ABSTRACT

Fiscal constraints, declining infrastructure and increased industry specialization have led to greater interest in the government use of Public-Private Partnerships. Through these arrangements, public projects can often be designed, implemented, administered and salvaged at lower cost and risk to the public than that associated with traditional government provision. A robust and properly conducted Value for Money (VfM) analysis ensures that the selected project delivery mechanism provides greatest return on the investment of taxpayer dollars.

This document was prepared at the request of the National Council on Public-Private Partnerships to provide a guide for conducting an effective VfM analysis. The authors were graduate students at American University's School of Public Affairs, and the guide was prepared as part of their graduate program in Public Policy. Therefore, nothing in this document should be construed as representing the official position or policies of the NCPPP; all perspectives and any opinions should be attributed solely to the authors unless otherwise cited.
TABLE OF CONTENTS

Executive Summary ................................................................................................................. 3
Value for Money: A Working Definition .................................................................................. 4
The Public Sector Comparator .................................................................................................. 5
  Competitive Neutrality ........................................................................................................... 6
  Calculating the Raw PSC ....................................................................................................... 6
  Risk Analysis for PSC Comparisons ..................................................................................... 7
  Using the PSC for VfM Analysis ............................................................................................ 8
  Challenges for Accurate PSC Estimates ................................................................................. 8
  Recommendations for PSC Usage .......................................................................................... 9
Life cycle Costing ...................................................................................................................... 10
Discount Rates ....................................................................................................................... 133
  What factors go into constructing a discount rate? ............................................................... 133
  When should the discount rate be updated/re-evaluated? .................................................. 144
  Should the same discount rate be employed for both the PSC and PPP bid? ..................... 144
Risk and Risk Transfer ......................................................................................................... 155
  Risk Management Steps ...................................................................................................... 155
    Risk Identification ................................................................................................................ 155
    Risk Assessment .................................................................................................................. 155
    Risk Allocation ..................................................................................................................... 166
    Risk Mitigation ..................................................................................................................... 166
    Risk Monitoring ................................................................................................................... 166
  Risk Transferring Techniques .............................................................................................. 177
VfM Pitfalls: Cautions when Applying VfM Analysis ................................................................. 177
  Do not confuse Program-level and Project-level VfMs ....................................................... 18
  Ensure that a project not only achieves VfM but is also affordable .................................... 188
  Ensure Accurate Valuation of Risk Transfer ................................................................. 19
  Ensure that PSC Is Not Subject to “Optimism Bias” ............................................................ 19
  Understand Market Capacity .............................................................................................. 200
  Beware of “Deal Creep” ........................................................................................................ 200
Conclusion ............................................................................................................................... 21
Appendices ............................................................................................................................... 222
  Appendix A: Value for Money in the Transportation Sector ................................................. 222
    Types of Transportation Infrastructure PPPs ..................................................................... 233
    Toll Revenue Risks .............................................................................................................. 233
    Ensure Contractual Build Quality ...................................................................................... 244
    Case Study: Cesar-Chavez Toll Road .................................................................................. 244
  Appendix B: Value for Money and Social Infrastructure ....................................................... 266
    Libraries ............................................................................................................................... 266
    Civic Buildings ..................................................................................................................... 277
    Hospitals ............................................................................................................................... 288
    VfM Private Sector Partners May Offer Management Expertise ...................................... 288
EXECUTIVE SUMMARY

Value for Money (VfM) analysis has been embraced internationally as an essential tool for assessing the relative costs and benefits of alternative options available for selection for the provision of a potential public project, but it is still an underutilized tool in America. VfM analysis compares financed or provided via a public-private partnership, compared to traditional public sector project financing. Indeed, as the federal, state and local governments within the U.S. continue to embrace PPPs as a necessary solution to budget constraints and potentially declining infrastructure, a fundamental understanding of VfM is essential to ensuring that the public interest is held paramount for all public-private endeavors.

This paper seeks to clarify VfM as a concept, explain how that concept is employed in assessing PPP projects through industry-specific as well as auditing agency formats, outline general evaluative criteria for VfM analyses, and provide general guidelines for public managers who will employ VfM analyses for future projects. Our hope is to provide public sector employees with information about VfM so they can make informed decisions when determining if projects should be undertaken through a PPP or through traditional public provision. Good VfM analysis can save the public sector money, but only if projects that can succeed through PPP provision are pursued. The VfM analysis provides public managers with quantitative values representing a project’s benefits and costs under traditional public sector provision and under PPP provisioning alternatives. However, public sector managers need to be aware of and avoid the many pitfalls to VfM analysis and need to ensure that they do not embark on a project through a PPP if they cannot afford the investment.
VALUE FOR MONEY: A WORKING DEFINITION

VfM comes in many derivations and necessitates varying scopes depending on the context of the PPP (for a sample of international definitions see Appendix F). For conceptual clarity, we employ the UK’s Her Majesty’s Treasury Value for Money Assessment Guide definition as a foundational definition of Value for Money:

VfM is defined as the optimum combination of whole-of-life costs and quality (or fitness for purpose) of the good or service to meet the user’s requirement. VfM is not the choice of goods and services based on the lowest cost bid. To undertake a well-managed procurement, it is necessary to consider upfront, and at the earliest stage of procurement, what the key drivers of VfM in the procurement process will be.

A VfM assessment is often called for at all stages of a project’s life cycle, including the study of project feasibility, project selection, and project evaluation. In general, there are six determinants of VfM (Morallos, 2008):

- Risk Transfer
- Long-term Nature of Contracts
- Competition
- Performance Measurement and the use of an Output Specification
- Performance Measurement and Incentives
- Private Party’s Management Skills

Most VfM analyses use a public sector comparator (PSC), a “hypothetical constructed benchmark to assess the value-for-money of conventionally financed procurement in comparison with a privately financed scheme for delivering a publicly funded service” (Grimsey, 2004). This can be essential to providing the quantitative justification for engaging in a PPP. Typically, a VfM assessment of a PSC calls for a simple difference of total costs associated with a private bid compared to the PSC, adjusting for transferred and retained risk.

An adequate allocation of risk is essential in obtaining positive VfM and forms the primary advantage of participating in a PPP. Constructing a PSC, therefore, requires a complete understanding of life cycle costs and risk allocation. Adequate assessments of anticipated life cycle costs can ensure that initial investments by
private and public partners are accounted for and recovered over the lifetime of a project, and that the project can be completed at a final price not substantially different from what was expected. The assurance of this second component is necessary for public managers to make effective risk allocation assessments and decisions.

These concepts are further illustrated in the appendices following this guide. These sections evaluate the VfM analysis in the contexts where PPPs are most frequently employed or considered and include assessments of the following sectors: transportation, municipal social infrastructure, information and communications technology, and wastewater management.

THE PUBLIC SECTOR COMPARATOR

To perform a credible VfM analysis, a benchmark measure must be developed that can be compared against the project costs of PPP bids; this benchmark is the Public Sector Comparator (PSC). The PSC is based on a hypothetical scenario under which the government pursues the project through traditional procurement methods. The VfM estimate of the PSC is often based on the net present value of anticipated life cycle costs (Morallos, 2008), but it should also include the costs and benefits associated with complete risk allocation to the public sector (Department of the Treasury, 2006). Development of the PSC and estimating its value is seen by some as a cost-effective way of evaluating the merit of undertaking a PPP, a process that falls somewhere between the extremes of the German practice of performing a full cost-benefit analysis of all proposed project designs and the French practice of simply choosing a private bid (Sarmiento, 2010). Developing the PSC and evaluating its VfM is less intense than conducting a full cost-benefit analysis of each alternative; public managers are able to simply weigh the project’s costs and risk transfer benefits associated with private sector alternatives against the VfM associated with the estimated PSC cost. PPP alternatives that allocate risk efficiently yet still result in lower costs when compared to the PSC will generate positive VfM.
Australia, 2008). Of course, selecting the alternative with the highest VfM – whether it be the PSC or arranged through a PPP, should be the goal of any public manager.

**COMPETITIVE NEUTRALITY**

The PSC must be calculated assuming competitive neutrality; the scenario used to develop the PSC and the resulting VfM associated with the PSC must not be biased so as to artificially inflate or deflate VfM associated with public provision of the project. It is assumed that government provision of a good or service has no advantage over the public sector, so the PSC’s value should not include beneficial factors such as access to capital via tax revenues (Department of the Treasury, 2011; Infrastructure Australia, 2008). The only advantages that should be considered are those that are not available to the private sector, such as differences in state taxation rates, interest rates, and differences in regulatory costs (Department of the Treasury 10, 25). However, competitive neutrality means that the government must also include agency costs and costs associated with oversight, the administrative and human resource expenses necessary for addressing and responding to public scrutiny, the costs associated with any reporting required for appropriately disclosing the use of taxpayer funds, costs associated with the eventual transfer/salvage of the assets at the conclusion of the project, and other similar costs that only the government would incur because of its unique relationship with the public beneficiaries (Morallos, 2008).

**CALCULATING THE RAW PSC**

It is necessary to include all relevant public sector costs when calculating the PSC, such as inflation, construction costs, consultant costs, capital costs, maintenance costs, labor costs, employee costs, insurance costs, and corporate overhead costs, among others (Department of Treasury, 2011). Often the public sector fails to consider some of the costs of a project (such as employee benefits, administrative costs, and utilities), which leads to an under-representation of the PSC’s true cost (Goldbach et al, 2012). These costs need to be based on the total life cycle costs of the project (as discussed in greater detail below), and they should be
converted into net present cost (NPC) so all the costs are comparable (Department of the Treasury, 2011). The expected cash flow from the project is termed the Raw PSC, and is calculated as follows (Infrastructure Australia, 2008):

\[
\text{Raw PSC} = (\text{operating costs} - \text{third party revenue}) + \text{capital costs}.
\]

Several techniques are available for ensuring the costs of any project are properly identified. In many industries, prior projects will provide a starting point for evaluating costs. For example, when the government considers the provision of a new highway, costs estimated in previous highway projects can signal factors that should be included when calculating the Raw PSC.

**RISK ANALYSIS FOR PSC COMPARISONS**

The value of the project risks must then be added to the Raw PSC. Risk calculation for a PSC typically follows five steps: (1) identification, (2) consequence assessment, (3) risk probability calculation, (4) contingency factor, and finally (5) risk valuation (Morallos, 2008). All risk costs should be attributed to government in calculating the VfM of the PSC, and should have a risk-free discount rate applied to it, which in Australia is the interest rate on ten-year government bonds (Department of Treasury, 2011). Like life cycle costs, discount rates are discussed below. A special note here first, however: a risk-free discount rate is one significant benefit that should be associated with the public provision of any project. That rate will always be higher when VfM is evaluated for PPP alternatives.

Once project risks are identified, they should be analyzed for their probability of occurring and their cost if they do occur (Infrastructure Australia, 2008). By assessing likelihood and magnitude, risk can be quantified so it can be included as an additional quantitative factor used in the VfM analysis. Like all costs, risk estimates should be reported according to net present cost in order to provide a measure comparable across alternatives. The techniques used to estimate costs of the Raw PSC (historical costs and current costs of similar
projects) may also be used to estimate the risk probabilities and costs in new projects (Department of Treasury, 2011). However, other techniques should also be utilized; a comprehensive risk analysis is vital to ensuring public projects are completed according to budget. Otherwise, the VfM analysis is unable to estimate the true value of any project over its life accurately and may result in the selection of an inefficient project alternative.

In all scenarios, both public and private, a contingency factor should be included to account for any unobservable costs or risks that could lead to undervaluation of the true VfM (Partnerships Victoria, 2001). The final equation for quantifying risk is as follows (Partnerships Victoria, 2001):

\[
\text{Value of risk} = (\text{consequence} \times \text{probability of occurrence}) + \text{contingency factor}.
\]

**USING THE PSC FOR VFM ANALYSIS**

Once the costs and risks of the private sector bid are calculated, a simple comparison of the PSC and the PPP costs can be completed to see which procurement method is best suited for the project (Sarmento, 2010). When comparing the private sector bids to the PSC, it is important to ensure that the cost savings from using a PPP arrangement is not outweighed by the transition and oversight costs (European Investment Bank, 2005). For example, when a PPP is used the government must perform some oversight functions to ensure the private sector is complying with contract requirements and any additional regulations (such as environmental regulations). Additionally, there are some transition costs when the project is transferred from the private sector to the public sector. Managers need to ensure that the VfM from using a PPP is greater than the projected transition and oversight costs to the government.

