

Introduction to Financial Modeling

Washington Joint Transportation Committee

September 2011

Introduction to Financial Modeling Relevance to WA JTC

- A tool that guides and supports decision making
- Evaluates the quantitative benefits and drawbacks of different financing and delivery approaches
- Aids Washington in determining whether it will receive appropriate value
- Helps identify the method of project financing and facility delivery that is most likely to achieve the lowest cost and/or best value
- Key tool used in the Value for Money (VfM) analysis

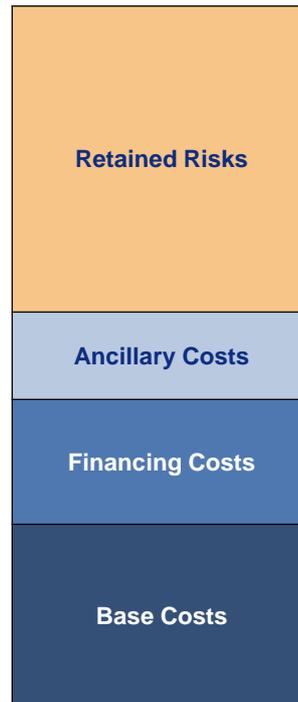
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Definition of Relevant Terms

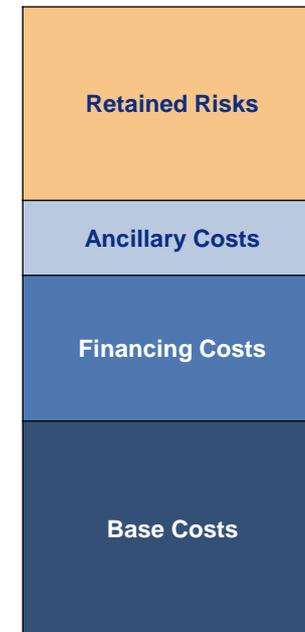
Value for Money analysis:

- Tool with the purpose of demonstrating whether a P3 solution is better than the chosen method of traditional delivery
- Comparison of the cost of delivery of a project under P3 against the cost under traditional delivery

Public Sector Comparator
(PSC)



Shadow Bid



- Value of P3 RFP Bid
- NPV of P3 costs

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Public Sector Comparator (PSC) model:

- Risk adjusted, whole-life costs of a project if the project is procured traditionally
- DBB or DB normally the model used to model traditional delivery
- PSC is used to compare to the cost of P3 delivery
- PSC is stated in Net Present Value terms
 - Estimation of project full cost and revenue under traditional delivery
 - Consideration and quantification of project risks
 - Use of discount rate

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Shadow Bid model:

- Cost of delivery of a project under the P3 approach
- Shadow Bid is effectively the hypothetical estimation of what the private sector would bid in response to the P3 RFP
- Beyond the VFM analysis, Shadow Bid models are used to:
 - Assess different scope or commercial terms
 - Analyze financing structure
 - Develop payment mechanisms

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Availability payment P3 model:

- Concessionaire designs, builds, finances, operates and maintains the facility over a period of time
- Receives a periodic payment as compensation. Payment is dependent upon:
 - Availability – facility being available to users
 - Performance – facility performing to standards specified in P3 agreement
- If facility is not available or performing to standards, then the concessionaire receives a deduction to the availability payment.
- The concessionaire may not receive any availability payment if unavailability / non-performance is material.
- Tolls can still be collected on the facility; however, concessionaire is not compensated directly from toll revenue (i.e., public sector retains revenue risk)

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Toll concession P3 model:

- Concessionaire designs, builds, finances, operates and maintains the facility over a period of time
- Concessionaire responsible for collecting toll revenue generated by the facility. Toll revenue compensates the concessionaire for costs incurred.
- Performance standards normally included in the P3 agreement
- Inability of concessionaire to meet performance standards can be grounds for termination
- Concessionaire retains revenue risk (both upside and downside)

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Discount rate:

- A discount rate is needed to convert project cash flows into NPV
- Adjusting discount rate to reflect inherent risk in cash flow can be counter-intuitive for costs – if a high discount rate is applied to high risk cost projections, the result will be a low NPV
- Generally, the values of risks are added/included in the cost projections
- The same discount rate is applied to cost projections of both P3 and PSC
- Choice of the discount rate:
 - Government borrowing rate – Probably most widely used and easiest to explain but often will not accurately reflect inherent risk in cash flows. Discount rate is from government's perspective.
 - Project level discount rate (Project WACC) – Discount rate is from the project's perspective reflective of risk inherent in cash flows.
 - Choice of discount rate is a policy decision

