Survey and Analysis of Transportation Investment Models in Other Countries

Stage 2 Report: Survey and Analysis of the Use of Public Sector Comparator (PSC) and Value for Money (VfM) Analyses in Developed Countries with Mature PPP Programs

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I. Key Objectives and Overview of Research Approach

Survey and Analysis of Transportation Investment Models in Other Countries – Key Objectives:

- Conduct an analysis of transportation investment models in other countries addressing:
  - Stage 1: Survey and Analysis of the Frameworks that Govern Transportation Investment in Other Countries
  - Stage 2: Survey and Analysis of the Use of Public Sector Comparator (PSC) and Value for Money (VfM) Analyses in Developed Countries with Mature PPP Programs
  - Stage 3: Survey and Analysis of Investment through Government-Sponsored Lending Institutions
- Develop a resource for U.S. transportation officials to better understand international approaches and how to incorporate best practices and innovations in U.S. transportation investment programs

Objective Of Stage 2: Survey and Analysis of the Use of Public Sector Comparator (PSC) and Value for Money (VfM) Analyses in Developed Countries with Mature PPP Programs

The objective of Stage 2 is to:

- Provide an understanding of how different jurisdictions use Public Sector Comparators (PSC) and Value for Money (VfM) analyses to evaluate public and private procurement options
- Complete a survey for the UK that includes:
  - Objectives of the PSC and VfM analyses
  - Timeframe or standardized schedule used to complete PSC and VfM analyses
  - Inputs and assumptions used to compute VfM
  - Typical stakeholders involved throughout the analyses
  - Extent to which quantitative and qualitative assessments are considered in determining if a PPP is an appropriate procurement option
- Highlight primary differences between analyses conducted in the UK, Canada, and Australia, and discuss applicable practices for the U.S. market
- Research and report on how issues relating to livability and sustainability can be reflected in the VfM analysis

Objective Of Stage 2: Survey and Analysis of the Use of Public Sector Comparator (PSC) and Value for Money (VfM) Analyses in Developed Countries with Mature PPP Programs

The following table highlights the key research questions requested by U.S. DOT and identifies where the questions are addressed in this Report:

Research Questions	Summary of UK Approach	Reference
i. What are the objectives of the analyses and how are the results used?	VfM and PSC analyses are used to assist governments in making investment decisions and selecting procurement methods that best meet the public's needs	Slides 12-16
ii. Exactly what does the analysis consist of? Include detailed examples of calculations that make up the analysis.	A VfM analysis consists of qualitative and quantitative assessments. The quantitative assessment uses a PSC and a Shadow Bid Model (SBM) to compare procurement methods. The UK uses a 3 stage approach to conduct VfM analysis for all potential PFI projects.	Slides 14-16, 25-32
iii. Who undertakes the PSC or VfM analyses?	Public Sector Procuring Department (e.g., Department for Transport) conducts the VfM analysis and PSC, although no longer required to develop detailed PSC.	Slides 19, 20, 23
iv. At what point in the planning process are the analyses performed?	VfM analysis is conducted during the capital planning, investment decision and procurement stages of the project lifecycle. The PSC and PPP models are developed during the feasibility study, before bids are received and procurement method is determined, to enable the analyses to be performed	Slides 12,22
v. To what extent do the analyses incorporate considerations that are not quantifiable, but are important for public decision-making?	The UK has recently placed more emphasis on the qualitative assessment of VfM analysis, including social and environmental factors.	Slides 25-28

Objective Of Stage 2: Survey and Analysis of the Use of Public Sector Comparator (PSC) and Value for Money (VfM) Analyses in Developed Countries with Mature PPP Programs

- **This Report focuses on the VfM analysis methodology and practices developed by the UK.** A summary of the differences in the approach between the UK, Australia and Canada are also highlighted.

Primary Jurisdiction:

UK	• Highest deal flow and one of the most sophisticated PPP/PFI markets in the world • Strong use of PSC and VfM in delivering PFI projects • High level of documentation is published on the use of PSC and VfM analysis

Additional Jurisdictions:

Australia	• Similar governance structure, car ownership/mass transit patronage levels, bulk freight and land mass/urbanization characteristics to the U.S. • Extensive guidance material on PSC and VfM analysis from the national and state governments • Strong deal flow for PPP projects
Canada	• Strong use of PSC and VfM analysis • Strong deal flow for PPP projects • Specific guidelines and regulations developed at the provincial level.

Source: Based on Survey of PwC Country Office staff

II. Overview of PSC and VfM

Definition of a Public Private Partnership

- **There is no global definition of a Public Private Partnership. The terms and definitions vary by jurisdiction:**

Jurisdiction	Definition
UK	A Private Finance Initiative (PFI) is an arrangement whereby the public sector contracts to purchase services from the private sector on a long-term basis, often between 15 to 30 years. In the UK, a PFI is only one type of Public Private Partnership (PPP). There are many other types of PPP arrangements, typified by some form of joint working arrangement between the public and private sectors.
Australia	A Public Private Partnership (PPP) is a long-term contract between the public and private sectors where government pays the private sector to deliver infrastructure and related services on behalf, or in support, of government's broader service responsibilities. PPPs typically make the private sector parties who build infrastructure responsible for its condition and performance on a whole-of-life basis.
Canada	A Public Private Partnership (P3 or PPP) is a form of procurement that uses a long-term, performance-based contract where appropriate risks associated with a project can be transferred cost effectively to a private sector partner.

Source: UK HM Treasury Value for Money Assessment Guidance, Infrastructure Australia, Partnerships BC

How is a Public Private Partnership different from a Conventional Procurement?

Conventional Procurement	Public Private Partnership
In a conventional procurement, the public sector: • Either performs the design work in-house or negotiates with an engineering design firm to prepare drawings and specifications • Separately contracts for at-risk construction by engaging one or multiple construction contractor(s) through competitive bidding • Retains the majority of the risk associated with the project	In a Public Private Partnership, the public sector: • Typically awards a single contract that may require the private company to design, build, finance, operate, and/or maintain an asset • Shares or transfers a portion of the risks to the private sector under the single contract • Typically, makes payments to the private sector company when services are delivered (although milestone payments may be made during construction)

Source: Based on Survey of PwC Country Office staff

VfM Analysis in the Investment Process

Capital Planning
- Develop capital strategy
- Identify investment options
- Prioritize projects and potential procurement options

Preliminary Strategic Assessment
- Develop a preliminary scope and outline of the project
- Conduct high-level qualitative and quantitative VfM assessments to determine potential for PPP delivery

Detailed Project Assessment
- Develop project scope, timing, costs, and preferred alignment
- Refine the qualitative and quantitative VfM assessments based on new project information

Does PPP offer VfM for the project?