**CHALLENGES FOR ACCURATE PSC ESTIMATES**

There are several challenges that must be confronted by public sector managers performing PSC calculations. Due to the hypothetical nature of a PSC, it can be extremely difficult to devise accurate cost and risk estimates, especially if there is little or no empirical data or sector experience available to use when
estimating costs (Farquharson, 2011). Even if costs and risks can be accurately estimated, these values are being predicted at a single point in time and are subject to change in the future (Farquharson, 2011). One other challenge for accurate PSC estimates and VfM analysis is that the assumptions used to value costs and risks can be manipulated to either favor public provision or a PPP arrangement (Farquharson, 2011). Finally, especially in cases of public resource constraints, even when a PPP is found to be more costly than a PSC, it may be the case that a project could not be accomplished via traditional procurement due to a lack of resources. Thus, failure to demonstrate VfM in a PSC/PPP comparison should not necessarily invalidate the PPP as an option.

**RECOMMENDATIONS FOR PSC USAGE**

When calculating the costs and risks to the government and private sector it is imperative that all costs and risks included are comprehensive and realistic; failure to do so will result in biased estimates that may lead to a less-than-optimal procurement choice (Goldbach et al, 2012). In addition to the quantitative assessment of risks and costs, the PSC should be accompanied by a qualitative analysis of factors that cannot be quantified, such as quality of service (Infrastructure Australia, 2008). Sensitivity analysis should be performed on the assessments to determine the reliability and robustness of the PSC so government officials know its validity (Infrastructure Australia, 2008). This analysis can be done by considering variables such as the duration of the project, inflation costs, the likelihood of delays, predicted demand, third party revenue in the project, residual value of the project, and total estimated operating costs (Infrastructure Australia, 2008).

The PSC should be completed before a request for proposal is published: this makes the bid analysis less biased toward government provision (Department of Treasury, 2011). Additionally, the PSC should not be altered after it has been finalized and approved unless either the scope of the project changes or a major factor in the PSC costs and risks omitted from the original analysis (Department of Treasury, 2011). Also, the PSC should not be altered in favor of government provision of a good or service if private sector bids are found to be less costly than government provision or vice-versa (Department of Treasury, 2011).
LIFE CYCLE COSTING

Calculating the net present value of a project’s life cycle cost (LCC), also referred to as “whole life cost” (WLC) can be difficult, and the method used will often vary from industry to industry. Calculating the LCC requires taking into account all the costs – in terms of money/capital investment, and those that are both direct and indirect – of “designing, building and facility management (operating, maintenance, support and replacement)” (El-Haram, 2002). The LCC must also consider the costs associated with the transition of the project from the private sector to the public sector at its conclusion. This calculation generally takes on the following formula (Fuller 2005):

Life-cycle cost = first cost + maintenance and repair + energy + water + replacement + salvage value.

In order to make all estimates comparable, LCCs should be calculated according to the same method terms so that comparison across options is feasible. Generally, net present cost valuation is used (Department of Treasury, 2011). Adjustments to LCCs for changes in the time value of money will be discussed in the Discount Rate section below. The National Institutes of Standards and Technology has computer software for calculating LCCs if the costs of a project can be grouped into the following categories (NIST, 1995):

- Initial investment costs;
- Operation and maintenance costs;
- Energy costs and water costs;
- Capital replacement costs;
- Residual values; and
- Financing costs.

Performing the LCC calculations must occur before the project is implemented so that the public manager can compare the PSC to the best available PPP; once project implementation occurs the LCC calculation loses most of its value. Therefore, the accuracy of the LCC depends heavily upon assumptions and estimates as to the unique efficiency attributes of each member of the PPP. These attributes may be related to a member’s area of specialization or unique access to resources or information related to the project goals (Chou, 2011). For example, according to the PSC the government’s LCC includes certain benefits that are only
available to governments, such as tax savings (Department of Treasury, 2011). Private entities may have similarly special treatment at their disposal and therefore those benefits should be included in the analysis – to the extent that is possible. In many industries these additional benefits are difficult to quantify, and the LCC must take this into account. This is particularly true in information or technology sectors (Chou, 2012) as well as social infrastructure investments.

Similar projects from the past can provide a useful guide for identifying costs, and certain industries follow a standardized approach to making this calculation; yet, unfortunately, much of the difficulty in projecting accurate LCC stems from the lack of acceptable industry standards (El-Haram, 2002). Other methods of evaluating the costs of the different options include Net Savings, Savings-to-Investment Ratio, Adjusted Internal Rate of Return or Discounted Payback (Fuller, 2005).

One particular difficulty in LCC analysis is the manipulation of available data to result in a single, representative figure. The first step in performing the analysis is therefore to structure the data appropriately (Pelzeter, 2007). Structuring should follow a scalable logic appropriate for the project. For example, some projects may be difficult to analyze because of the number of involved parties (Chou, 2011). Public managers could begin analyzing LCC in such a case by identifying each of the actors that must be engaged in the three primary stages: project feasibility, project selection, and project evaluation stages (Morallos, 2008). An additional complicating factor arises from the use of sub-contractors or agents to perform work on behalf of the PPP members; however, contract law appears to ensure these unknown costs can be accurately estimated and secured by contract. Project data may also be categorized by project phase, input area (financial versus construction, for example), functional elements, risk factors, or based on other factors (Pelzeter, 2007).

Although time consuming, developing a robust data management plan will enable public managers to identify costs that would otherwise be overlooked. For example, if project data is categorized according to the various phases of the project life, public managers will be forced to consider the responsibilities of each
party during the project’s implementation and delivery. During these phases of the project the responsibilities of the government partner could be easily overlooked because of the reliance upon the private sector to affect delivery. This mistake could have serious consequences on the actual LCC because the government must actively oversee the project. To fulfill its oversight role, the government may need to hire additional employees or invest in better technology, both of which could have a serious impact on the actual LCC.

Once the data has been categorized to ease the analysis, prices and price trends can be considered. Prices include not only the current costs of materials but should also include projected information based on historical trends and the industry environment (Pelzeter, 2007). For example, a project that depends heavily upon the availability of a particular resource should consider the supply and demand trends for that resource in order to anticipate changes in price related to availability. Pricing also takes into account indirect costs, such as transportation charges, taxes or fees, and other administrative costs. Once all the information is available the actual LCC can be calculated. Static calculations are easiest to conduct but do not take into account the time value of money; however, because it is the most “concrete” method, it is preferred to alternatives that include a stronger financial analysis component.

LCC calculations must also take risk into account. Like the PSC, other PPP proposals must include a comprehensive risk analysis that can be projected over the life of the project. In addition to the customary costs associated with a public project, LCC in the PPP context must also consider the costs of transferring the project back to the government at the end. Since the goal is always to return the project to public ownership, the government manager must consider what costs the government will need to anticipate despite allocating so much responsibility to the private partners. Although the government may not need to outlay a tremendous amount of capital during the course of the project, it should still invest in project oversight and anticipate taking on additional costs in the future when the project is transferred back.
DISCOUNT RATES

Calculating net present value is central to fully understanding and developing life cycle cost estimates, as explained above. In addition to defining expected cost categories, assessing net present value requires applying a discount rate to future costs and transactions. According to the Australian government, the “purpose of using a discount rate is to convert future revenues and costs into their value today (their present value), so that they can be meaningfully used for comparison/evaluation purposes” (Central Guidance, 2006). Comparing PPP bids to the PSC is critical to assessing VFM.

WHAT FACTORS GO INTO CONSTRUCTING A DISCOUNT RATE?

First and foremost, a discount rate must be calculated to account for all cash flows. Australia divides cash flows into two categories: certain cash flows, financially underwritten and guaranteed revenues; and uncertain cash flows, unguaranteed revenues. Each category entails varying levels and sources of risk (Central Guidance, 2006). The discounting process should account for both the time-value of money, factoring in inflation and interest rates, and any systematic risks, which have generally been transferred to the private sector in a PPP project (Department of Treasury, 2011). Australia employs a robust methodology for constructing discounts rates for both PSCs and PPP designs. Their methodology is based on the following principles (Department of Treasury, 2011):

- All (or nearly all) projects have systematic risk;
- Systematic risk will be borne by either the public sector, the private sector or shared;
- Only systematic risk is reflected in the discount rate (i.e. not project specific risk which is quantified separately);
- Where systematic risk is transferred in the Project, the discount rate used for the PSC and the discount rate used to evaluate Respondents’ Proposals will differ according to the systematic risk borne by each party; and
- The extent of transfer of systematic risk may differ between Project Respondents, therefore requiring the calculation of specific discount rates.

Following those principles, the discount rate is calculated differently in for each context; one may apply to the PSC while something different is applied to the private bid. With the PSC, the government assumes all
systemic risk and thus calculates their discount rate as a risk-free rate (Department of Treasury, 2011). This is contrasted by practices in the UK that levy six percent rates on all PFI (PPP) initiatives.

**WHEN SHOULD THE DISCOUNT RATE BE UPDATED/RE-EVALEUATED?**

The initial discount rate should be established during the creation of the PSC and re-evaluated during the submission of private bids, whereupon the discount rate would be contractually agreed to by all PPP parties (Central Guidance, 2006). Given the long-term nature of PPPs, changes in the financial model are inevitable. Re-evaluation of the discount rate should be defined by contract in the following circumstances (Central Guidance, 2006):

- Change in the financial model during the life of the PPP;
- Project termination (including voluntary termination; force majeure, uninsurable risk and change in law; fraud/breach of contract; and private sector default);
- Refinancing; and
- Pre-payment of debt (where applicable).

**SHOULD THE SAME DISCOUNT RATE BE EMPLOYED FOR BOTH THE PSC AND PPP BID?**

The use of different discount rates for the PSC and private sector bid has been a highly contentious issue, and some governments avoid the issue altogether by applying the same rate for both the PSC and PPP bid (as mentioned, the UK employs a six percent rate for all projects) (Grout 2006). However, even in a world of complete capital markets with no distortionary taxation, different discount rates may still be appropriate even if not commonly practiced by governments (Grout 2006). When determining discount rates, comparison of the PSC to a PPP option is not a simple comparison between two cost flows in an economic sense; the PSC considers the present value of the cost of project delivery, while the PPP considers the present value of the private sector revenue flows (Grout 2006). Although each method has its merit, the most important consideration may be the ability to include an appropriate forecast of risk in the selected rate.
RISK AND RISK TRANSFER

Achieving VfM in PPP projects is in large part derived from their ability to transfer risk from the public entity to the private partner (Aldrete et al., 2010). The fundamental idea is that the private sector is more skilled at managing certain types of risk than the public sector (Mzikayise Binza, 2008). Risk in PPPs can be defined as the chance that an expected outcome for a project does not occur. More technically, this can be stated as the chance that the benefits and costs of a project are not allocated to the public and private entities as expected at the project’s onset (Aldrete et al., 2010). The general steps a public manager should undertake in regard to risk management are risk identification, assessment, allocation, mitigation, and finally monitoring.

RISK MANAGEMENT STEPS

RISK IDENTIFICATION

The public manager should first determine likely risks at the onset of a project. There are two typical methods for performing this step. The first method is to compile a risk checklist by studying the risks associated with past projects similar in nature to the project being considered. The second, and perhaps preferred, method is to consult with experts in each area or aspect of the project (Aldrete et al., 2010). Consultation with these experts is perhaps more essential for projects in high-tech industries.

RISK ASSESSMENT

Risk assessment entails the determination of the probability that a risk will occur, and then the potential cost associated with that risk occurring. By valuing the potential cost of a risk, the public manager and the private entity are thus able to assess which party is willing to accept a given risk, and which risks should be managed with greater priority (Aldrete et al., 2010). Scholars note that projects deployed through the use of PPPs are not universally successful, and VfM may not obtained if the public entity does not have the necessary expertise in assessing the financial costs of risk. Governments that consider PPPs should only do so if they
possess strong in-house capability for the accurate and comprehensive perform these assessments (Nisar, 2007). Typical risks include: changes in law; private sector defaults; cost overruns; design deficiencies; and negative public response, among others (Murray, 2006).

