

Investing in Water Infrastructure Projects

Value-for-Money:
Affordably Attracting Private Sector Partners

May 2010

This is a reproduction of a paper submitted to the Ontario Water Works Association (OWWA) and Ontario Municipal Water Association (OMWA) Joint Annual Conference, 02-05 May 2010, Windsor, Ontario, Canada.

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Abstract

The use of Alternative Procurement and Financing (AFP) or similar public-private partnership (PPP) models in delivering infrastructure projects and services in Canada and North America is on the rise and there is still considerable room for growth in this market when compared to the more mature markets of Europe and Australia. This presents opportunities for utilities to improve and expand upon existing systems, leveraging the resources it has control over and not necessarily relying on public sources of funding from higher levels of government which are generally inadequate in the longer term; the recent infrastructure stimulus packages in Canada and the U.S. are, in our opinion, short-sighted and inappropriate at dealing with the long-lived infrastructure that is characteristic of the water and wastewater industry.

In order to achieve “value-for-money”, a term which is intended to capture the value received by a municipality and/or utility (and the citizens it represents) when adopting an alternative to traditional procurement, municipalities and/or utilities must possess sufficient sophistication in order to develop procurement processes that appropriately balance risks and rewards between the public and private sectors such that a competitive environment for bidding on AFP or PPP projects results. These analyses consider factors that may not otherwise be considered in traditional budgeting and procurement processes.

This paper discusses key components of contract structures as well as important elements of the procurement process in order to illustrate how municipalities and/or utilities can achieve and enhance value-for-money. Real-world examples are used where appropriate.

This paper follows one presented at the 2009 conference titled “Accessing Capital Markets for Water Infrastructure Investment” and is intended to raise and/or build awareness on the parts of the owners of water infrastructure systems (typically municipalities), on the ways they can increase their effectiveness in delivering projects and service improvements.

Introduction

In North America and elsewhere, the provision of water and wastewater services has been held in the public domain for quite some time and for good reason. These infrastructure systems are necessary for reasons of public health and economic development. The machinery to deploy these systems, including funding mechanisms from various levels of government, were well established and the prosperity of these developed nations is evident.

Current circumstances, however, are somewhat different in that these

“...water needs to be under public control and that the public sector then decides what role the private sector might play in service delivery”

Richard Ayler of Thames Water
in Holland, 2005

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About Vatten Infrastructure

Vatten Infrastructure is specifically focused to deal with investments in the water and wastewater industries, including the structuring of contracts and the financing of projects using private sector participation including public-private partnerships (PPPs). Its services include: procurement advisory services; value-for-money assessments; financial and transaction advisory services; due diligence and asset management advisory services. For its engagements, Vatten assembles customized teams from its advisor network on a global scale to deploy teams with the perfect blend of financial and technical experience and expertise. For additional information, please visit www.vatten.ca.

jurisdictions now have an immense stock of public infrastructure which is at, nearing the end of or, in some cases, beyond its design life. In addition, public utilities are known for their well-intentioned conservative approaches; a philosophy which relies on the tried-and-true methods and technologies for implementing and managing infrastructure. There is a strong trend toward increasingly stringent environmental regulation and, as a result, facilities that were previously performing appropriately for a certain set of standards may no longer be capable of dealing with newer standards.

An excellent example of this is the Lake Simcoe watershed which, among other initiatives, is contemplating the requirement that the sewage treatment plants in the watershed reduce their phosphorus loadings by 20% every 10 years (Province of Ontario, 2010). Moreover, the estimated cost of achieving these reductions is on the order of \$100 million. The Province has acknowledged that investments in innovation and technology will be the most significant component towards this objective. It follows that there would be many similar situations faced across North America and elsewhere.

The deployment of newer and innovative technologies is arguably best handled by the developers of the technology which are predominantly in the private sector. It will take time and effort to build the necessary capacity within municipalities to “house” these technologies internally (i.e., operate and manage), should they wish to do so as they have in the past.

In addition to the need for new technologies driving the need for increased private sector involvement, there is also the potential for efficiencies derived from transferring certain risks to the private sector. Certainly in the case of new technologies, there would (or at least should) be a motivation on the part of the public to ensure that the providers thereof are accountable for their work; not only with respect to installation and commissioning, but also in relation to ongoing operations and performance. Other risks that can be transferred include design and construction risks which, when apportioned properly, work to reduce implementation timelines and cost overruns.