If VfM is demonstrated, the project moves to procurement as PPP

If VfM is not demonstrated, then alternative procurement options are considered

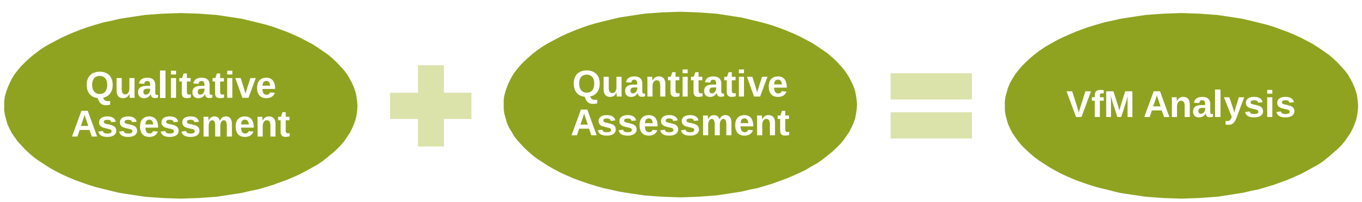
Procurement
- Issue RFQ/RFP documents
- Receive and evaluate bids
- Assess relative VfM offered by each bid

Financial Close with Selected Bidder

Source: UK HM Treasury Value for Money Assessment Guidance

What is Value for Money (VfM) Analysis?

- **VfM is the optimum combination of whole lifecycle costs and quality (or fitness for purpose) of the good or service to meet the user's requirement**
- VfM analysis may be used to:
  - Assist in making the overall investment decision for a potential project
  - Assist in selecting the appropriate procurement method, whether it be a PPP or conventional procurement (primary focus of this presentation)
- VfM analysis compares the qualitative and quantitative impact on government of delivering a project through conventional procurement with the impact of delivering the same project as a PPP
  - Quantitative Assessment: Comparison of estimated, risk-adjusted costs
  - Qualitative Assessment: Key considerations that cannot be easily quantified



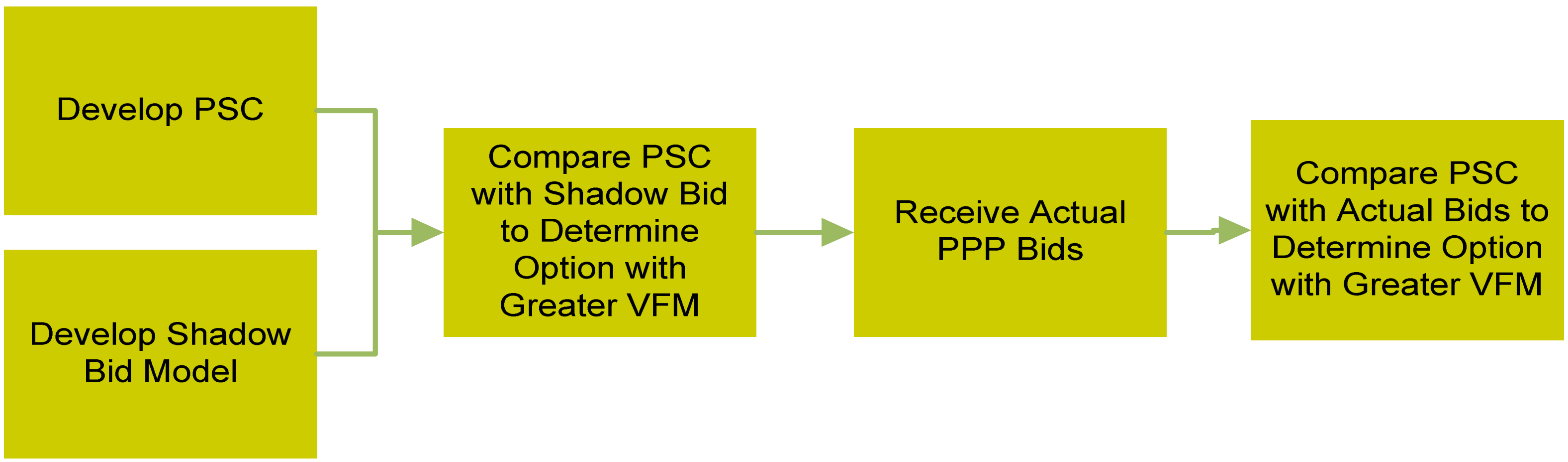
<u>Key Observation:</u>

If the potential exists for the project to be delivered more efficiently and at a lower risk adjusted cost as a PPP, when compared to a conventional procurement, then the PPP option presents greater VfM

Source: Based on Survey of PwC Country Office staff

Tools Used in VfM Analysis

- **The main tools used in a quantitative VfM assessment are the Public Sector Comparator (PSC) and Shadow Bid Model (SBM)**
- The graphic below displays how a PSC and SBM may be developed and compared to assess VfM at different stages



- Estimate the costs of a project if it were reasonably undertaken by the public sector (PSC) or the private sector (SBM)
- Typically constructed before bids are received

- SBM is compared to PSC:
  - Prior to RFQ issuance
  - Prior to RFP issuance

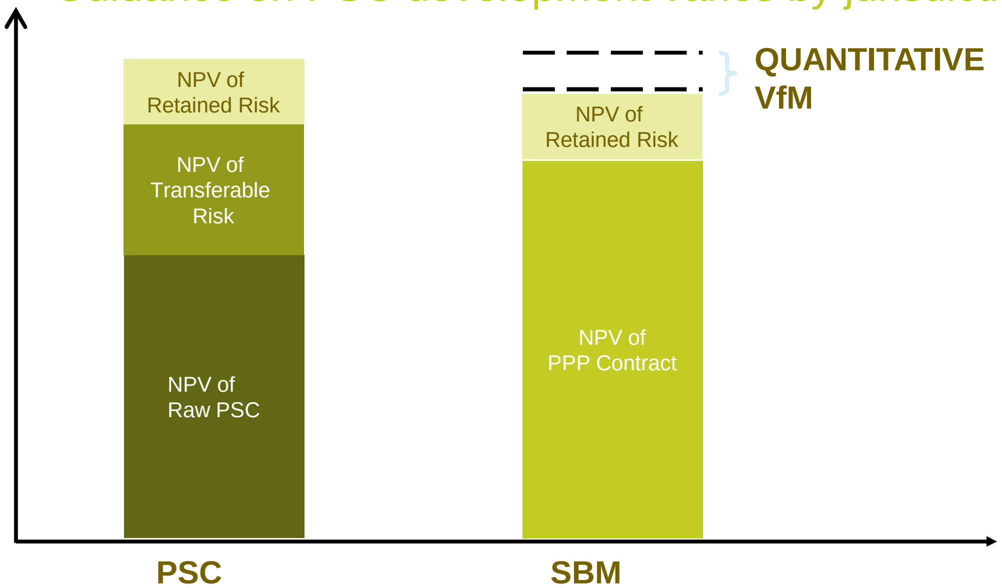
- Receive actual costs of PPP bids from vendors during procurement