---

**RISK ALLOCATION**

Contracts forming PPPs for the provision of public work must specify which parties will bear responsibility for which risks. There are several different ways that parties can bear responsibilities, including through guarantees, availability payments (contractually established dates upon which the public entity pays the private entity an amount based upon the quality of the private entity’s performance), and performance bonds (the private entity and public entity contractually establish a maximum amount to be paid to the public entity should the PPP’s performance be below contractual obligations) (Aldrete et al., 2010). Public managers must exercise caution at this stage; contractual guarantees may prove to be of no avail if, for example, the contractor goes bankrupt during the construction of the project. In such situations, the contracting government has usually had to soak up the costs associated with finishing the project (Murray, 2006).

---

**RISK MITIGATION**

Risk mitigation strategies seek to enhance the ability of a party to manage, predict, and, if necessary, soak up the costs of risk. Some general techniques include reducing uncertainty by predicting costs, further transferring risks to another third party, using financial instruments to hedge costs, increasing the price for users of the project, and diversification (Aldrete et al., 2010).

---

**RISK MONITORING**

After the project has been implemented, the contract needs to establish mechanisms by which continuing risks associated with the operation of the project are tracked and resources are maintained to mitigate them.
RISK TRANSFERRING TECHNIQUES

As noted above, the primary benefit of the PPP option is that it can allocate risk more efficiently and therefore reduce costs for the public sector. A common misperception regarding the use of PPPs is that as much risk as possible should be transferred to the private entity. However, if a portion of the risk can be more efficiently managed by the public sector, that risk should be borne by the public sector; by transferring risk to the private sector that can be more efficiently managed by the public entity, money (and by definition, the PPP’s VfM) will be wasted since, ultimately, the public sector must pay the private entity to bear the risk. Further, if the project is especially risky, the interest rates that the private contractor will have to pay on the debt they acquired in order to finance the project are often times higher than public debt interest rates (Murry, 2006). These higher costs due to higher interest rates are, again, ultimately borne by the government. In order to assess whether or not the risk ought to be transferred to the private entity, a public sector comparator analysis should be undertaken. Finally, if there is a great amount of risk that is not accounted for a priori during the formulation of the contract, the public sector must retain a position of relative power over the private entity in the case of post-contractual re-negotiations if unexpected costs are incurred; the public sector must maintain a relationship of interdependence with the private contractor in order to maintain influence during any re-negotiations (Lonsdale, 2009).

VFM PITFALLS: CAUTIONS WHEN APPLYING VFM ANALYSIS

Before public managers begin applying VfM analytic framework to evaluate potential public-private partnerships, it is important to consider the potential pitfalls that may erode predicted VfM gains. Calculating VfM is a delicate process and requires a nuanced understanding of the myriad factors affecting cost and performance outcomes. Our discussion of VfM now turns to a description of some of these most common pitfalls identified in VfM literature.
Public managers should recognize the difference between outputs and outcomes. Outputs, as a set of objectively measurable products (such as the number of citizens provided with a given service) are different from policy outcomes (whether the given service achieves its actual objective). In other words, VfM analyses should be tied to a particular goal that is trying to be achieved (Yescombe, 2011). If the project goal is for a particular type of output the VfM should be based on the level of the output. If the goal is to construct a given piece of infrastructure, the VfM should be based on a total project cost. It is important to remember that the VfM for programs and projects often cannot and should not be compared. For example, a manager should not confuse the VfM of constructing a new hospital with the VfM of the provision of hospital services since they are measuring different ideas. Applying the proper analytic framework here is critical.

Ensuring that a project not only achieves VfM but is also affordable

Knowing what an agency or jurisdiction can and cannot afford are key to setting effective procurement and partnership initiatives. Even in the face of tempting VfM analysis public managers must ensure that their projects are also affordable (Yescombe, 2011). Some projects naturally align themselves with a PPP model and may provide significant value for money. However, under a political and economic climate of shrinking public budgets, public managers must ensure that their project itself is truly affordable, and that the VfM realized aligns with public priorities and preferences. While VfM analysis can provide useful insight into how a project should be financed, it often does not take into account the context of the jurisdiction in which it would be applied. Many state and local governments are facing substantial budget deficits now and in the near future. Simply undertaking a project without considering both the long- and short-term affordability will threaten both the PPP and the ability of the community to finance it, as well as other public sector activities that are already being undertaken. Furthermore, if the manager faces uncertain financial resources on the near- or long-term future, VfM is threatened by reduced service provision in the wake of scaled-down services. VfM calculations
are generally developed based on an anticipated level of service provision. Missing this mark over the life cycle of the partnership can erode VfM gains.

Further, it is important to consider the added costs associated with overseeing private sector projects and transferring ownership at the end of the partnership when making procurement decisions (European Investment Bank, 2005). Communities with already-tight budgets should not underestimate the burden these costs can place and their effect on net VfM. The anticipated VfM for a project needs to exceed the transfer and oversight costs to the government so there is still a net gain to the public.

ENSURE ACCURATE VALUATION OF RISK TRANSFER

PPPs are heavily justified by the valuation of risk transfer arrangements. Without this assumption of risk by the private sector, there would be no partnership. However, as discussed, VfM requires careful calculations of all cost factors which are set by risk allocation, an incredibly difficult task. Any risk that is unaccounted for in analysis has the potential to threaten a project’s viability and public appeal.

A further consideration in assessing proper risk transfer is ensuring that both the public and private sector partner have full and accurate information (Yescombe, 2011). All requirements of a desired project or program need to be disclosed to potential bidders so that they can adequately price their proposals. Bids that are substantially lower or higher than others should be analyzed closely to determine whether the contractor has adequately priced all appropriate levels of risk into their proposals. As such, most literature cautions public managers to avoid selecting PPPs based on cost alone. Low-cost PPPs do not always deliver the best VfM.

ENSURE THAT PSC IS NOT SUBJECT TO “OPTIMISM BIAS”

Several pieces of VfM literature have cautioned against so-called “optimism bias” skewing VfM analyses (Scottish VFM Assessment Guidance, 2011). Optimism bias occurs when the VfM evaluator believes that one procurement method (either the traditional or a PPP) will be more successful than is likely the case
Bias may stem from several sources, including a manager’s evaluation of a previous project that a selected contractor has completed. This bias can be problematic. In the past, procurement decisions made by public managers have been influenced by this bias. In reviewing a contractor or private partner’s past performance on a different project, managers may falsely believe they will achieve the same return on investment on another project. The procurement methods and the proposals that the government receives for each project should be evaluated independently and with an eye for practicality. Most literature suggests that public managers should recognize the threat that this bias poses and carefully develop it into their VfM analytic framework.

UNDERSTAND MARKET CAPACITY

Market capacity and the ability of private partners to deliver projects and services that the public sector needs are vitally important to achieving best VfM (Scottish VfM Assessment Guidance, 2011). If the number of private sector providers that is capable of fulfilling a PPP contract is limited, the likelihood that a PPP will lead to the best VfM decreases. The force of competition in driving down private sector bids boosts the appeal of a PPP approach. In the absence of adequate competition, however, the public sector may overpay the private sector for a project or service that it could deliver on its own with greater VfM.

BEWARE OF “DEAL CREEP”

Expanding long-term projects may prove particularly challenging to VfM gains (Yescombe, 2011). VfM is analyzed at the outset of a project and should reflect total life cycle cost predictions. These cost estimates are intended to encompass all aspects of the partnership. In the long-term, changes in project scope may necessitate changes in the program or project structure. While risk assessments should ideally capture the chance that projects will encounter changes, they cannot capture all unanticipated situations. Public managers should be weary of deal creep, or the growth of projects based on private or public sector demands. Project creep has the potential to skew VfM gains or losses.
CONCLUSION

As discussed in the executive summary, PPPs are increasing in popularity as procurement options for the public sector. The strength of a PPP is that it shares the risk between the public and private sectors with each sector responsible for the risk they can most easily manage. That being said, PPPs are not always the best decision for the public sector. VfM analysis enables the public sector to decide if a PPP is a better procurement method than traditional public provision. If a PPP is shown to be the better option, then VfM analysis can help the public sector pick the best private sector bid to provide the infrastructure or service. The hope is that when VfM analysis is used to evaluate proposed projects and private sector bids, the best procurement decision is made so projects do not fail and the public sector does not waste its limited resources on projects that fail.

This report attempts to distill the general components of a Value for Money assessment when considering a public private partnership. We start with a working definition of VfM, explain the key components therein: the Public Sector Comparator, proper life cycle costs and discounting methods, and risk allocation. We go on to explain common pitfalls experienced when conducting a VfM analysis. These sections explain best practices for each aspect of a VfM analysis and will help public sector workers understand VfM analysis and its components. It is our hope that this report, along with the industry-specific appendices, can provide a good instructional tool for public managers considering a PPP. This report should help public sector workers able to not only calculate and analyze VfM, but to avoid common and easily made mistakes when doing so to ensure projects are carried out in the best manner possible.
Transportation sector projects remain at the forefront for PPPs and have been implemented widely within the United States and abroad. In the United States, in particular, trends of the past several decades have placed strains on funding for transportation projects: fuel taxes that have been primarily used to fund these projects have been declining due to improved vehicle fuel efficiency; political difficulties of raising taxes have prevented needed repairs; and shifting demographics have changed demands on infrastructure and service provision (Morallos et. al., 2009). Thus PPPs have proliferated as an alternative means to fund transportation infrastructure projects. It should be noted that transportation PPPs need not concern only infrastructure; The US, Great Britain, and several Scandinavian countries have entered into PPPs for the operation of their public bus systems with considerable savings (Hensher et. al., 2005). However, the literature heavily focuses on infrastructure projects given their predominance, and thus, this section will specifically address transportation infrastructure PPPs.

Governments often bear certain risks during the implementation of a public private partnership. VfM is obtained when the risk can be more efficiently and cheaply managed by the private sector. The government’s costs of guaranteeing against a particular risk must be calculated for the government to accurately assess the relative costs and benefits of pursuing a public private partnership versus another policy option (Morallos et. al, 2009). Literature reviews provide three main strategies for evaluating the “contingent liability”, or guarantee costs of public private partnerships. First, actuarial and statistical methods predict the potential future costs of contingent liabilities based on past trend (Aldrete et. al, 2010). Econometric methods use economic and financial theory to predict future costs associated with the public entity assuming the contingent liability (Aldrete et. al, 2010). Finally, the contingent claims analysis method uses other traded securities to value future liabilities associated with the government entity’s assumed risks (Aldrete et. al, 2010).
PPPs in transportation have three primary structural forms: management and maintenance contracts; operations and maintenance concessions; and build-operate-transfer concessions (Aldrete et al., 2010). The private contractor in management and maintenance contracts operates and maintains a piece of transportation infrastructure, typically roads, for a short-term contractually determined period (Aldrete et al., 2010). The private contractor in operations and maintenance concessions operates and maintains a piece of transportation infrastructure, and also agrees to expand, rebuild, or renovate that infrastructure (again, typically roads). These types of PPPs are typically long-term. The private sector makes the investment for these activities, and after the lease expires, they typically make profit through either a direct public sector payment or through toll fees (Aldrete et al., 2010). Build-Operate-Transfer concessions go one step further than the first two forms and assign the responsibility for building the piece of infrastructure to the private sector as well. There are several variants to this design, including: build-transfer-operate; design-build-finance-operate-transfer; design-build-finance-operate; and build-own-operate (Aldrete et al., 2010). These forms of PPPs entail more responsibility and risk for the private sector than the first two. When assessing potential VfM, it is important to define all risk. Like other specific sectors, transportation projects carry their own risks that public managers should be aware of and include in their VfM analyses.