A growing trend in North America, and well established in other parts of the world, is the use of private capital for infrastructure projects through arrangements known in the lexicon as public-private partnerships (PPPs), private finance initiative (PFI), alternative financing and procurement (AFP), among others. This is increasing in relevance as financing mechanisms from higher levels of government are not keeping pace with infrastructure funding needs coupled with practical limitations on the ability to increase taxes and user fees. It is estimated that the Province of Ontario’s water and wastewater needs over the next 15 years will be on the order of \$30 to \$40 billion (Simm, 2009). The situation of North American municipalities can generally be described as having less-than-healthy balance sheets and, as such, may have some motivation to seek alternative financing solutions including partnerships with private groups (Gunderson, 2010).

By way of example, the City of Greater Sudbury is currently preparing for the procurement of a biosolids management facility whose capital expenditures alone represent over 2 years of their capital program budget. Moreover, the City has not historically had a biosolids management program having disposed of its biosolids in the tailings ponds of local mining operations and, hence, the City’s internal capacity (human and otherwise) may not be well positioned to take this responsibility under its own auspices at this time. Accordingly, the City is considering the possibility of engaging the private sector to not only design and build the new facility, but also to finance and operate it.

In summary, there are several drivers which warrant the consideration of private sector participation in the delivery of water and wastewater services. The following sections provide a brief overview of modes of engaging the private sector in varying degrees and methods of assessing their appropriateness.

“Finding the right balance: the key must be in evaluating each individual circumstance and striving for an appropriate mix between public and private participation in order to bring people the clean water they need. Some situations will tend toward privately provided or supported solution, whereas others will tend toward public solutions.”

(Maxwell, 2009)

Engaging the Private Sector

As with any successful contractual arrangement, the key is to ensure an appropriate alignment of interests among the affected parties. In doing so, the desired outcomes of the arrangements will manifest themselves with minimal enforcement and interference.

Finding the right balance means determining the optimum allocation of risk between the public and private sectors. There are a number of models to choose from and the selection of the appropriate model depends on several factors, including the nature of the project in question, the circumstances of the municipality (e.g., human resources, financial resources, political economies), and on the market conditions in the private sector.

The traditional model of design-bid-build is one where the majority of risks are carried by the municipality. The more recent adoption of the design-build (DB) approach seeks to shift the design and construction risks to the private sector party and, as such, improvements in timing for delivery and measurable cost savings are often realized. In these projects, the municipality continues to carry the risks of operations which, in many circumstances may be appropriate, however, other circumstances may warrant the expansion of the delivery model to design-build-operate (DBO). As in the Sudbury example noted earlier, it may be desirable to also shift the additional burden and risk associated with financing a project as is the case with a design-build-finance-operate (DBFO) delivery model. The list goes on and there are many variations which can be considered and customized for the situation at hand.

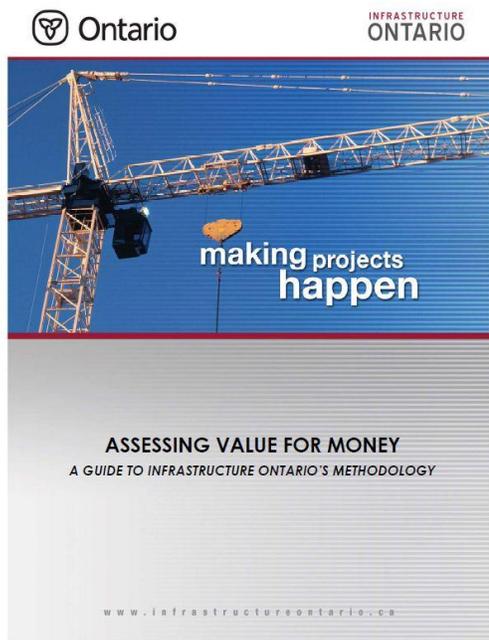
How then, does a municipality go about selecting the appropriate delivery model? Well, we can liken this process to that of buying a car. There are certain “needs” that have to be met, such as the ability to travel to and from one’s place of work (and perhaps for conducting work itself), the ability to transport family for routine activities such as school and recreation, and the setting in which one lives (e.g., urban, suburban, rural). Beyond the needs there are “wants” which may serve to fulfill one’s passion, such as performance beyond that required for transport in and of itself. Of course, we need to consider the cost implications, whether a lease, finance or purchase is appropriate, as well as the operations and maintenance liabilities one exposes themselves to (e.g., fuel efficiency, frequency and magnitude of repairs). There is also the matter of the warranty and when certain risks transfer from the manufacturer’s hands to the owner’s hands. The final decision, in a rational decision making process, is one which considers the above in the selection of the option which yields the highest value to the customer.