- Actual Bids are compared to PSC:
  - When bids are first received and during bidder selection
  - Prior to closing the deal
- In some jurisdictions, including the UK, actual bids are not typically compared to PSC

Source: Based on Survey of PwC Country Office staff

The Public Sector Comparator (PSC)

- **Represents the whole lifecycle, risk-adjusted cost estimate for a project if it were to be financed, owned, and implemented by the public sector**
  - Provides a baseline measure to compare against future bids
  - Provides a benchmark to measure value for money
  - Uses financial and statistical modeling techniques to estimate project cost
- A PSC is constructed before bids are received and may be updated throughout the procurement process
- Guidance on PSC development varies by jurisdiction



- This chart shows how the net present value (NPV) of the PSC and Shadow Bid Model (SBM) may be compared during the quantitative assessment
- **The difference between the total NPV of the conventional procurement and PPP options represents the quantitative VfM**

Source: Based on Survey of PwC Country Office staff

The Shadow Bid Model (SBM)

- Represents the risk-adjusted cost estimate to the public sector for a project that is delivered by the private sector. The private sector may be responsible for the design, construction, finance, operations and/or maintenance of the asset.
- A shadow bid is constructed before bids are received
- A shadow bid:
  - Allows the public sector to estimate the bid price that could be received if the project is structured as a PPP
  - Provides a benchmark to measure value for money
  - Uses financial and statistical modeling techniques
- In many jurisdictions, a shadow bid helps the government select a procurement method by comparing the PSC to the shadow bid during the early stages of VfM analysis, to assess the potential benefits and efficiencies of procuring the project as a PPP.

Source: Based on Survey of PwC Country Office staff

III. VfM Analysis in the United Kingdom

Objectives of VfM Analysis in the UK

- The UK conducts a VfM analysis for all forms of procurement, including but not limited to projects that are being considered as PFIs. The public sector:
  - Compares potential outcomes of alternative procurement options
  - Uses historical data from similar projects to inform and benchmark the VfM analysis
  - Determines the procurement method which allows the public to realize the optimum combination of whole lifecycle costs and achieve the quality required of the good or service

Benefits of VfM Analysis	Challenges of VfM Analysis
• Helps identify the drivers of a project that will provide value for the public sector, which may inform the development of procurement and contractual documents • Focuses the public sector's evaluation on the whole lifecycle costs associated with a project, rather than on the costs of individual project components	• Typically requires assistance from multiple external advisors, including financial and technical advisors • May be timely and costly to complete a detailed VfM analysis, especially during the early planning phases • Requires significant reviews and continuous assessment of VfM leading up through financial close

Source: UK HM Treasury Value for Money Assessment Guidance; Based on Survey of PwC Country Office staff

Summary of VfM Analysis for PFI Projects in the UK

Topic	Analysis
Standard Processes and Milestones	The UK utilizes a standard, 3-stage VfM analysis methodology. VfM is analyzed during the following stages: Stage 1: Program Level Assessment Stage 2: Project Level Assessment Stage 3: Procurement Level Assessment
Key Stakeholders	The contracting UK national government department or procuring authority is responsible for conducting the VfM analysis, with guidance from Her Majesty's (HM) Treasury
Tools Used to Conduct VfM	VfM guidance and a financial evaluation tool spreadsheet is used to calculate quantitative VfM. Customized tools may also be developed by specific departments.
Qualitative Assessment	Assessment may include: Use of new or innovative technology, environmental emissions, safety and prevented fatalities, health benefits, and design quality
Quantitative Assessment	Assessment may include: Equity and project internal rates of return (IRR), comparative net present values (NPV), and estimated unitary payment

Source: UK HM Treasury Value for Money Assessment Guidance

Introduction and Evolution of VfM Analysis in the UK

Private Finance Initiatives (PFI) grew out of a formalized legal framework set forth by the British government in 1992. Today, the UK has one of the most developed PFI market in the world. In 2009, the UK closed 52 PFI deals at a total value of US$8.2B

- The UK has developed a structured and standardized approach to VfM analysis, which is outlined in national guidance. The public sector conducts VfM analysis as a continuous assessment, in order to:
  - Assist in making the overall investment decision for a potential project
  - Assist in selecting the appropriate procurement method, whether it be a PFI or conventional procurement
- The results of the VfM analysis may also be used to inform the development of procurement documents, such as RFQs/RFPs, as well as the bid evaluation criteria

Source: UK HM Treasury Value for Money Assessment Guidance, Infrastructure Journal

Introduction and Evolution of VfM Analysis in the UK (Cont'd)

- In recent years, the UK has revised its approach to VfM analysis to reflect lessons learned from previous projects. It now places additional emphasis on the qualitative aspects of VfM analysis, as compared to the quantitative aspects:
  - The Procuring Authority is no longer required to develop a detailed PSC, due in part to the high costs and inherent limitations associated with the data
  - A standard spreadsheet tool is adopted to evaluate quantitative VfM

Benefits of Revised Approach	Challenges Associated with Revised Approach
• Reduces reliance on the quantitative VfM assessment to select projects/award contracts and places additional emphasis on qualitative considerations such as innovative design and environmental factors • Limits the impact of subjectivity and bias on the quantitative VfM assessment outcomes to address concerns that a PSC can be skewed to deliver a desired result • Reduces cost associated with development of quantitative VfM assessment	• Reduces the ability of the public sector to accurately compare bids received with a conventional procurement option – historically, a detailed PSC would serve as a baseline against which to measure bids and often resulted in increased communication between the public and private sectors if estimates were not comparable with actual bids • Uses a set discount rate, which does not incorporate a risk adjustment and often varies from the discount rate calculated by the private sector

Source: Based on Survey of PwC Country Office Staff

VfM Analysis Throughout the PFI Project Lifecycle

Capital Planning | **Investment Decision** | **Procurement** | **Financial Close** | **Contract Term Completion**

Capital Strategy

VfM Stage 1: Program Level Assessment

- Initial analysis by the procuring authority to determine if a program is suitable for PFI procurement
- Informs the investment program

VfM Stage 2: Project Level Assessment

- Detailed analyses to support the project business case
- Informs the procurement decision

VfM Stage 3: Procurement Level Assessment

- Analysis of VfM offered by bids
- Informs selection of preferred bidder

Audits and reviews are also conducted Post-Financial Close

Source: UK HM Treasury Value for Money Assessment Guidance

Key Stakeholders in the UK

Supporting Government Agencies and Departments	Procuring Departments and Authorities	Supporting Stakeholders
• **HM Treasury** – Provides guidance on the development of VfM analysis • **Office of Government Commerce (OGC)** – Provides guidance on matters such as the procurement process, partnering arrangements, and project/risk management • **Infrastructure UK** – Created within HM Treasury and absorbed Partnerships UK, which supported and invested in infrastructure projects, and developed public service commissioning models • **The National Audit Office (NAO)** – Conducts objective, independent analyses of PFI projects, which are released to the public	• **Public Sector Procuring Department** – Conducts the VfM analysis. The Department Accounting Officer has primary responsibility for VfM analysis, and delegates tasks to Central Project Finance Unit (PFU) in Stage 1 and the project team in Stages 2 and 3.	• **External Advisors** – Professional financial, technical, and legal advisory firms assist the procuring authority during the VfM analysis, as needed. • **Private Sector** – Participates in bidder conferences and market sounding exercises that are conducted during Stages 1 and 2 of the VfM analysis.