TOLL REVENUE RISKS

All aspects of risk analysis and management outlined in the Risk Guidelines section above pertain to transportation PPPs. Risks in the form of toll revenues collected from PPP projects are especially important considerations (Office of Transportation Public Private Partnerships, 2011). Given the long-term agreements that are common in transportation infrastructure PPPs, volatility in toll-revenues over time frames such as 20-30 years poses a significant risk, and therefore, threatens transportation infrastructure VfM. The risks associated with toll revues include whether or not an individual will choose to pay for the toll route (i.e. whether or not the toll road will save a driver sufficient time to justify payment), and in the long term, whether
trends will change to negatively affect traffic volume. Such long term threats include changing regional economies (if once economically vibrant areas fade, less traffic in the regions will ensue), the creation of alternative routes (potentially diverting traffic from the toll route), and rising costs of fuel (leading to an overall decrease in travel by automobile) (Aldrete et. al, 2010).

Further, an extension of the implications of unpredictable toll revenue is the risk associated with fluctuating international capital markets (Schwartz et. al, 2006). Recently, and especially within the United States, transportation infrastructure projects have been financed through international lending. Given recent fluctuations of international currency valuation, financing long term risks of these types should be included in VfM analysis.

ENSURE CONTRACTUAL BUILD QUALITY

Part of the value received by the public at the conclusion of a transportation infrastructure PPP is the condition of the property following transfer of property ownership. Literature suggests that public managers should be particularly concerned with contracting clear construction quality standards (Schwartz et. al, 2006). While a project may appear properly constructed when it is first implemented, construction quality issues may take time to appear. Therefore, including risk calculations for unknown defects to infrastructure following project completion is an essential component of transportation infrastructure PPP projects.

CASE STUDY: CESAR-CHAVEZ TOLL ROAD

The Cesar Chavez Toll Road in Texas provides a case study for the analysis of transportation PPPs in particular. The Cesar Chavez Toll Road project’s aim is to fix the four existing lanes of the highway, and also to add two new toll lanes to the road in order to reduce rush-hour congestion (Aldrete et al., 2010). The analysis of this PPP opportunity used traffic simulation models to assess the stability of toll revenues (Aldrete et al., 2010). The software used for this analysis was DynusT, one of the most commonly used simulation software for assessing toll revenue volatility. Due to the long-term nature of this project, simulations were run for 2010,
2020, and 2030 (Aldrete et al., 2010). A value of time uncertainty statistical model was used to assess the likely maximum and minimum values by hour of the toll road by vehicle. The minimum was determined to be $14 dollars per hour, while the maximum was determined to be $17.50 per hour (Aldrete et al., 2010). The logic of the model held that if an individual values time savings more relative to another individual, they will be more likely to pay the toll. Regardless, the more time that the toll road saves an individual driver will result in a greater degree of travelers using the toll road. Using these methods of analysis, the Cesar Chavez Toll Road is expected to provide $81 million dollars, and therefore provides enough revenue for the public sector to provide a guarantee (Aldrete et al., 2010).
APPENDIX B: VALUE FOR MONEY AND SOCIAL INFRASTRUCTURE

Social infrastructure projects come in many forms, but often include schools, hospitals, and other municipal services such as courthouses and libraries (Mackenzie and Zerunyan, 2010). Financing infrastructure projects such as these through public-private partnerships are becoming increasingly attractive to public managers due to a desire to avoid financing mechanisms that create long-term debt (often through traditional finance mechanisms such as municipal bonds) for municipalities. PPPs also provide the public with a number of other attractive benefits such as higher VfM and lower long-term or overhead costs. In addition to financial gains, however, PPPs can provide benefits in the form of social benefits. This is particularly applicable to social infrastructure projects. VfM, in the cases of these projects, can often be regarded as the “public good” product that is achieved when these services are supplied (Bhattacharva and Rahman, 2010). As citizens take advantage of the services supplied by PPP’s, citizens derive additional non-financial value. Values may be derived from altered opportunity costs due to more efficient access to services, or equity gains from access to better schools and libraries.

PPPs have been used to finance and develop social infrastructure projects both within the United States and abroad. After reviewing the literature on these projects, we analyze specific categories of social infrastructure that have documented evidence of use: libraries, civic buildings, and health care centers.

LIBRARIES

Several case studies of public library development through PPPs exist and are quite instructive. These projects have become particularly attractive as cities and towns face ever-tightening budgets. Given the relative ease for managers to control library expenditures by cutting back on services, property acquisitions, and overall operations, funding for libraries is often a clear target for municipal public managers facing budget shortfalls. Indeed since 2006, federal funding for local library services has seen a dramatic decline. Several cases studied indicated that local governments had particular trouble raising sufficient capital to build new, or
even re-open closed libraries (Jordan, 2008). If funding was injected into the local government, it was generally devoted to other infrastructure projects that were of a higher priority (such as aging roads and bridges). Financing and operating these facilities through private sector partners may be both easier and more appealing to public managers. PPPs will enhance VFM by accelerating the opening of new libraries, and will thus generate positive externalities in the form of public access to library resources. Further, some private sector partners may have experience opening and operating libraries. Relying on contractors with an understanding of industry best practices may lower costs and improve efficiency by lessening management and operation learning curves.

---

**CIVIC BUILDINGS**

State and local jurisdictions increasingly use PPP’s to finance civic buildings such as courthouses, police stations, and administrative offices. The use of VfM analysis in assessing PPP possibilities is also on the rise. Travis County, Texas is currently pursuing a public-private partnership to create a new courthouse (Garza, 2011). Following best practices, the county has hired outside consultants to determine the type of procurement or PPP instrument that will provide the community with the greatest VfM. The county is not committed to any one type of PPP necessarily, but will be weighing the outcomes based on quantifiable results.

Similarly, the community of Long Beach, CA also used VFM financial analysis to weigh the risks of various procurement processes in pursuing its own courthouse. This community selected two independent consulting firms as well as separate legal advisory services in making their bid selections. In preparing its evaluation, Ernst & Young, the primary risk analyst, sought experienced experts to quantify risk valuation for each aspect of the project. Risk aspects received real dollar figures, which factored into an overall VFM valuation (Judicial Counsel of California, 2008).

In both cases, outside management consultants were brought in to develop and evaluate public sector comparators. Applying appropriate finance discount rates and risk allocation will be used to calculate how an
efficient PPP can drive up anticipated VFM gains. Utilizing outside consultants with experience in overseeing these kinds of projects will help ensure that projected VFM gains are actually realized.

HOSPITALS

Evaluating VfM for hospitals can be particularly challenging given the highly volatile healthcare market. With skyrocketing health care costs, expanding technology, and costly new medications, anticipating health care costs over the long term is extremely challenging. Nevertheless, healthcare PPP’s have emerged outside the United States. Some ventures have been successful, whereas others have not. Research suggests that VfM is achieved in healthcare partnerships when risk is adequately transferred to the private contractor (English, 2004). Realizing real and generally accepted risk transfer is key to a viable partnership. However, in health care, off balance-sheet costs threaten VfM results, as it did in the case of the UK’s failed La Trobe Regional Hospital (English, 2004). VfM was not fully achieved due to a non-transparent bid process. The government did not adequately provide prospective bidders with clear information on the government’s proposed pay structure. Automatic health care payment adjustments at the national level (of a decreasing rate of 1.5% annually) forced the privately managed hospital to seek additional funding from its public partner. When applying these lessons to future hospital PPP’s, it is important to consider the risk of “goal creep” when judging VfM (Yescombe, 2011). Given the volatile nature of healthcare costs, it is possible (if not likely) that baseline cost considerations will need to be frequently adjusted to reflect the changing medical landscape.

VFM PRIVATE SECTOR PARTNERS MAY OFFER MANAGEMENT EXPERTISE

Private sector partners may possess a higher degree of expertise and management capabilities in social infrastructure projects when compared to public sector agencies. Services provided through social infrastructure may be the same or comparable to other services provided by private sector partners. Municipalities interested in establishing hospital services can look to private sector hospital corporations for advice and expertise. Similarly, localities interested in beginning library services can look to other private sector
library management companies that already have expertise in providing cost-effective services. Expertise is especially important when considering VFM implications. Life cycle costs may be less overall as private sector partners with expertise can introduce cost-reducing industry best practices from the beginning. Over the course of the partnership this will mean that life cycle costs as a whole are reduced.

---

**ESTABLISH BASELINE COSTS**

As in all VfM projects, establishing baseline cost estimates is critical. According to the Infrastructure Ontario methodology, VFM and baseline cost estimates taken in three stages, - prior to the release of the RFP, once the project is awarded, and as it is undertaken. Models should be established to calculate total VfM as milestones are reached and actual risk is realized. Further, according to Infrastructure Ontario, all costs of a PPP (such as transaction, financing, and contingency costs) must be included in VfM analysis. Other costs that should be considered include outside advisory, legal, and consulting services that may be brought in and not charged specifically for by the bidder (Auditor General of Ontario, 2007). Throughout the procurement process the VfM baselines should be compared against all procurement methods. Public managers must keep in mind that PPPs, although politically attractive, might not be the best option. If the public sector can do it cheaper and more efficiently, it will yield a better VfM.

---

**SOCIAL INFRASTRUCTURE PROJECTS OFFER PUBLIC GOOD VALUE**

The true VfM for social infrastructure projects comes from the ability of private sector partners to deliver a project faster, and at reduced life cycle costs, than the public sector. Like roads and other physical infrastructure projects, social infrastructure investments are associated with particularly high up-front costs that must be shouldered over a long (thirty years at least) period of site use. Acquiring secure financing, and approving bonded indebtedness, may take substantial time for these projects. Social benefits that can result from the operation of these institutions are not being realized when they are closed.
While the output value of public goods should be assessed in a social infrastructure project, it is also important to understand equity issues as well (Mehta, Bhatia, Chatterjee, 2010). Social infrastructure services provided through PPPs should be adequately distributed across a target population so that the community sees the greatest impact of these services and thus the highest offset in VfM.

Since social infrastructure services require specific outputs, the UK’s treasury recommendations for VfM analysis are particularly suited to social infrastructure projects. Governments using PPP approaches should focus on total output (a conduit for measuring public good through a measurable set of programmatic accomplishments) and allow private sector partners to develop innovative and cost-effective ways of achieving that output level (Mehta, Bhatia, Chatterjee, 2010). For example, health sector PPPs can focus on specific indicators such as the number of patients served, the number of children vaccinated, etc. Libraries can study the net-cost per library transaction or the number of patrons served overall (Value for Money and Policy Review Initiative, 2007).
APPENDIX C: VALUE FOR MONEY IN INFORMATION AND COMMUNICATIONS TECHNOLOGY

PPP projects in Information and Communications Technology (ICT) generally focus in one of three areas: enhancing decision support for public administrators, providing more and improved services to citizens, or providing citizens with greater access to information (Bhatnager, 2000). Such projects can benefit public administrators by improving their ability to evaluate and monitor public programs. For example, one case reviewed by Bhatnager examined the impact of hand-held computers on midwives in rural areas. In this study, nurse midwives were able to update patient information in real time using the computers, and managers were better able to monitor the progress and work of the midwives.

When improving services to citizens, public administrators can use ICT projects to not only improve service delivery but also transparency. Such projects may be generally targeted toward improving efficiency in repetitive processes. For example, such projects may be implemented as part of an effort to streamline certain filings and payments made to governments. In doing so, the project may reduce the need for “back office” staff and for the performance of clerical work. Eventually, such projects could replace the need for staff members to be physically present in certain facilities. In India, one ICT project computerized land records and provided several benefits to the government in terms of increased revenues, increased transparency, and reduced the need for clerical staff (Bhatnager, 2000). The Computer-aided Administration of Registration Department (CARD) that resulted from this project has now been introduced in 200 offices, supported by a strong and dedicated leadership (Bhatnager, 2000).

CASE STUDY: RURAL DEVELOPMENT IN INDIA

ICT projects benefit citizens because they gain better access to information. In rural areas, this is of particular importance because information asymmetries have an incredible impact on local revenues (Bhatnager 2000, 3). The Warana Wired Village Project covered 70 villages in India and helped address existing information asymmetries, but the project was implemented too recently to evaluate it at this time. However, in
theory, the project provides citizens greater access to information so they are better able to evaluate pricing traditionally settled by “middle men” who were familiar with both the producers and the purchasers. Because of their informational advantage, these middle men were able to seek greater rents than would otherwise be justified. Warana is an interesting case because the “infrastructure” building is targeted toward the development of “information booths” that connect different villages so producers have a better sense of pricing in other areas (Bhatnager, 2000). These information booths provide citizens with other information as well; government transparency is a significant externality associated with these projects because citizens have previously been unable to “audit” the government’s performance in delivering services or managing funds (Bhatnager, 2000). Furthermore, citizens are able to access other information that will improve their productivity. Because communication between villages had faced such great difficulty in the past, technological innovations that improve work efficiency were often isolated based on their location at genesis. By making this information more wide-spread, other villages can take advantage of innovations and discoveries outside their narrow jurisdiction, and this data is preserved for future generations because it is not subject to extension as older generations pass (Bhatnager, 2000).