The next section discusses how a municipality can assess value among different procurement and delivery models.

Assessing Value-for-Money

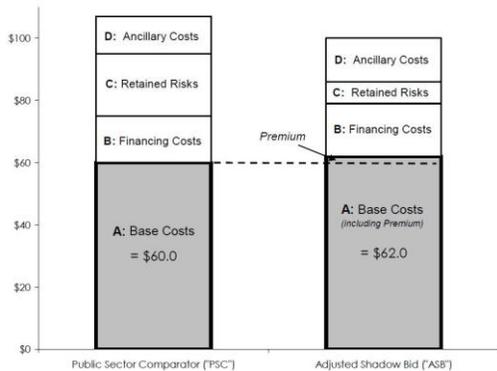
The methodology presented in this section is a significantly abbreviated version of that used by Infrastructure Ontario (2007) and the reader is encouraged to consult with the source document for additional detail.

The assessment of value-for-money for any given project is to make a comparison between the total costs of procurement using the traditional approach (e.g., design-bid-build) and procurement employing an alternative approach. In order to provide an appropriate “apples-to-apples” comparison, these total costs are more comprehensive than the up-front construction cost associated with a project and include life cycle costs, financing costs, the cost of carrying various risks and ancillary costs associated with the processing of each approach.



Base Costs

These costs include the up-front construction costs as well as the life-cycle costs associated with any installation and thereby include the costs of operations, maintenance, rehabilitation, repair and replacement. It is not uncommon that the present value of the life-cycle costs would approximate the up-front construction costs and, as such, are a significant component of the assessment. Although municipalities use design standards and criteria to produce a project which would account for these matters, the designers and constructors are generally not accountable for performance inadequacies provided that their work is not outright negligent. It is often very difficult to seek remedies in this regard, particularly after expiry of warranty and maintenance periods.



(Infrastructure Ontario, 2007)

In general, the total of these base costs would be very similar between traditional and alternative methods of procurement; however, there are two factors which may cause them to vary. One factor is the increased level of risk placed on the private sector counterparty which would be reflected in a premium in the case of the alternative procurement method. To counterbalance this is the degree to which the private sector is able to implement innovations and technologies to improve matters and, as such, exert a downward pressure on pricing. The net impact on the base cost can be positive or negative (or negligible), depending on the circumstances.

Beyond the above, the ratio of capital to operating costs on a net present value basis may be free to adjust itself to varying degrees so as to optimize value over the life of the project. Examples of this might be to incur additional up-front capital expenditures so as to minimize operations and maintenance down the road (e.g., pipe class), or to reduce capital expenditures where the future operations and maintenance costs can be controlled through sound asset management practices, depending on the circumstances (e.g., water loss control through pressure management).

Financing Costs

In the simplest of terms, it is undeniable that the public sector can attract financing at lower rates than the private sector. Therefore, the costs of financing are generally higher in the case of alternative procurement when compared to traditional procurement. This is but one element of the entire cost of a project.

That being said, it is important to note that the availability of financing (or lack thereof) on the part of a municipality may result in the deferment of a particular project and, with it, there is potentially the associated cost of lost economic development and penalties for non-performance, citing the Sudbury example as a case in point. A fair comparison would seek to quantify the implications of a “no-go” versus a “go” decision for a particular project.

Retained Risk Costs

This is by far the most significant component which acts to reduce the total cost of delivering a project using alternative approaches. It is also the component which requires the most care in estimating appropriately. There are a number of risk factors which may be considered for transfer to the private sector and which include, design risk, construction delay risk, construction cost risk, technology risk and operating risk, among several others.

The valuation of the risks retained by the municipality requires a risk assessment and analysis which determines the relevant risks to consider, the respective probabilities of occurrence as well as the consequences of occurrence. This requires the application of experience and supporting historical information.

Ancillary Costs

These costs are those associated with the processing of the different approaches and can generally be expected to be higher in the case of the alternative delivery models on account of additional project management, due diligence and transaction costs.

Selection

The selection of the delivery model to adopt is based on which model results in the lower total cost. The difference between the alternatively delivered project and the traditionally delivered project - also termed the public sector comparator (PSC) - is the “value-for-money” which the public sector benefits from in the case where the former is lower.