Source: UK HM Treasury Value for Money Assessment Guidance, HM Treasury Green Book, Infrastructure UK

Tools Used during VfM Analysis in the UK

- The UK has developed several tools and documents to provide procuring authorities with guidance on conducting the VfM analysis, as well as additional guidance relevant to procuring PFI projects. Guidance includes:
  - Value for Money Assessment Guidance (HM Treasury)
  - Value for Money Quantitative Assessment User Guide and Evaluation Template (HM Treasury)
  - Standardization of PFI Contracts (HM Treasury)
  - Competitive Dialogue Procedures (OGC)
  - The Green Book (HM Treasury)

Benefits of the UK Approach
• Provides consistency in the application of VfM across all projects and is not sector specific • Ensures a minimum standard of quality in the analysis that underpins the government investment decision, procurement method, and selected bidder • Reduces transaction costs • Provides transparency and increases confidence in the market for how the government selects PFIs

Source: Based on Survey of PwC Country Office Staff

Qualitative Assessment of the VfM Analysis

- In the UK, the qualitative assessment is an essential support tool when conducting the VfM analysis, and it assists the government in evaluating key considerations that cannot be quantified
- In general, a qualitative assessment includes the analysis of every consideration, outside of cost, that may differentiate a conventional procurement from a PFI
- The results of the qualitative assessment may be weighted more heavily than the results of the quantitative assessment when:
  - The difference in the quantitative results for the CP option and the PFI option are marginal
  - There is a high level of uncertainty around quantitative input variables
  - The quantitative outputs are highly sensitive to input variables

Key Observation:
The qualitative assessment used by the Department for Transport considers use of innovative technology; impact on environment and emissions (including effect of greenhouse gases); impact on safety and prevented fatality, and quality of design

Source: UK HM Treasury Value for Money Assessment Guidance

Qualitative Assessment of the VfM Analysis

- The qualitative assessment is revisited at every stage of the VfM analysis
- To reduce the inherent limitations of conducting a qualitative assessment (e.g., it is difficult to assess the impact of innovation during planning), the UK has sought to standardize the assessment by developing standard questions and issues in the VfM guidance to address during each stage of the VfM analysis. The questions are designed to assess factors affecting:
  - **Viability –** The project has clearly defined output specifications and appropriate risk transfer to be effectively structured as a PPP (i.e., project can be contracted and costs can be projected on a whole lifecycle basis)
  - **Desirability –** The project has benefits, such as incentives and risk transfer, that make it attractive for both the public and private sector (i.e., possibility of cost/time savings and development of innovation)
  - **Achievability –** There is an appropriate level of market interest, and the private sector has the skills and capabilities to manage the project complexities (i.e., private sector has capacity to support, and competition is evident)

Source: UK HM Treasury Value for Money Assessment Guidance

Qualitative Assessment Process for the VfM Analysis

- The diagram below shows the process for the qualitative assessment for a VfM analysis in the UK:

Stage 1: Program Level Assessment

- Assess and determine if a PFI is a viable procurement option
- Assessment considers:
  - Clarity of output specifications
  - Ability to structure as long-term contract
  - Degree of operational flexibility
  - Ability of private sector to manage generic risks
  - Degree of innovation
  - Ability to estimate whole life-cycle costs
  - Level of market interest

Stage 2: Project Level Assessment

- Revisit the Stage 1 assessment and update based on increased understanding of requirements and refined data
- Market sounding activities, such as bidder conferences, are conducted to evaluate:
  - Quality of expected competition
  - Capacity of market to fulfill current and future requirements
  - Market conditions that may impact bids

Stage 3: Procurement Level Assessment

- Conduct a continuous assessment to monitor consistency
- Assessment may also consider:
  - Likelihood of market failure
  - Competitive capacity of bidders during RFQ or RFI phase
  - Efficiency of project plan
  - Market appetite for risk transfer

Source: UK HM Treasury Value for Money Assessment Guidance

Qualitative Assessment for Livability and Sustainability

- Social and environmental factors are considered in project selection and are reassessed during the VfM analysis
- In the UK, transport projects are assessed against five qualitative objectives for transport: environmental impact, safety, economy, accessibility, and integration
- In March 2010, the Department for Transport released the Transport Carbon Reduction Delivery Plan, which establishes three five-year cycle targets to reduce greenhouse gas emissions. The first five-year period, 2008-2012, sets out the target of a 22% reduction.
- There are several specific examples of livability and sustainability considerations that may be used in the qualitative VfM assessment. In general terms, if there is opportunity for innovation by the private sector that may result in more efficiently meeting carbon reduction, environmental, and sustainability goals, this may be considered in the qualitative VfM assessment.
- Examples of specific factors that may be considered during the qualitative VfM assessment include:
  - Project environmental emissions
  - Potential purchase of more fuel efficient and electric vehicles
  - Impact of overall planning and integration of rail transit with pedestrian, bicycle, and bus access
  - Impact of availability on transport services and ability to meet expected transport demand

Source: UK Department for Transport; Based on Survey of PwC Country Office Staff

Quantitative Assessment of the VfM Analysis

- The UK uses a standard spreadsheet tool, developed by HM Treasury, to complete a quantitative assessment during Stages 1 & 2 of the VfM analysis:
  - Using standard inputs and flexibility factors, the spreadsheet compares the net present values of the conventional procurement (CP) option against the PFI option
  - The spreadsheet allows for a more simplified approach to conducting VfM, as compared to the development of a detailed PSC. For example, the spreadsheet provides a standardized model that includes set inputs and formulas for calculating outputs such as net present value and internal rates of return.
  - The spreadsheet tool utilizes a fixed discount rate, which is the social time preference rate set by HM Treasury in the UK's Green Book. The discount rate does not include a risk adjustment, which is unique to the UK.
  - In contrast, other jurisdictions base the discount rate of the weighted average cost of capital
- During Stage 3, the project team analyzes the VfM offered by the bids received. If the bids indicate a significant increase in costs from the PFI option developed during Stage 2, the project team will revisit the quantitative assessment from Stage 2 that supported to selection of the PFI Option.