---

**CASE STUDY: BUSINESS ECOSYSTEMS IN M-TAIPEI**

In 2004, the government of Taipei launched an initiative to transform the city into a digital city. To this end, 5,000 “hot spots” were made available for public use. These wireless access points covered all major infrastructure, including libraries, hospitals, and schools, but also included less expected venues, such as major highways and coffee houses. As Taipei’s initiative made 90 percent of its public spaces Wi-Fi accessible, it became the first, large-scale wireless city (Chou, 2012).

What is most interesting about the M-Taipei project was the use of “business ecosystems” for the provision of the service. Unlike traditional PPP arrangements, a focus on creating a business ecosystem because the administration quickly realized no single firm was prepared to deploy a project of this magnitude.
Instead, the government of Taipei recruited two flagship private partners, Intel and HP, to orchestrate the development. It is particularly noteworthy that these flagship firms gained significant intangible benefits from this project; although their revenue stream was significantly constrained by contracts that had failed during initial stages in the process and the absence of revenue stream generated through public use, these companies were eager to contribute because a project of this size and novelty could only improve their marketability elsewhere (Chou, 2012, 90).

M-Taipei demonstrates the benefits of ecosystems linked by area of expertise in projects of this type. Specifically, three ecosystems were developed to propel the project design, construction, and administration. By identifying resources that may be more efficiently accessed through ecosystem approach, offers the opportunity to increase VfM by reducing costs in this innovative area. In the context of information and communications technology, Taipei was wise to engage in greater outreach rather than attempting to “reinvent the wheel” through the public provision of this project.

**CONCERNS WITH ICT PROJECTS**

For projects that enhance decision support services, an important point to consider is the willingness of public administrators to adopt a new style of administration (Bhatnager, 2000). If the public administrators are unwilling to change their approach to public management, the development of a more robust ICT infrastructure will result in an expensive project that the administrators are unable to benefit from. Project managers interested in launching ICT projects must not only have the true desire to chance the existing regime but must also receive training and continuing education over the life of the project (Bhatnager, 2000).
APPENDIX D: VALUE FOR MONEY IN WASTEWATER MANAGEMENT

IMPORTANCE OF WATER INFRASTRUCTURE AND WATER MANAGEMENT SERVICES

Water is already a scarce resource and will likely become even scarcer in the future: by 2050 it is expected that 4.8 billion people, or 52% of the world’s expected population, will face water scarcity (Veolia Water, 2010). Future water scarcity will not only affect developing countries, but will affect developed countries as well by limiting their economic growth (Veolia Water, 2010). While this will have a global impact, solutions need to come from the local level since local areas and governments will face the strains of water scarcity (Veolia Water, 2010). Given the current fiscal climate, improvement in water infrastructure is likely to be too expensive for the public sector to undertake on its own; thus, the public sector can form contractual partnerships with the private sector to create and maintain this much needed infrastructure.

Many countries use PPPs for water service and wastewater management projects, however Canada has published the most comprehensive guidance on their policies and procedures for these PPPs and their VfM analysis. Thus, this section will rely heavily on their guidance with other sources supplementing and fleshing out their information as applicable.

WATER INFRASTRUCTURE AND WATER PPPS

PPPs for water service and wastewater management facilities are operations are increasingly popular throughout the world (Canadian Council for Public-Private Partnerships, 2001). These PPPs take many forms, such as providing new water infrastructure, operating existing or new water facilities, or improving current water infrastructure. One reason the private sector can provide better technological investment and infrastructure is because their board of directors and employees have technical backgrounds, whereas public sector officials who run these facilities and make budgetary decisions are less likely to have this expertise (Wilson, 2001). Also, the competition inherent in the private sector would force them to focus on innovation and better technology since a water company that fails to provide quality water services or has an accident
(such as polluted water) would go out of business and be replaced with a better, more efficient company (Wilson, 2001).

In September 2008, the Environmental Financial Advisory Board sent a letter to the Administrator of the Environmental Protection Agency (EPA) recommending the United States study Canada’s experience with water service and wastewater PPPs, including VfM analysis, and use these methods to help solve domestic water infrastructure and water service problems (Environmental Finance Advisory Board, 2008). The Environmental Financial Advisory Board specifically highlighted Canada’s use of the PSC to evaluate private sector bids and ensure VfM will be created; they recommend the United States study and adopt this practice (Environmental Finance Advisory Board, 2008).

There are different PPP delivery methods that a public sector manager can use to structure the PPP contract, such as design-bid-build, design-build, design-build-operate, and design-build-finance-operate (Papa, Herstein, Adams, 2010). Each of these delivery methods transfers different levels of risk to the private sector, with the traditional design-bid-build transferring the least risk (Papa et al., 2010). The optimal delivery method will depend on the specific circumstances of the improvements to or new construction of water infrastructure desired (Papa et al., 2010; Smith 1-2). The Canadian Council for Public-Private Partnerships (CCPPP) recommends the following (Wilson, 2001):

- Employ the design-build delivery method for new infrastructure projects
- Let the private sector operate infrastructure if quality service is a goal of the project
- Use the private sector as a financing project since these projects generally cost too much for the public sector to provide all of the financing

<table>
<thead>
<tr>
<th>VFM IN WATER MANAGEMENT PPPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPPs transfer some risk inherent in any new project from the public sector to the private sector, which makes PPPs attractive financing options to improve current, and build new, water infrastructure. The CCPPP recommends differing PPP delivery methods depending on what risk the public sector wants to minimize (Canadian Council for Public-Private Partnerships, 2001):</td>
</tr>
</tbody>
</table>
Private provision of services to minimize commercial input risks
- Private provision of a facility at a fixed cost to minimize commercial input risks
- Volume or usage payment systems to the private sector to minimize output risks

Four factors that lead to successful water management PPPs and provide the public with more VfM are: (1) the competition inherent in the private sector; (2) the economies of scale with water services; (3) the accountability written into the PPP contract; and (4) the de-politicization of the water operations that do not tie its operations and budget to politics or bureaucracy (Canadian Council for Public-Private Partnerships, 2001). CCPPP estimates that water management PPPs have saved the general public and the public sector between 30% and 40% of the traditional cost of public sector provision (Canadian Council for Public-Private Partnerships, 2001). However, VfM analysis should be done for all proposed water management PPPs to ensure this delivery system is the best choice for all parties involved.

All current costs must be taken into consideration when performing the VfM analysis or its results will be flawed and will not reflect the true benefit (or lack thereof) of a project (Canadian Council for Public-Private Partnerships, 2001). These costs include traditional costs (such as capital costs, operation costs, and maintenance costs), as well as other factors that will affect the total cost of the project (such as inflation and opportunity cost) (CRISIL, 2009). These costs can be extremely difficult to estimate accurately because of resource-sharing between multiple localities’ governments (Canadian Council for Public-Private Partnerships, 2001). Since water PPPs often have environmental costs and considerations attached to them, these must be taken into account when analyzing the VfM that a PPP might bring the public (Ridolfi, 2004).

New South Wales primarily uses the Public Sector Comparator (PSC) to conduct its VfM analysis to see if a project has a positive VfM and will benefit from a PPP (Graham, 2010). New South Wales uses two different discount rates to value the financial inputs and risk inherent in the project in their VfM analysis. The PSC is discounted using a risk-free rate since this represents the cost of public sector provision (Graham, 2010). The private sector bids are discounted using an “evaluation discount rate” which is a combination of the risk-free discount rate of aspects of a project that would have public sector financing and a positive discount rate for
“systematic risk” for aspects provided by the private sector (Graham, 2010). In addition to the quantitative analysis of the project, New South Wales undertakes a qualitative study and considers factors that are not easily quantified, such as innovation and quality of the project (Graham, 2010).

**CASE STUDY: THE IRISH WATER MANAGEMENT PPP EXPERIENCE**

Water management PPPs have been a significant percentage of Ireland’s PPP projects. Between 1994 and financing estimates through 2016, the Irish government will have spent nearly twelve billion Euros on water management PPPs (Reeves, 2011). The Irish government uses a method similar to New South Wales to decide whether or not to move forward with a PPP by comparing the private sector bids to a benchmark measure, the Public Sector Benchmark (PSB). Like the PSC, the PSB considers capital, operating, and maintenance costs, as well as the allocation of risk (Reeves, 2011). A PPP is only allowed to be used if the private sector bid is shown to achieve VfM against the PSB (Reeves, 2011).

After systematically analyzing water management PPPs in Ireland, Eoin Reeves, from the University of Liverpool, concludes that many PPP projects have been undertaken that did not provide VfM. He states that the Irish government, like many around the world, is under fiscal pressure to cut costs and provide necessary infrastructure and services with much less resources (Reeves, 2011). He provides evidence where a wastewater plant was built through a design-build-operate (DBO) delivery method that cost 2.4% more than public provision would have cost (Reeves, 2011). The cost and risk estimates made by policy analysts that recommended a PPP arrangement were not subject to sensitivity analysis (Reeves, 2011). A sensitivity analysis is performed to test the underlying assumptions were used to make the cash flow estimates (Department of Treasury, 2011). It helps determine how robust the PSC is and how likelihood changes in external circumstances and costs would affect the PSC estimates and generally analyzes the capital costs, operating and recurrent costs, discount rate, inflation costs, maintenance costs, and refurbishment costs (Department of Treasury, 2011).
Reeves cites other examples where a DBO PPP has been used when this may have not been the best PPP arrangement (Reeves, 2011). He shows evidence that DBO PPPs have been done even when the evidence showed traditional procurement would have been a better option and implies that the government tries to use the numbers to make DBO PPPs seem like the most attractive delivery method (Reeves, 2011). Thus, the Irish government needs to ensure that public officials are using accurate methods to make cost and risk estimates and are held accountable for faulty estimates that lead to poor procurement decisions (Reeves, 2011).

The Irish experience should be a cautionary example to public managers undertaking water management PPPs. Not all water management PPPs will fail to provide VfM. However, sensitivity analysis should be done on cost and risk estimates to make sure these estimates are as accurate as possible. Additionally, DBO arrangements should not be the only procurement model considered by government officials.

CONCLUDING REMARKS

According to a study prepared by Deloitte, water PPPs face five major challenges: market competition, substantial procurement costs, uncertainty, scale, and politics. There are a limited number of private companies that partner with governments to provide water services which hinders the competitive and innovative advantage of the private sector. Also, these projects’ capital costs can be high, and private companies may not know the true value of the existing infrastructure to be able to accurately assess the true financing costs of a project. As mentioned earlier, the scale of these projects may not be the most efficient use of private sector resources if projects are too small or too large; the optimal scale of a water project will depend on individual local circumstances. Finally, water infrastructure and service is generally seen as a public good and the public sector and general public may resist private sector involvement with this resource and service (Black 14).
These challenges can be overcome, but they need to be taken into account when analyzing the VfM of proposed projects and structuring the PPP contracts. These projects need to be designed and analyzed in such a way that provides flexibility for new information and analysis to be added if necessary, which will allow for more accurate comparisons between traditional public sector provision, the proposed PPP VfM, and the actual outcome of the projects (Graham, 2010).
The following concepts are useful to gaining a complete understanding of value for money:

**Public Sector Comparator (PSC):** The estimated costs of a project financed under a traditional public sector model. PSCs are generally used to compare total costs with private sector alternatives. In most cases, the difference between the two is considered the “Value for Money” of the P3 project.

Public Private Partnership (PPP): A risk-sharing relationship based on a shared aspiration between the public sector or metropolitan government and one or more partners from the private sector to deliver a publicly agreed outcome or service (Grimsey, 2004).

