in practice to select projects for P3 treatment in your jurisdiction?

Question 20—Do the screening criteria help identify whether any of the project risks (schedule risk, construction cost, revenue risk) can be transferred cost-effectively to the private consortium?

Question 21—Are you aware of whether a P3 agency (or government department) has ever rejected a potential P3 project because it was not deemed suitable? If so, please explain the circumstances.

P3s, THE CREDIT CRISIS AND INFRASTRUCTURE STIMULUS

Question 22—Is the higher cost and reduced availability of debt financing, which accounts for the bulk of financing in highly leveraged infrastructure deals, delaying some infrastructure projects or even leading to their indefinite postponement? Please provide examples.

Question 23—Is infrastructure financing for P3s likely to benefit from a “flight to quality” among investors, since such projects are often backed by availability payments from the public sector?

Question 24—Is there a role for the public sector to play in unlocking private sector financing for P3 infrastructure projects? Should the public sector provide interim or bridge financing for a limited period of time, up to a point where the deal is refinanced entirely on a private basis? Are there any other measures that should be taken by the public sector? Are any of these likely to compromise the efficiency benefits of P3s?

Question 25—Is there a role for P3s in delivering infrastructure and providing fiscal stimulus during the current downturn?

CASE STUDIES

This research project calls for four case studies, one each from the provinces of Quebec, Ontario, Alberta and British Columbia—with the objective of comparing the PPP process to the traditional procurement process in the respective jurisdictions.

Question 26—In view of the objectives of this research project, could you suggest one or more P3 projects for the case studies? These are likely to be project pairs (i.e., one P3 and a comparable conventional project) where both projects are in the same asset class and where data on procurement outcomes (e.g., budgets, time lines, service levels) are available for both projects.

APPENDIX D

List of Interviewees

The interviews for this project were conducted during March and April 2009. The following people were interviewed:

- ◆ Jane Bird, Canada Line Rapid Transit Inc.
- ◆ Larry Blain, Partnerships British Columbia
- ◆ Fred Blaney, New Brunswick Department of Transportation
- ◆ Anthony Boardman, Sauder School of Business, University of British Columbia
- ◆ Graham Brown, Carillion Canada Inc.
- ◆ Guy Choinière, L'Agence des partenariats public-privé du Québec
- ◆ Nicola Cox, Transport for London
- ◆ Richard Deslauriers, PricewaterhouseCoopers LLP
- ◆ Jim Dougan, Infrastructure Ontario
- ◆ Heather Douglas, Borden Ladner Gervais LLP
- ◆ Stephen Gash, EllisDon Corporation
- ◆ Vaz Georgiou, Infrastructure Ontario
- ◆ Russell Goodman, PricewaterhouseCoopers LLP
- ◆ Nicholas Hahn, Macquarie Capital Markets Canada
- ◆ Pierre Lefebvre, L'Agence des partenariats public-privé du Québec
- ◆ Bruce Laughton, Quinte Health Care Corporation
- ◆ David Livingston, Infrastructure Ontario
- ◆ Don Mackinnon, Power Workers' Union
- ◆ John McBride, PPP Canada
- ◆ Duncan McCallum, RBC Capital Markets
- ◆ David McFadden, Gowling Lafleur Henderson LLP
- ◆ John McKendrick, Infrastructure Ontario
- ◆ Tim Murphy, McMillan LLP
- ◆ Brad Nelson, PCL Constructors Canada
- ◆ Jane Peatch, The Canadian Council for Public Private Partnerships
- ◆ Tim Philpotts, Ernst & Young Orenda Corporate Finance
- ◆ Jay Ramotar, Alberta Treasury Board
- ◆ Steven Richards, Infrastructure Ontario
- ◆ Bob Shouldice, Borden Ladner Gervais LLP
- ◆ Gabriel Soudry, L'Agence des partenariats public-privé du Québec
- ◆ Sandra Sultana, Ministère des Transports du Québec
- ◆ Susan Tinker, Partnerships British Columbia
- ◆ Julian Ware, Transport for London

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