Source: UK HM Treasury Value for Money Quantitative Assessment User Guide and Evaluation Template; Based on Survey of PwC Country Office Staff

Quantitative Assessment Process for VfM Analysis

- The HM Treasury guidance outlines the following process for the quantitative assessment:

Stage 1: Program Level Assessment

- Conduct quantitative assessment using VfM spreadsheet with high-level estimates
- All estimates should be supported by evidence from past experience and projects

Stage 2: Project Level Assessment

- Update VfM spreadsheet with more detailed information as it becomes known
- Complete upfront procurement appraisal and financing model as part of the business case
- Best practice for the project team to develop a Shadow Bid Model (SBM) as part of the business case

Stage 3: Procurement Level Assessment

- Conduct continuous assessment to monitor quantitative VfM through contract award and financial close
- If there is a significant increase in costs of PFI option, must revisit Stage 2 assessment

Source: UK HM Treasury Value for Money Assessment Guidance

Inputs and Outputs of Quantitative VfM Assessment in the UK

Inputs (Variables)

- Timing
- Escalators
- Discount Rate
- Capital & Operating Expenditures
- Optimism Bias
- Lifecycle Costs
- Transaction Costs
- Third Party Income
- Flexibility Factors
- Indirect VfM Factors
- Tax
- Financing Costs
- User Charges*

Sensitivity Analysis

- Assesses the effects of varying key input values (e.g. capital and operations costs, discount rate)
- Tests the vulnerability of outputs to changes in inputs

Outputs (Calculations)

- **Equity Internal Rate of Return** - Rate of return on investment for project equity capital investors
- **Project Internal Rate of Return** - Return on total project cash flow where cash flow equals total income of private party accrued over the life of the project less incurred costs by the private party
- **CP NPV Costs** - Difference between cost of present value cash inflows and present value cash outflows for a CP
- **PFI Net Present Value** - Difference between cost of present value cash inflows and present value cash outflows for proposed PFI

* User charges are an optional input and may vary based on type of project

Source: UK HM Treasury Value for Money Quantitative Assessment User Guide and Evaluation Template

Interpreting the Results of the Quantitative VfM Assessment

- If the VfM spreadsheet calculates that the Indicative PFI VfM value is > 0, then the procuring authority might conclude that the PFI Option is more likely to provide VfM than Conventional Procurement Option (in the absence of sensitivity analysis and qualitative assessment)

An example of quantitative assessment results for a UK PFI project

	PSC NPC £M's	PFI NPC £M's
Base Case Scenario (15% pre-tax IRR)	314	235
Indicative PFI value for money %		25.11

Source: South Tyne & Wear Waste Management Partnership Outline Business Case

- In order to increase confidence of results provided by the quantitative VfM spreadsheet, the spreadsheet is run several times using different input assumptions and sensitivities

Source: UK HM Treasury Value for Money Quantitative Assessment User Guide and Evaluation Template,

Risk Assessment and Allocation

- Rigorous identification and management of risk throughout a project, whether procured conventionally or through a PFI, is important in calculating VfM and providing optimal rather than maximized risk transfer.

Stages of Risk Analysis in the UK

- Internal specialists, with the assistance of financial and technical advisors, are typically responsible for assisting the procuring authority with the risk assessment
- A **risk register** or **risk log** is used as a tool to identify and quantify value and probability of risks

Source: UK HM Treasury Value for Money Assessment Guidance

Accounting for Risk in VfM Analysis

- The quantitative VfM spreadsheet accounts for several forms of risk:

  – Assumes a distribution of risk between the procuring authority and the private sector partner as set out in the Standardization of PFI Contracts (SoPC)
  – Incorporates optimism bias (OB), which accounts for tendency for project appraisers to be optimistic and less objective on certain risks
  – Incorporates flexibility factors that account for unknown risks that may develop over the life of a project and occur due to unexpected events

- The qualitative assessment includes an assessment of private sector's appetite for risk, and expected degree of risk transfer
- If market conditions do not support at least a moderate degree of risk transfer for project, PFI may not be considered a viable procurement option

Source: UK HM Treasury Value for Money Assessment Guidance, UK Standardization of PFI Contracts

Outcomes of VfM Analysis

- The procuring department reviews the results of the qualitative and quantitative assessment at the end of each stage, which informs the overall VfM analysis and decision-making process:
  - The qualitative assessment helps inform the public sector about the capabilities and competitiveness of the market, the amount of expected risk transfer, the degree of operational flexibility, the impact of innovation, etc.
  - The quantitative assessment informs the qualitative judgment on how best to allocate capital and make appropriate use of any private capital available
- The outcomes of the VfM analysis inform:
  - Stage 1 – The development of the investment program, by indicating the investments potentially suitable for PFI delivery
  - Stage 2 – The selection of a project's preferred procurement option (conventional procurement or PFI), and the development of the Outline Business Case
  - Stage 3 – The selection of the preferred bidder and achieving Financial Close

Source: UK HM Treasury Value for Money Assessment Guidance

Reporting of VfM Outcomes

- The National Audit Office (NAO) conducts objective, independent analyses of PFI projects, which are released to the public
- The conclusions of the VfM analysis, the evidence to justify the conclusions, and the proposed project framework for the spending period are summarized in existing, publicly available documents – typically the Departmental Investment Strategies
- If concerns or issues exist around commercial confidentiality or of biasing the public sector's negotiating position, departments have the right to limit the availability of the VfM analysis

Source: UK HM Treasury Value for Money Assessment Guidance, National Audit Office

Comparison of VfM Analysis in UK, Canada, and Australia

UK	Canada	Australia
National Government provides guidance on VfM analysis	State Governments provide guidance on VfM analysis	National and State Governments provide guidance on VfM analysis
Quantitative VfM template provided by the National Government, includes a set discount rate which is the social time preference rate developed by HM Treasury	No national template provided, although certain provinces (e.g., ON) have developed standard tools; models are generally developed for individual projects and the discount rate approach fluctuates (e.g. BC and ON)	No template provided, models developed for individual projects and the discount rate is based on weighted average cost of capital
Templates and guidance to develop the conventional procurement and PFI option	Guidance on developing a PSC and Shadow Bid (e.g., BC and ON)	Guidance on developing a PSC, PPP/Shadow Bid model not mandatory for analysis
PSC not utilized in VfM analysis during the bid phase	PSC utilized in measuring VfM offered by bids	PSC utilized in measuring VfM offered by bids
Public release of VfM analysis outcomes is through government audit processes	VfM analysis outcomes publicly reported after financial close	VfM analysis outcomes publicly reported after financial close
Quantitative and qualitative VfM analysis is conducted, with a stronger emphasis on qualitative VfM analysis	Quantitative and qualitative VfM analysis is conducted	Quantitative and qualitative VfM analysis is conducted

Source: Based on Survey of PwC Country Office Staff

IV. Summary of Key Lessons Learned And Considerations for the U.S.

Summary of Key Lessons Learned and Considerations for the U.S.