**Adjusted Shadow Bid (ASB):** The total estimated costs to the public sector of delivering a project identical to a PSC by an alternative financing procurement (see below).

**Alternative Financing Procurement (AFP):** Ontario’s version of PPP. It entails private financing of a project for public works.

**Discount Rate:** The current dollar value of future payments. The purpose of using a discount rate is to convert future revenues and costs into their present value, so that they can be meaningfully used for comparison/evaluation purposes.

**Discounted Cash Flow (DCF):** An analysis to calculate the net present value of a project through the employment of time value of money concepts such as Net Present Cost and Net Present Value.

**Life-Cycle Cost (LCC) or Whole-of-Life Costs:** Total cost of ownership over the life of an asset. This is to include upfront costs as well as maintenance, ongoing service delivery, and refurbishment costs.

**Net Present Cost (NPC):** The total Net Present Cost of a project is a summation of all costs: capital investment, operation and maintenance costs, replacement costs, energy costs (fuel cost plus any associated costs), any other costs such as legal fees, etc. If a number of options are being considered then the option with the lowest Net Present Cost will be the most favorable financial option.

**Net Present Value (NPV):** The sum of present values to a given project or asset. NPV factors in all cashflows, both inbound and outbound, and is the chief component of a DCF.

**Private Finance Initiative (PFI):** The United Kingdom’s version of a PPP. The public sector contracts to purchase services from the private sector on a long-term basis.

**Value of Risk Transfer:** The benefit governments receive by transferring risk to the private sector.
APPENDIX F: VFM DEFINITIONS

Value for Money comes in many iterations and necessitates varying scopes. The following is a country/territory sample of working VfM definitions:

AUSTRALIA

Queensland – The Queensland Reconstruction Authority was established to lead reconstruction efforts in Queensland of damage caused by weather events in the Summer of 2010. They define VfM in the context of reconstruction efforts as follows:

Value for money is a determination of the outcomes of an individual reconstruction project assessed against how it has contributed to the advancement of Government priorities, as well as cost and non-cost factors that include, but are not limited to, whole-of-life and transaction costs and fitness for purpose.

CANADA

Ontario - Infrastructure Ontario is a publicly owned corporation which engages in project delivery, real estate management, and lending for the Canadian territory to support infrastructure improvement initiatives. They employ a straightforward definition of VfM which calls for the comparison of the traditional costs associated with public sector delivery (a PSC) with the proposed costs of an adjusted shadow bid. Their definition of VfM:

In simple terms, a value for money (VfM) analysis refers to the process of developing and comparing the total project costs, expressed in dollars measured at the same point in time, related to the following:

1. Traditional Project Delivery: Estimated costs to the public sector of delivering an infrastructure project using traditional procurement processes (under which total estimated costs are known as the public sector comparator, or PSC), and

2. Alternative Financing and Procurement: Estimated costs to the public sector of delivering the same project to the identical specifications using [Alternative Financing Procurement] (under which total estimated costs are known as the adjusted shadow bid, or ASB).

The difference between the public sector comparator and the adjusted shadow bid is referred to as the value for money. If the adjusted shadow bid is less than the public sector comparator, there is positive value for money by procuring a project using AFP.

BRITISH COLUMBIA

The British Columbian Ministry of Municipal Affairs has published a guide for establishing P3 projects in the territory. They pose value for money as a question: “Does the project design allow for successful construction
and service delivery that meets the needs of the end users at the lowest cost for capital, operations and maintenance over the duration of the agreement?"

They explain that the following stages must be considered with VfM analyses: (1) project design; (2) project construction; (3) project/service delivery; (4) management; and (5) operating system. And at each of these stages, a VfM analysis will require: (1) a cost/benefit analysis of the public private partnership arrangement; (2) an allocation of risks between partners; (3) project finance requirements resulting in a need for taxpayer support; and (4) duration of taxpayer support required for project finance.

UNITED KINGDOM

The Treasury Department for the UK released a Value for Money Assessment Guidance in 2006. They define VfM for the purposes of analyzing a PFI:

PFI should only be pursued where it represents VfM in procurement. VfM is defined as the optimum combination of whole-of-life costs and quality (or fitness for purpose) of the good or service to meet the user’s requirement. VfM is not the choice of goods and services based on the lowest cost bid. To undertake a well-managed procurement, it is necessary to consider upfront, and at the earliest stage of procurement, what the key drivers of VfM in the procurement process will be.
Over the last few decades, the use of public private partnerships (PPPs) by government has proliferated both internationally and within the United States to finance and manage complex projects. They are becoming more popular in the United States due to the current fiscal climate and budgetary limitations. However, critics have raised doubts about their efficiency. Criticism of PPPs in part reflects the fact that government sometimes tend to use such arrangements as “off budget” operations as a mechanism to escape fiscal constraints. Therefore, it is in public managers’ interests to carefully assess proposed PPP projects and ensure that it creates Value for Money (VfM) for the public sector. VfM analysis is one of the first aspects that public managers should consider when determining the merit of entering into any PPP. It expands on a cost and the benefit analysis by including “softer” costs, such as opportunity costs from a facility being operation at an earlier date. VfM analysis considers if the public will benefit from a public-private partnership by comparing it to a sole public sector provision. The following is a selection of sources on VfM best practices, case studies, and key concerns with annotations describing them.


The authors examine current obstacles to PPP’s in China at the local level. VfM analysis has contributed to a rapid expansion of PPP’s within the country. The authors find that weak administrative structure and access to investment capital have hindered full PPP adoption in the country. Further, the administrative structure in China has yet to fully embrace the ideas of PPP’s due to the cultural aversion against private property ownership.


This analysis, prepared by the California Department of Justice, discusses the implementation of a PPP to build a new courthouse in Long Beach, CA. It includes various analyses during the steps of PPP implementation and is a resource for best practices in this kind of procurement partnership.

Aldrete, Rafael M., Arturo Bujanda and Gabriel A. Valdez-Ceniceros. *Valuing Public Sector Risk Exposure in Transportation Public-Private Partnerships.* College Station, Texas: University Transportation Center for Mobility, Texas A&M University, 2010.

This report details both VfM assessments done for PPPs and how to accurately value risk in PPP projects. It also provides detailed information about valuing risk specifically for transportation PPPs as well as cases study examples with a detailed analysis of their VfM assessments. The authors stress the need for a standardized framework for evaluating PPPs and VfM analyses. They suggest a methodology and a framework for judging VfM analysis suggesting that European models could be easily adapted to fit US needs. This document is intended to help public managers develop both a VfM assessment process and the criteria to use and evaluate the VfM results.


This article looks at how to successfully implement PPP at the program level. The author identifies the following principles as highly important towards this aim, including availability of PPP institutional/legal framework;
availability of PPP policy and implementation units; perception of private finance objectives; perception of risk allocation and contractor’s compensation; perception of value-for-money; PPP process transparency and disclosure; standardization of PPP procedures and contracts; and Performance specifications and method specifications. The paper proceeds to examine each principle in detail. In regards to VfM in particular, the author argues that this principle is achieved via “establishing a cap on revenues, enforcing specific toll rate setting mechanisms, requiring specific equity-debt ratios, limiting the concession period to the time all debts are retired, and/or capping the contractor’s rates of return.” The paper concludes that public managers must consider all six of these principles.


The authors present obstacles and opportunities for PPP’s when analyzing those employed by the UK government. It relies on interviews conducted with 68 procurement officials and private partners. It suggests that risk identification among many projects needs to be improved in order to streamline PPP projects and enhance cost savings. Better VfM can result from initial cost saving estimates for projects that are deemed optimal for PPP’s. Based on the interviews, the researchers have concluded that in the UK, public managers often struggle at determining the best VfM for projects because they lack the expertise to work closely with private partners. Bridging this gap is key to better VfM.


After providing an overview of VFM and PPP objectives, this article discusses the particular case of the Rudeshur gas turbine power station in Iran. The article outlines the various risks inherent in the project as well as the allocation between both the public and private partners. The study provides several critiques of Rudeshur’s VFM potential that are unique to the electric industry, including ways to price electricity based on power market competition, and supply and demand fluctuations in fuel and power consumption to maximize public returns on investment.


Martin Benes and Oldrich Stary have compared value for money and real options. According to the authors, VfM can be defined as the sum of real options. In the most common cases when some cost items like maintenance cost are fixed in concession contracts, there are two real options in it. The consumer holds the call option to cut the high price level in the market, while the concessionaire holds the put option to potentially make extra profits if the management is able to save money on maintenance while also maintaining high quality levels.


This report discusses larger trends in service delivery for health and education in India. Using examples, this is an excellent resource for evaluative framework for PPP’s as well as specific case examples.

Bhattacharya, Debapriya Mustafizur and Rahman. "Delivering Social Infrastructure through PPP: The Role of
This OECD presentation looks at the implementation of social infrastructure projects in India and Bangladesh and studies how and why PPPs can be effective tools for governments looking at delivering health and education services. Based on these case studies, the authors provide a discussion of implementation challenges for future PPP’s in the social infrastructure sector.


The author describes six factors that determine VfM: risk transfer, long-term contracts, competition, “performance measurement and the use of an output specification,” performance incentives, and the managerial skill of the private partner. Further, the author identifies six general types of public private partnerships: Build-operate-transfer, build-own-operate, leasing, joint ventures, management contracts, and cooperative arrangements. A public manager can know that VfM has been achieved if the “total present value cost of the private party supply will be less than the net present value of the base cost of the service, adjusted for: the cost risk to be retained by the metropolitan municipality; cost adjusted for transferable risk; and competitive neutrality effects.” The article goes into detail about various considerations public mangers must undertake in the evaluation of public private partnership options, but spends the vast majority of its analysis discussing the management of risks associated with public private partnerships. Though this discussion is the crux of the analysis, it also provides a broad outline of major concepts, facets, and challenges associated with public private partnerships.


This report is a sample of the VfM evaluation process employed in British Columbia, Canada. It reports on the background, rationale, objectives, and competitive selection process of a proposed project, the William R. Bennett Bridge. It then examines and demonstrates qualitative and quantitative evidence that the project as financed achieves VfM.


This book discusses what countries that use PPPs or are considering their use should consider in assessing VfM. The book is a result of a project led by the Budgeting and Public Expenditures Division of the OECD public Governance and Territorial Development Directorate. The book suggests that achieving VfM depends on the ability of the public and private actors to identify analyze and allocate risks appropriately. When allocating risk, a distinction should be made between endogenous and exogenous risks. Another important observation is that policymakers who consider the VfM analysis of the PPP must also take into consideration the opportunity cost imposed by the inflexibility of the PPP design and contract.


This report is an example of best practices for VFM review and evaluation. It provides an iterative approach the various steps that the Irish government deems most useful and effective to evaluating PPP’s. It delineates
several types of VFM analyses and provides a framework for each.


The article discusses the uncertainty that may be crucial in whether VfM is achieved. The author believes that the greatest VfM is achieved by efficiently minimizing the risk and by truly understanding the nature of uncertainty to the capital project. This article is important in a way that it helps understand the uncertainty elements associated with the assessment of VfM.


This article analyses the M-Taipei Project, a public IT project in Taiwan. It observes how differing business ecosystems’ symbiotic relationships with one another are a crucial consideration in IT PPPs. The three ecosystems they consider are those that are knowledge based, resource oriented, and business oriented.


The article studies a case in which the concept of VfM can be useful in implementing PPPs in developing countries. In 2006 the Government of Lesotho needed to replace its main public hospital, Queen Elizabeth II. To maximize the use of limited resources and ensure long term improvement in facilities and services, the government adopted the PPP approach for a new hospital for which it needed IFC’s infrastructure advisory services for design and construction of a new 425 bed hospital and adjacent gateway clinic, the renovation of three strategic filter clinics, and the management facilities, equipment and delivery of all clinical care services for 18 years. As one of the pioneering PPPs in Africa (in the health care sector), the article compares this project from other similar project in relation to the way the VfM is calculated or created. According to the authors, VfM is more than just a project cost and risk transfer. On an operational cost comparison, the Government is not likely to pay much more for the PPP than it currently spends on the Queen Elizabeth II, yet it will receive vastly improved facilities, medical services and patient care. From a patient perspective, services at the new hospital and filter clinics are affordable and will cost the same as at any other public health facility in Lesotho.