Public Sector Perspective

Working in the public’s interest, municipalities are responsible to use public funds in a responsible and efficient manner. When considering procurement methods, the objective is to optimize - not necessarily minimize or maximize, as the case may be - the risk premium that the private sector may apply, the cost of the risks which are transferred or retained, and the incremental ancillary costs.

Critical to this optimization process is developing a sufficient understanding of the risks and their consequences through a risk assessment and analysis process, noting that transferring certain risks may be counterproductive to producing value-for-money. In addition, the private sector will react positively (through reduced risk premiums and increased competition) where procurement processes are performed in a clear, transparent and fair process. It is common to see a Fairness Auditor or similar third party to oversee the process. A useful exercise is to conduct a market sounding study to determine the appetite of private sector participants (project developers, constructors, financiers) with respect to project specifics and transaction structures. It would be pointless to proceed down a path of developing an alternative procurement process if there are few or no interested parties to bid on the project.

A very influential mechanism to attract private sector interest (read: competition) is to align the interests of the public sector with that of the private sector through payment structures which reward the achievement of desired outcomes and penalize performance failures. Again, an appropriate balance of rewards and penalties is essential to attract value.

Some Comments on Private Sources of Capital

As noted in previous work, the capital market’s appetite for infrastructure investments can be characterized as having (much) more money than there are bankable projects to fund (Papa *et al.*, 2009). The key here is to not only make available, but also to appropriately structure projects to be attractive to this capital which is one of the motivations for considering increased private sector participation, along with other gains as noted earlier. These available funds will flow away from municipal water and wastewater projects in Ontario (and Canada) in the absence of these conditions. Moreover, these funds may be used for investments in foreign infrastructure which would lead to increased economic gains abroad. This could be particularly painful if it is Canadians’ money, held in Pension and similar funds, which is invested abroad rather than at home.

Of course, this is not, and should not be, the only reason to consider alternative procurement methods, however, these approaches should certainly not be ignored or rejected for reasons other than their relative value in comparison with traditional procurement and delivery methods.

In addition, it is important to point out some associated benefits in that properly structured public-private partnership arrangements not only deliver value-for-money, but also promote the appropriate incentives for municipalities and utilities to “live within their means”. As opposed to taking on a debt load with set payments, alternative structures allow for volume-based and performance-based pay and, in doing so, there is an incentive to maintain levels of service as payments are not made unless there is value received. This, in turn, allows municipalities to focus on appropriate rate structures that encourage the appropriate use of water - it should come as no surprise that water tariffs in Ontario and many other jurisdictions are far below the cost of providing the service and offer a distorted incentive for such a precious resource to be wasted.

Of course, there is also the situation where a municipality may be faced with a “go” or “no go” decision on a particular project undertaken using its own capital resources. In the case of a “no go” decision, whatever economic benefits (e.g., employment, increased productivity, economic development potential, etc.) cannot be realized. In the context of the value-for-money assessment, the cost of this lost (or deferred) opportunity is a cost which would be borne by the traditional procurement model and would tend to tilt the balance in favour of alternative procurement with external sources of private funding.

Conclusion

The drivers for increased private sector participation are evident in the market place and are expected to increase in intensity as North America’s stock of infrastructure ages and the fiscal pressures to maintain levels of service and to provide for economic growth continue to mount. It is therefore not surprising to see the increased adoption of alternative procurement methods which transfer risks from the public to private sectors locally and has been the case for quite some time at the international level.

Statistics from the US show that 61% of public officials have little or no experience with public-private partnerships (Shandling, 2009) and which speaks to the need for capacity building within our municipalities. Nevertheless, the expertise exists locally and supporting mechanisms have been developed at the provincial and federal levels of government within Canada. Projects can be considered for delivery using alternative procurement methods and the value of such approaches can be assessed vis-à-vis traditional methods and, selected in the case where additional value can be realized in the public’s interest.

Acknowledgments

The authors gratefully acknowledge the input of the following individuals who generously donated their time and insight to assist in the preparation of this paper and corresponding presentation:

- Elizabeth Brubaker, Environment Probe
- John Walker, Aurion Infrastructure
- Paul Calder, Borealis Infrastructure

“What matters is that people have access to clean water, that prices and profit levels are at a reasonable level and sufficient to sustain the necessary infrastructure from a longer-term life-cycle perspective, that the quality of water is acceptable, and that natural hydrological systems are preserved for future generations to use.”

(Maxwell, 2009)

Disclaimers/Disclosures

1. This report must not be construed as investment advice.

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