VfM Analysis is an important component used to assist the public sector in determining if a project may be procured as a PPP

- Key lessons learned for the U.S. Department of Transportation include:
  - Ownership of VfM analysis guidance (either by federal, state, or local governments) is developed to fit the needs of the appropriate stakeholders
  - Both qualitative and quantitative assessments are considered as part of the VfM analysis
  - Standard tools and guidance can be developed in an effort to streamline analysis and reduce costs
  - VfM analysis can account for both known and unknown risks

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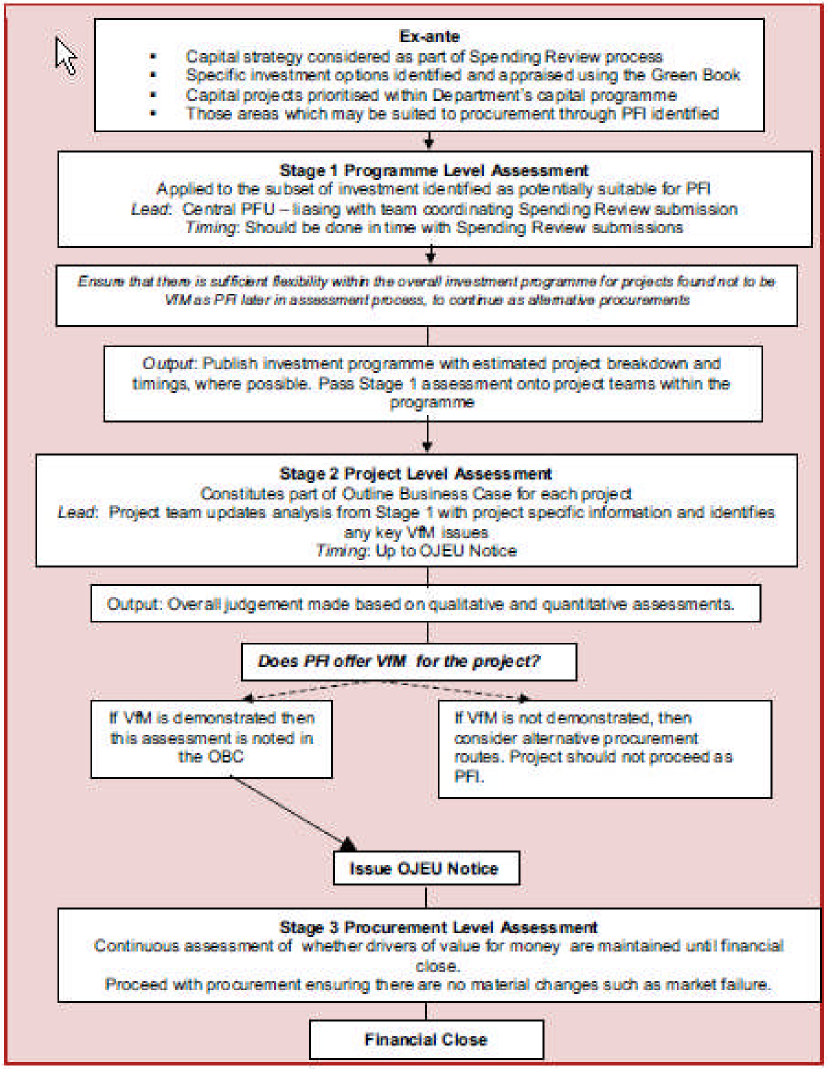
Appendix B: Description of VfM Guidance Sources

- **Value for Money Assessment Guidance (HM Treasury)** - provides procuring authorities with a process and approach in developing a VfM analysis for consideration of the PFI procurement option.
- **Value for Money Quantitative Assessment User Guide and Evaluation Template (HM Treasury)** - user guide document and evaluation template Excel spreadsheet both developed by HM Treasury's Corporate Finance Team. The user guide document defines terms, input variables, and output calculations, and supporting assumptions used in the evaluation template.
- **Standardization of PFI Contracts (HM Treasury)** - guide for public sector agencies in drafting PFI contracts with three main objectives:
  - Promote a common understanding of risks involved in a PFI project
  - Standardize approach and pricing across a wide range of projects
  - To reduce the time and costs of negotiation by developing a standard agreeable approach for all parties
- **Competitive Dialogue Procedures (OGC)** - guide compiled from the experiences and advice of contracting authorities, practitioners, and bidders and advisors with significant procurement experience to provide insights and suggested approaches to contracting/procurement authorities
- **The Green Book (HM Treasury)** - guide developed for government decision makers in the appraisal and evaluation process of a new policy, project, or program. The Book builds and outlines its appraisal and evaluation process in a 6-stage iterative approach:
  - Rationale - action justification
  - Objectives - goals
  - Appraisal - prospective assessment of social costs and benefits to see if proposal is worthwhile
  - Monitoring (Implementation) - information collection and tracking of policy, program, or project
  - Evaluation - retrospective assessment using historic data after the fact
  - Feedback - new input/insight after an appraisal or evaluation iteration
- **Additional department or agency-specific guidance relevant for PPPs** - project or department/agency specific standards and guidance

Appendix C: Snapshot of UK VfM Assessment Guidance



Source: UK HM Treasury Value for Money Assessment Guidance

Appendix D: Sample Qualitative Assessment Questions

Stage 1: Program Level Assessment

Viability	Desirability	Achievability
• **Program Level Outputs and Objectives** – Can the quality of the service be objectively and independently assessed? • **Soft Services** – Are there good strategic reasons to retain soft service provision in-house (e.g., longer-term implications of skill transfer)? • **Operational Flexibility** – What is the likelihood of large contract variations being necessary during the life of the contract? • **Equity, Efficiency, and Accountability** – Are there public equity, efficiency or accountability reasons for providing the service directly, rather than through a PFI contract?	• **Risk Management** – Is the private sector likely to be able to manage the generic risks associated with the program more effectively than the procuring authority? • **Innovation** – Is there scope for innovation in either the design of the solution or in the provision of the services? • **Contract Duration and Residual Value** – How far into the future can service demand be reasonably predicted? • **Incentives and Monitoring** – Can the service be assessed independently against an agreed standard? • **Lifecycle Costs** – Is it possible to integrate the design, build and operation of the projects in the program?	• **Market Interest** – Is there evidence that the private sector is capable of delivering the required outcome? – Does a significant market with sufficient capacity for these services exist in the private sector? • **Other Issues** – Is the procurement feasible within the required timescale? Is there sufficient time for resolution of key procuring authority issues? – Is the overall value of the contract significant (sufficient for the public and private sector to justify their transaction costs)?