This article stresses four pillars that public managers and procurers should base their PPP projects on in order to attain best VfM. The authors first encourage managers to structure deals that most easily deliver the outcomes that meet the public sector’s objectives while simultaneously taking into account the real capabilities of the private sector. Second, the procurement process chosen by managers should maximize the prospect of ensuring the most favorable outcome for the public. Third, price should not be the only consideration when evaluating PPP RFP bids. Tradeoffs between price and quality are crucial. Finally, managers should continuously review PPP’s to ensure that the deal still makes sense. If it doesn’t, managers should not hesitate to walk away. The article includes examples of various PPP projects in the backdrop of the four pillars it discusses.

This report focuses on PPP's for water service projects in India. It provides a general overview of water service PPP's and four steps for implementing a water service PPP. In addition, this document details the costs that need to be taken into consideration when analyzing the PSC in comparison to the private sector bids, such as opportunity cost and inflation costs.


This study provides information about international, national, and state policies regarding PPPs and VfM analysis, giving the reader a wide array of current practices in different environments. There is also a general discussion VfM studies. It cautions that accurate risk pricing is necessary to find correct VfM estimates and that all necessary costs must be taken into consideration when performing the analysis. This document provides public managers with a survey of current practices which could help them create their own best practices given their environment and political and budgetary constraints.


This report is extremely valuable to public managers in the education sector. It provides the reader with a literature and data review of current VfM practices in education. The authors propose a definition of VfM to be used for educational projects that could help public managers focus their VfM analysis. After surveying the literature and available data, the authors find that spending per pupil has a limited impact on student performance and suggests other costs and factors need to be taken into account when conducting education VfM assessments, such as leadership, culture, and management and learning. Finally, they make suggestions on how to improve VfM in schools that could assist education public managers making policy decisions.


This article examines PPP in the United Kingdom and develops a research framework for studying accountability measures in projects that use VfM techniques. The authors include past research on accountability and public management to support their techniques. Their model is tested against four criteria: warrantability, tractability, measurability, and feasibility. The authors conduct preliminary interviews to reveal the role of subcultures in affecting accountability standards in VfM-designed projects.


This article examines VfM analyses and practices done over the duration of a project and investigates the relationship between VfM studies and accountability with a specific focus on the gap in the current literature surrounding VfM studies and accountability at the middle and end stages of a project. The author’s recommendation is that managers responsible for PPPs should not stop their VfM analysis after the project has been analyzed and started; VfM analysis of the implementation and monitoring stages should be completed as well. By doing this analysis, public managers would gain more support for their PPP projects and have more evidence to convince skeptics of the PPPs.
This publication provides in-depth policy guidance that structures Western Australia’s development of the PSC. It details their process step by step and explains each aspect that must be considered when developing an accurate PSC, such as competitive neutrality and the discount rate. This document is helpful to public managers who want guidelines and information about how other countries create their PSC.


The article provides important guidelines for Public Private Partnership in multi-faceted projects in Australia. It advises also the public authorities on the optimal means of financing the costs of public investment projects in order to achieve Value for Money (VfM). Finally, it provides guidelines related to discount rate for discounting whole life Public Private Partnership (PPP).


This article considers the perspectives of the United States, United Kingdom, and Ireland, and discusses VfM in the context of competition. Specifically, a VfM analysis is used at multiple points during the provision of the selected service to ensure that the service is being provided through the most efficient vehicle. This is particularly relevant in the UK’s Private Finance Initiative’s long-term relationships.


The authors have studied the role of Public Partnership Units, in particular their variety of roles, including providing information and guidance to government departments. Public Partnership Unit’s strengths include international experience and customized guidance on the preparation of PPPs. Public Partnership Units primarily screen PPPs, access VfM and affordability to the Government, or disseminate good practices. The importance of this article is its elements that help understand how Public Partnership Units conduct assessment VfM


English dissects Canadian healthcare PPP initiatives and discusses them from a historical standpoint, showcasing the evolution of initiatives. The research provides insight into both the successes and failures of healthcare delivery initiatives.


This website created by the European Investment Bank provides a brief overview of their VfM analysis practices. It provides circumstances that lead to a higher VfM in PPP projects, as well as cautions for managers deciding between a financing a project through a PPP contract or traditional procurement methods. It also provides links to other European Investment Bank guidance documents that provide more in-depth information about their PPP projects and VfM analysis practices that could help public managers make decisions and
perform VfM analyses.


The European Commission provides guidelines for PPP practitioners in identifying and developing key issues affecting the development of successful PPP schemes. They focus on several topics: ensuring open market access and fair competition; protecting the public interest and maximizing value added; defining the optimal level of grant financing both to realize a viable and sustainable project but also to avoid any opportunity for windfall profits from grants; and assessing the most effective type of PPP for a given project.


This article discusses the difficulties in accurately determining VfM due to bid-rigging in the EU. The article talks about remedies available to the government in such situations, like awards for damages. This is relevant to the extent that VfM calculations are not able to accurately predict the cost; it further shifts the risk to the private actor by subjecting them to lawsuit/damages in the event that the contracted-for service/good is not provided as originally defined.


This document explains the UK’s process and procedures for VfM analysis. In addition to providing an overview of their process, it also gives the reader general conclusions about PPP’s and VfM as well as observations that increase the likelihood that a project results in a positive VfM.


The authors examine partnership buyouts using option theory to diagnose the motives for incrementally committing to strategies through sequential investment processes. They examine buyouts and equity purchases of partner firms subsequent to initial minority equity trying to find out if real option theory is real. They also consider unexplored relations of applying option theory by examining the effects of uncertainty in combination with other variables. The study focuses on joint ventures considering two compound options.


Garza details how a municipal government in Texas selected an independent evaluator to assess various PPP proposals in advance of a PPP award, illustrating best practices for independent evaluation. Garza details how a municipal government in Texas selected an independent evaluator to assess various PPP proposals in advance of a PPP award, illustrating best practices for independent evaluation.


The School of Policy, Planning and Development of University of Southern California produced this report for both the California government and the national government. In addition to providing information about PPPs
and the California PPP environment, it also describes analytical tools for evaluating PPPs, similar to VfM strategies. This report recommends doing a fiscal analysis and VfM analysis of proposed projects and that only those projects that pass these assessments be completed through a PPP as opposed to using the traditional procurement processes. Additionally, it recommends doing multiple VfM analyses for the different stages of the project to ensure that the PPP model is the best model to use for a project.


This document focuses on the PCC or PSC that is one of the initial steps that public managers must take to determine if a PPP project will have a positive VfM and should be pursued. It presents the relevant considerations a public manager must consider when making a PSC to compare to the private sector bids. At the conclusion of the paper, the authors present a list of best practices that should be followed by public managers when constructing their PSC.


This report outlines the extent of costs and benefits related to public-private partnerships as they relate to the transportation sector. It also examines formal public interest evaluation criteria in place in international governments (Australia, United Kingdom and Canada), contrasting them with the relative paucity of criteria and tools in place in the United States through case studies. These criteria include VfM tests and Public Sector Comparators. The US case studies (including the Chicago Skyway and Indiana Toll Road) revealed that most state and local governments had limited, if any, public interest tools. GAO recommends that the Department of Transportation develop objective criteria for identifying national public interests in highway public-private partnerships.


This document focuses on VfM that can be achieved through PPP’s. It explains the New South Wales procedure for determining if a project will deliver VfM by comparing the private sector bids to a PSC. The presentation details the process for constructing a PSC and relevant factors that must be included in it. This presentation would be helpful for managers developing a PSC and comparing it to bids.


This paper evaluates the private finance initiative (PFI) model in the United Kingdom. It specifically examines the performance of PFIs, how their outcomes compare with alternatives, and who the relative winners and losers of PFIs are. The aim of using PFIs is to reduce costs to government budgets and to obtain greater VfM. PFIs are relatively new types of P3s and they have new characteristics such as the preferential use of private finance, relatively higher complexity, and altered accountability assumptions. The authors argue that too little research has been conducted on the efficacy of PFIs, and, therefore, that it is wise for public managers to avoid them for the time being.

Out of Sweden's 280 local governments, 64 have pursued PPPs for a total of 117 such programs. 15% of all government services are contracted out. The author finds that there three primary predictors for whether or not Swedish municipalities use PPPs to complete projects. First, local governments with strained budgets more often opted for PPPs. Second, relatively smaller local governments more frequently used PPPs (since larger governments would be more capable of undertaking the task themselves). Third, large local service sectors also were found to be linked with increased PPPs. The author further notes that PPPs in Sweden are seen as a mechanism by which innovation can be injected into public projects and works. The author notes that PPPs in Sweden found the most success when they are highly transparent and have aims outside of purely financial ones (i.e. when innovation is also a key objective).


The author explains the conceptual debate between employing a single discount rate for both the private bid and PSC and using two different bids based on where systematic risks are accounted for. He also provides several examples of successful and failed PPPs.


This article seeks to assess the appropriate private sector and public sector discount rates in the context of public private partnerships (PPPs). The article shows the existence of strong arguments for using a higher rate to discount private projects than public sector projects and analyzes the implication for private sector involvement in public services.


The article underscores the importance of distinguishing the terms “cheaper” and “VfM.” According to the author, VfM is not synonymous with “cheaper.” VfM is possible even when more is spent than in a conventionally procured solution if the result is a far superior service. A public sector comparator can be used in order to measure the cost of an equivalent project. However, the author believes that there are no foolproof measures and it can only be used as a benchmark to aid in decision rather than as a pass/fail test even though it does introduce some discipline into the difficult process of identifying how much the provision of a service actually cost. Determining VfM is not just about comparing interest rates. The cost of borrowing are more than offset by the fact that the private sector takes on risks that would have otherwise been the responsibility of the public sector in areas such as building time and cost overruns, and by its more efficient operational practices and use of resources. Therefore, PPP is able to achieve VfM because these savings over the whole life of assets and services provision outweigh any additional financing costs.


The author discusses about some best practices that align the requirements for PPP and traditional procured projects (TIP) from data collected through a survey in 31 countries including 22 OECD countries. The article discusses the concepts of ex-ante value assessment VfM and ex post VfM assessment.

The article provides a discussion of VfM and why it is an important objective of PFI projects. The article reviews variations in VfM calculations through a full empirical analysis of five PPP projects and a questionnaire analysis of an additional 44 projects. The authors suggest that VfM is often calculated with shifting timetables and additional uncertainties. They conclude by discussing criteria that project managers can use to reveal informative and insightful VfM calculations.


PPPs are common in the provision of transportation infrastructure but are less common in public transportation operation. This paper examines the influences of competitive contracts in P3 public transportation operation on VfM. It argues that competitive tendering leads to regulatory capture, provides “wrong” incentives for the winning bidder after the bidding process ends, and leads to the oversupply of services. The authors argue that negotiated performance-based contracts are superior alternatives for the public manager to pursue.


This report provides guidance for procuring agencies considering private finance initiatives (PFI). It establishes a three-stage process to assess the VfM of PFI schemes summarized as follows: (1) Program Level Assessment ensures that PFI is only considered in appropriate situations which would likely lead to good VfM; (2) Project Level Assessment replaces the previous Public Sector Comparator (PSC) and requires identification of every aspect in a project which are key to VfM; and (3) Procurement Level Assessment identifies market conditions and potential problems which could erode VfM.


This entire publication is focused on the PSC with detailed instructions on how to calculate it. It also includes examples of PSC calculations. This document would be helpful to public sector managers whom have never created a PSC before and have little information or guidance on it. The detailed information would help managers understand the nuances of the PSC and then they could use the examples as a model for how to construct their own PSC’s.


This document provides information about Infrastructure Ontario’s processes for calculating VfM practices and for assessing risk transfers. It provides a detailed step-by-step explanation of their process for quantifying and monetizing VfM and risk transfer. They recommend including all costs associated with a project, as well as using a constant discount rate for all costs included in the analysis. Deloitte & Touche, Canada LLP analyzed these practices and confirmed that they were “consistent with best practices observed in other Canadian and international jurisdictions.”