Source: UK HM Treasury Value for Money Assessment Guidance

Appendix D: Sample Qualitative Assessment Questions

Stage 2: Project Level Assessment

Viability	Desirability	Achievability
• **Project Level Outputs** – Is the project delivery team satisfied that a long term contract can be constructed for this project? Can the contractual outputs be framed so that they can be objectively measured? • **Soft Services** – How will the soft facilities management (FM) providers be bought into the design process? How early will this happen? What mechanisms can be used to ensure this? • **Operational Flexibility** – What is the likelihood of large contract variations being necessary during the life of the contract? • **Equity, Efficiency, and Accountability** – Are there public equity, efficiency or accountability reasons for providing the service directly, rather than through a PFI contract?	• **Risk Management** – Can the payment mechanism and contract terms incentivize good risk management? • **Innovation** – Is there scope for innovation in either the design of the solution or in the provision of the services? • **Contract Duration and Residual Value** – How far into the future can service demand be reasonably predicted? What is the expected life of the assets? What are the disadvantages of a long contract length? • **Incentives and Monitoring** – Can the service be assessed independently against an agreed standard? • **Lifecycle Costs** – Is it possible to integrate the design, build and operation elements of the project?	• **Market Interest** – Is there evidence that the private sector is capable of delivering the required outcome? – Does a significant market with sufficient capacity for these services exist in the private sector? – Does the nature of the project suggest that it will be seen by the market as a profitable venture? • **Other Issues** – Is the procurement feasible within the required timescale? Is there sufficient time for: resolution of key Authority issues; production/ approval of procurement documentation; staged down-selection and evaluation of bidders, negotiation, approvals and due diligence? – Is the overall value of the project significant and proportionate to justify the transaction costs?

Source: UK HM Treasury Value for Money Assessment Guidance

Appendix D: Sample Qualitative Assessment Questions

Stage 3: Procurement Level Assessment

Market Failure	Efficient Procurement Process	Risk Transfer
• **Market Abuse or Failure** – Is there any evidence from similar projects (in scope or location) to suggest that there will be a shortage of good quality financially robust bidders? – Is there any evidence of market abuse? • **Procurement Issues** – Was there a good response to the solicitation? – How many potential bidders met the necessary criteria? Are the financial robustness and capacity of the bidders sufficient? – Is there evidence of good competitive tension in pricing of risks etc.?	• **Efficient Procurement** – Is there a realistic project plan, and has this been adhered to without undue delays? – Are bid costs likely to be proportionate to the contract value? – Will any aspect of the procurement impact adversely on market interest? (e.g., restrictions imposed by Competitive Dialogue procedure) – Are there any problems emerging with the way the procurement is structured? • **Authority Resources** – Does the procuring authority have the necessary resources to conduct a good procurement? – Are sound project governance arrangements in place?	• **Wider Issues** – Is the competition delivering the proposed risk transfer? – Does the Authority confirm that the nature of the deal and/or the strategic importance of the work still make it suitable for delivery through PFI? – Is there still confidence that all the key VfM drivers will be preserved?

Source: UK HM Treasury Value for Money Assessment Guidance

Appendix E: HM Treasury Quantitative Assessment Inputs

PFI Value for Money Quantitative Assessment

Input sheet

General

Timings	*(Yrs)*	*Rates - Escalators & Discount*	*Rates (%)*	*Base Year*
Contract period	29	CapEx escalator	4.5%	0
Initial CapEx period	4	OpEx (non employment) escalator	2.5%	0
Year when OpEx is first incurred	5	OpEx (employment) escalator	3.5%	0
Proportion of UC in initial CapEx period payment	50%	Unitary charge escalator	50%	0
		Nominal discount rate	6.09%	NA

PFI Funding

Gearing (%)	90%
Sterling swap rate (%)	5.15%
Credit spread (bps)	12
Bank margin (bps)	100
Tail for bank debt (yrs)	2
Commitment fee (bps)	50
Upfront fee (bps)	90
Grace period (yrs)	1

Costs

Whole Life	*CP*	*OB Pre (%)*	*OB Post (%)*	*PFI*	*OB Pre (%)*
Initial CapEx (£'000)	65,250	10%	30%	71,775	10%
Lifecycle costs at each LC date (£'000)	6,535	10%	30%	1,076	10%
Lifecycle intervals (yrs)	10	NA	NA	1	NA
OpEx (non employment)(p.a.) (£'000)	1,075	10%	20%	1,183	10%
OpEx (employment per person) (p.a.) (£'000)	20	NA	NA	20	NA
OpEx (employee number)	25	NA	NA	25	NA
Transaction					
Public sector (£'000)	1,958	10%	10%	1,453	10%
Private sector (£'000)	0	0%	0%	1,077	10%

Pre Tax IRR Targets

High	18%
Medium	15%
Low	13%

Third Party Income	*CP*	*OB Pre (%)*	*OB Post (%)*	*PFI*	*OB Pre (%)*
Income (p.a.) (£'000)	475	10%	10%	575	10%

Flexibility	*CP*	*PFI*
Scope change year	10	10
Probability factor (%)	50%	50%
Level of scope change (%)	50%	50%
Premium flexibility factor (%)	0	10%

Indirect VfM Factors	*CP*	*PFI*
Amount (Npv)(£'000)	0	2,000

Tax	*CP*	*PFI*
CP adjustment factor (%)	6%	NA

Lifecycle Related Adjustments	
Lifecycle / residual cost benchmark	50%
CP lifecycle VfM adjustment if lower than benchmark	40%
CP lifecycle VfM adjustment if higher than benchmark	40%
CP residual cost factor if lower than benchmark	70%
CP residual cost factor if higher than benchmark	35%

bps	Basis Points
CapEx	Capital Expenditure
LC	Lifecycle Costs
NA	Not Applicable - *no input required*
OB Pre	Pre-FBC Optimism Bias
OB Post	Post-FBC Optimism Bias (for CP only)
OpEx	Operational Expenditure
CP	Conventional Procurement
	Input required (can link from previous sheet)
	Hard-wired Assumption - *no input required*

PRINT

Instructions | Input - Assumptions | **Input Summary** | Output - Indifference | Output - Stashed Scenarios | Print All

Source: UK HM Treasury Value for Money Quantitative Assessment User Guide and Evaluation Template

Appendix E: HM Treasury Quantitative Assessment Outputs

PFI Value for Money Quantitative Assessment

Output sheet - Indifference points (see User Guide paras A17-A37)

Output Box

Scenario name		Indicative VfM -18% IRR
IRRs		
	Pre Tax Equity IRR	**14.92%**
	Pre Tax Project IRR	7.88%
VfM		
	"Indicative" PFI VfM	**11.44%**
Indifference Points (IP)		
CP		
	Initial CapEx	0%
	OpEx (Non Employment)	0%
	OpEx (Employment)	0%
	Transaction Costs	0%
PFI		
	Unitary Charge	0%
Other Values		
	CP Costs (NPV)	-165
	PFI Costs (NPV)	-146
	Unadjusted Annual Unitary Charge	11.0

CP Sensitivity Multipliers

CapEx(%)	0%
Lifecycle (%)	0%
OpEx (non employment) (%)	0%
OpEx (employment) (%)	0%
Transaction (%)	0%
Residual cost (%)	0%
Third party income (%)	0%

Check

Senior Debt Fully Repaid?	TRUE
Pre Tax IRR = Target?	FALSE
Total Cashflows = Zero?	TRUE

Switches

IRR

13% Pre Tax Target

15% Pre Tax Target

18% Pre Tax Target

Indifference Points (IP)

CapEx IP

OpEx Non Employ

OpEx Employ IP

Transaction IP

Unitary Charge IP

Stabilizer

Stash Scenarios

PRINT

Explanations

The "Indicative" PFI VfM value is determined by selecting the target IRR switch which corresponds closest to the PFI Contractor's expected return.

Running an Indifference Point switch gives the percentage increase/decrease in the variable required to give the point of indifference between the two procurement options.

In the event that #DIV/0!s, #NUM!s or other error messages appear in the Output Box, having updated the relevant inputs, the stabiliser switch should be used to clear the errors.

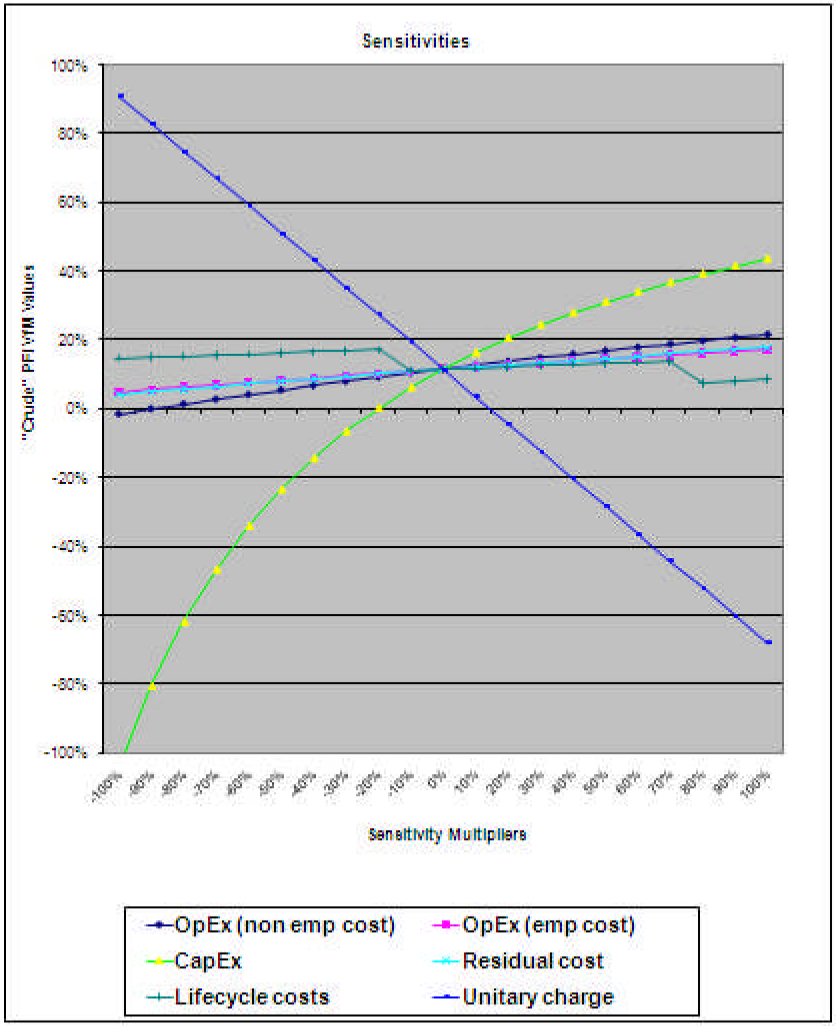
A separate shadow bid model should be developed to calculate the projected unitary charge. There are a number of simplyfying assumptions underpinning the VfM Spreadsheet which means that Local Authorities should not use the Unadjusted Annual Unitary Charge figure shown in the Output Box as a proxy for affordability purposes.

The Output Box results may be recorded in the separate "Output- Stashed Scenarios" spreadsheet by clicking the Stash Scenarios switch.

Instructions | Input - Assumptions | Input Summary | Output - Indifference | Output - Stashed Scenarios | Print All

Source: UK HM Treasury Value for Money Quantitative Assessment User Guide and Evaluation Template

Appendix E: HM Treasury Quantitative Assessment Outputs



"Indicative" PFI VfM Sensitivity Values

Multiplier	OpEx (Non Employment)	OpEx (Employment)	CapEx	Residual Cost	Unitary Charge	Lifecycle Cost
-100%	-1.7%	4.8%	-104.3%	4.2%	90.9%	14.6%
-90%	-0.2%	5.5%	-80.7%	5.0%	83.0%	14.9%
-80%	1.2%	6.2%	-62.0%	5.7%	75.0%	15.2%
-70%	2.6%	6.9%	-46.8%	6.5%	67.1%	15.6%
-60%	4.0%	7.6%	-34.2%	7.2%	59.1%	15.9%
-50%	5.3%	8.2%	-23.6%	8.0%	51.2%	16.2%
-40%	6.6%	8.9%	-14.5%	8.7%	43.2%	16.5%
-30%	7.9%	9.5%	-6.7%	9.4%	35.3%	16.8%
-20%	9.1%	10.2%	0.1%	10.1%	27.3%	17.1%
-10%	10.3%	10.8%	6.1%	10.8%	19.4%	11.1%
0%	11.4%	11.4%	11.4%	11.4%	11.4%	11.4%
10%	12.6%	12.1%	16.2%	12.1%	3.5%	11.8%
20%	13.7%	12.7%	20.5%	12.8%	-4.5%	12.1%
30%	14.7%	13.3%	24.3%	13.4%	-12.4%	12.5%
40%	15.8%	13.9%	27.8%	14.1%	-20.4%	12.8%
50%	16.8%	14.4%	31.0%	14.7%	-28.3%	13.1%
60%	17.8%	15.0%	33.9%	15.3%	-36.3%	13.5%
70%	18.8%	15.6%	36.6%	15.9%	-44.2%	13.8%
80%	19.7%	16.1%	39.1%	16.5%	-52.1%	7.4%
90%	20.7%	16.7%	41.3%	17.1%	-60.1%	8.0%
100%	21.6%	17.2%	43.5%	17.7%	-68.0%	8.6%

The chart shows the impact on the "Indicative" PFI VfM Value of inflating and deflating the relevant tabulated PSC cost variable and the Unitary Charge by different multiplier values, varying from -100% to 100%.

(i) Where the x axis (corresponding to a zero VfM Value) is traversed, the point of indifference between the two procurement options has been reached.

(ii) Various hard-wired lifecyle related assumptions, (i.e.) in connection with the Residual Cost and the VfM Adjustment factor, will result in adjustments only in the event that pre-determined benchmarks are reached. Since such adjustments are "stepped", rather than gradual, it is likely that the lifecycle cost line will be skewed.

For further information, please refer to section <> of the User Guide.

Instructions | Input - Assumptions | Input Summary | **Output - Indifference** | Output - Stashed Scenarios | Print All

Source: UK HM Treasury Value for Money Quantitative Assessment User Guide and Evaluation Template