The purpose of this paper is to apply an economic lens to the analysis of whether or not PPPs are an efficient choice for providing public services. The paper argues that, although there are examples of PPP failures, PPPs do have proven their potential to reduce costs and improve service quality. The primary reasons why PPPs have these benefits are: competition through the bidding process, private sector economies of scale, private sector incentive structures, and the transferring of risk to areas that the private sector has more control over the public sector. The paper predominantly focuses on analyzing a wide range of PPP considerations such as inefficiencies, public goods, incomplete contracting, and the relative abilities of the public and private sector to borrow money at lower costs.


This article details the PPP arrangement to preserve libraries in Jackson County, OR. The author provides an analysis of the political and budget climates that threatened library services and how groups came together to support the idea of a PPP. Key selection criteria for management of PPP’s are included.


This paper is concerned with the mechanisms by which contractual uncertainty may impinge on the VfM of PPPs. Uncertainty is distinguished from risk in this analysis in that uncertainty are the problems throughout a contractual period that cannot be known a priori, whereas risks are known entities. Uncertainty in contracts is dangerous for public managers because of the almost certainty that post-contractual re-negotiations will occur. If uncertainty cannot be eliminated, the paper argues that the public manager must retain a position of power vis-à-vis the private supplier, so as to ensure clout during re-negotiations. This can be achieved through public-private interdependence and “customer (i.e. the public manager) dominance.” The paper argues that the public manager cannot always retain power for re-negotiations (often impinging the VfM of the PPP), and lists scenarios in which it is highly difficult for the public manager to do so.


This guide explains the process involved with contracting into public private partnerships for local municipalities in Canada. It explains what a PPP is, how to establish policies and procedures regarding PPP implementation, when it is a good idea to enter into a PPP, and how to work with PPPs once they are contracted.


This paper is a survey of VfM practices employed by international governments. Its goal is to provide guidance to public agencies considering using VfM by discussing the PSC, risk valuation, and discounting. It also discusses weaknesses in VfM analyses as practiced.


This study compares VfM practices between the United States and the international community, as well as
among the different states within the United States. Overall, the United States does not use public-private partnerships as much as the international community. Additionally, the United States does not make use of VfM assessments as consistently as the international community does. The authors of this study find that there is considerable variation among the different states, with some using VfM assessments and others using other forms of analysis, such as market valuation. They recommend increasing transparency of PPPs to increase their political feasibility, which can be done by publishing documentation, such as VfM analysis. They also suggest evaluating programs against their initial VfM assessments to find improvements that can be made to the analysis procedures. Finally, the authors suggest that higher trained experts may be needed to accurately perform these analyses.


The paper states that the achieving VfM relies on three criteria: “the nature of the project itself; a government that exercises effective project and contract management skills; and clear and effective risk allocation.” For successful implementation of PPPs, public managers contemplating the use of PPPs must “Ensure that the services to be provided respond to a clear public need and can be clearly identified and measured, ensure that the public sector has the expertise to assess and manage risk, ensure that the partnership can deliver the high-quality, efficient and responsive services through an optimal allocation of risk, and ensure that there are clear lines of accountability and redress.” If the public official can achieve these conditions, the paper argues that PPPs are always the best option for infrastructure projects.


This publication provides criticisms of PPPs, specifically focusing on VfM analysis and risk transfer analysis. Public sector managers should be aware of these potential problems, so they can mitigate them and have more credible VfM assessments to garner support for their projects. This document highlights that faulty VfM analysis and risk transfer analysis is often done, biasing the data in favor of PPPs. Thus, it is recommended that these analyses should be done by an independent body with a standardized discount rate to increase the legitimacy of estimates and the final recommendations.


This document provides guidance for the NHS in applying the UK’s Treasury Dept’s new PFI requirements and guidelines, as explained in “Value for Money Assessment Guidance”. It includes instruction on how to follow Treasury’s new VfM rules particularly with the new requirement to include a qualitative assessment of the viability, desirability, and achievability of PFI when assessed against alternative procurement routes.


The purpose of this paper is to provide an overview of the issues that need to be considered in the transferring of risk and how VfM can be maximized. The literature review of the paper states that VfM is often achieved by the transference of risk. The paper cites the main risk areas associated with P3s as: design, construction and development, performance, operating cost, variability of revenue, and P3 termination, and goes on to discuss each through the lens of whether or not the risk is transferred implicitly or explicitly. The paper then examines
five case studies of P3 arrangements and discusses their strengths and weaknesses as they pertain to the study’s hypotheses: “That PFI will deliver price certainty for the department; that PFI will ensure timely delivery; and that PFI will supply good quality assets.” The author finds mixed support for the hypotheses.


This article uses case studies from 3 PPP projects in the UK used under the PFI model. All three were construction projects. The authors find that in all three cases the projects were completed faster and at a lower cost than public sector estimates. They suggest that managers using VfM methodology compare PPP provision costs to business case estimates and public sector comparators. Costs should also be benchmarked to cost and quality before and after implementation of the particular PPP project.


This article approaches PPP relationships from the perspective of “private governance” trends in international economic activities. It suggests that a de facto PPP relationship exists in the financial sector, where a deregulatory approach has resulted in private entities managing, maintaining, and administering financial regulation on behalf of (or in lieu of) the government. The United States and other nations’ reliance upon big banks, termed “elite” banks by the author, to control the financial markets demonstrates this extreme form of PPP. Although not contractually provided for in most cases, large governments defer to the expertise of these elite banks in difficult or urgent situations while providing an “implicit” form of insurance in return.


The Virginia Department of Transportation’s (VDOT) Office of Transportation Public Private Partnerships authored this document outlining its policies and standards when evaluating proposed PPP projects. VDOT requires two VfM assessments to be done and this document contains step-by-step guidance on how these are conducted and reported. It also contains a checklist for analysts to ensure they included all necessary factors when conducting the VfM analyses. This document provides considerable information about VfM practices done by VDOT and can be used to show current practices within the United States and supply public managers with a foundation for creating their own VfM guidelines and standards.


This report focuses on water infrastructure projects that are carried out through PPP’s and the VfM a locality receives from a PPP arrangement. Specifically, this document focuses on the contract structure for water service PPP’s and provides suggestions on how to achieve the best VfM from projects. This document would be especially helpful to public managers designing water service PPP contracts, as well as public managers who are deciding on the conditions under which the PPP will take place.

The Partnerships Victoria policy establishes guidelines for undertaking P3 in Victoria, Australia. This piece outlines the role of the public sector comparator, identifying practical issues in its employment including risk adjustment and selecting the proper discount rate.


The author’s objective is to illustrate that the outcomes of optimizations via life cycle costs rely on key assumptions made during the calculation of the life cycle costs. The author develops a framework to characterize the differing kinds of assumptions made. The author’s framework is composed of 3 pairs of competing assumptions: technical versus economic life spans, static versus dynamic calculation methods, and costs only versus income minus costs analyses. The author then uses this framework of competing assumption types to evaluate how results vary when applied to case studies when assumptions shift.

“PFI Deals in Recession: Singing the Blues, Recession is Heaping Problems on a Controversial Form of Public Investment,” The Economist, 2 July 2009.

The author discusses a VfM audit conducted by the British National Audit Office and specifically notes the conflict between the theory that such arrangements reduce government expense and the theory that the contracts are “expensive pork” for the private sector.


This article reviews the Irish experience with water service PPP’s and analyzes if they truly provided VfM. The author finds that in many cases, the PSC and analysis of private sector bids were not accurately constructed in order to bias the decision in favor of a PPP in the design-build-operate model. This article should serve as a cautionary reminder to public managers that PPP’s will not always be the best procurement option and to be unbiased when creating and analyzing the PSC and private sector bids.


The article advises that the public manager pursuing a P3 in the public health sector should: ensure that the private entity’s mission is in line with the public agency’s, that a several private contractors are used in controversial issue areas, that the private entity’s independence in scientific judgment is preserved, and that the contract is thorough.


This resource book lists numerous case studies in different industries where PPP’s are used, such as water and wastewater services, transportation infrastructure, and solid waste management. Public managers responsible for PPP’s in those sectors could learn from previous PPP undertakings that may have similarities to proposed projects.

The author presents an argument that the best way to develop VfM analyses is to conduct a public sector cost comparison prior to requests for project bids. Including risk-factor pricing into VfM analysis is also key. The author uses previous research to illustrate larger descriptions for how to compute a public sector comparator as well as discount rates and risk allocation. VfM evaluation is taken at both a theoretical and a mathematical level. The author concludes by relating the Portuguese experience in PPP’s to the applied discussion of cost and risk calculations using actual data.


This brief white paper discusses PPP’s for both improving aging water infrastructure in developed countries and creating water infrastructure in developing countries. The author notes that there is no optimal design of water projects; the best design for a project depends on the goal of the project.


The author presents an overview of the British experience with PFI’s and PPP’s. The history of PPP’s in Britain is discussed along with the comparative financing and accounting instruments used to design them. The particular motivations for PPP’s are discussed in the context of the UK finance strategies. The paper concludes with recommendations for future private financing initiatives to enhance public value from investments.


Veolia Water is a private sector company that works with governments in PPP projects to provide water services to the general population. This short document explains the impending water scarcity and problems that will likely stem from it. It stresses the importance of finding local solutions to this global problem and suggests ways to manage water services more sustainably.


This report was commissioned by the Department of Business, Innovation & Skills, UK, and summarizes the results of the work stream on the economic rationale for the Green Investment Bank (GIB), a UK Bank under the Department of Business, to finance the transition to a green economy. The report seeks to respond to questions related to the economic rationale for the establishment of the GIB, such as the existence of market failures, areas of financial shortage, the creation of VfM, and compares the GIB with alternative policies.


This document is in response to an inquiry into the E. coli found in Walkerton’s water supply and analyzed the role of PPP’s in water services in Ontario, Canada. This publication is helpful to public managers who are in charge of water service PPP’s. It provides a global overview of water service PPP’s and their benefits. It also details factors public managers must consider when undertaking a water service PPP.

This document was prepared for an inquiry on the subject of managing water providers, so it could be especially useful to public managers engaged in PPP’s where they will have long relationships with water service providers. The CCPPP believes that the private sector can play a role in water service provision and makes recommendations for best practices and general strategies that can be used when undertaking a water service PPP.


The article combines several World Bank/IFC work experiences in advising their member states on PPPs on projects related to infrastructure, health and education. IFC advisors use VfM techniques during the design phase of infrastructure projects with private participation to identify whether the participation of the private sector creates enough value to a government to offset the incremental costs of private financing. The article discusses the important elements one should consider when assessing VfM. VfM compares how much it will cost the government to build and run an infrastructure facility if completed by the public sector (reference project) versus the cost under a PPP scheme. VfM is calculated by subtracting the total cost of the PPP project from the cost of the reference project: if the result is a positive number then there are benefits to bringing in the private sector participation.


In this presentation, Yescombe identifies key evaluative criteria for those considering PPP’s. Of particular value to this presentation are criteria that public managers should watch out for when considering undertaking public partnership initiatives.


The article develops a more comprehensive concept of “value for money” and its possible practical application to different projects in Latin America. VfM is defined as the optimum combination of the project’s whole life costs and its quality in relation to the user’s requirements, and does not always mean choosing the lowest cost bid. It should not be chosen for purposes of lowering budget expenditures alone.


Mackenzie and Zerunyan detail several trends that are underway with social infrastructure projects. Specifically, the authors look at several finance instruments and how to leverage existing finance mechanisms to attract new lenders for smaller infrastructure projects. Other discussion topics include the benefits of PPP’s for social infrastructure projects and the ways some states currently structuring them.


The paper identifies six major factors that create barriers to PPPs in infrastructure development, including: “social, political, and legal risk; unfavorable economic and commercial conditions; inefficient public procurement framework; lack of mature financial engineering techniques; problems related to the public sector; and problems related to the private sector.” These barriers were identified via a survey of experts worldwide. The
paper explores best practices regarding how to remove these barriers through a literature review, case studies, and consultation with experts. The paper constructs a new protocol for ensuring infrastructure PPP success with nine components. In regards to VfM, the author argues that the public manager should utilize the best value source selection approach (BVSS) that “the public client only needs to identify core requirements or minimum service standards and allow private sector participants to make their discretions as to whether offering higher standards (75).” The paper goes into detail regarding how and why this approach is ideal.