Introduction to Financial Modeling Framework for VfM Analysis

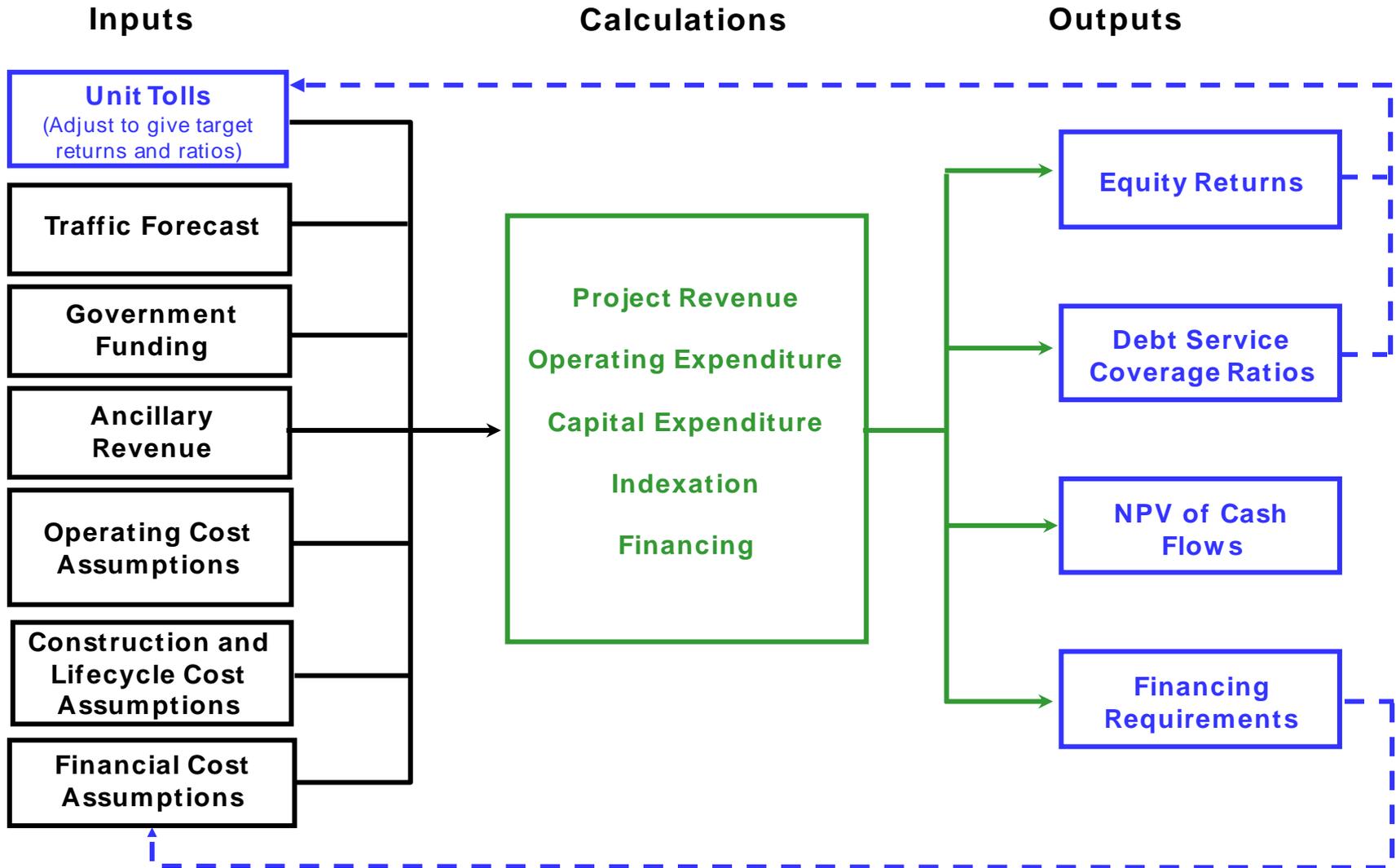
The methodology for developing a VfM analysis includes:

- Define procurement model and risk sharing
 - Estimate project costs**
 - Estimate project revenues**
 - Identify and analyze project risks
 - Assess the uncertainty around the cost estimates to arrive at risk-adjusted values
 - Develop financial model and calculate net present value**
- } Project inputs

Developing a Financial Model – Core Components

- Built in Microsoft Excel, usually consisting of numerous worksheets
- At its core, it consists of:
 - Inputs
 - Calculations
 - Outputs
- Summary sheet for quick, “desktop” view of project
- Calculations are complex and interaction exists between worksheets
- Includes functionality to facilitate in-depth analysis

Developing a Financial Model – Core Components



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Developing a Financial Model – Inputs

	PSC	Shadow Bid Model
Revenue	Baseline projections	Baseline projections considering “equity” view
Construction	Baseline cost projections for construction of facility using DBB or DB model	Projections using a fixed-price DB model
O&M	Baseline projections for O&M assuming WSDOT as provider	Baseline projections for private O&M provider
Lifecycle	Baseline projections for lifecycle assuming ‘status quo’ approach	Baseline projections with impact of enhanced O&M to reduce lifecycle costs
Tax	Not applicable	<ul style="list-style-type: none"> • Federal, state, and local taxes • Depreciation and impact on taxation
Financing	<ul style="list-style-type: none"> • For toll projects: toll revenue-bond financing terms • TIFIA • For non-toll projects: traditional bond (GO or GARVEE) financing terms 	Private finance terms for: <ul style="list-style-type: none"> • Taxable bank/bond debt • Tax-Exempt Private Activity Bonds • TIFIA • Equity
Inflation	Inflation rates for revenue, construction, O&M	Inflation rates for revenue, construction, O&M
Tenor of analysis	Must match shadow bid model	<ul style="list-style-type: none"> • To be determined • Generally, for availability payment P3: avg. 30 years • Generally, for toll concession P3: avg. 50 years

Developing a Financial Model – Outputs

- Long-term cash flow analysis of project inputs
- Funding gap assessment over the project life
- Valuations in both year of expenditure and present dollar terms
- Financial capacity assessments for both taxable and tax exempt debt and private equity scenarios depending on delivery option

Developing a Financial Model – Functionality

- Functionality within the model allows a user to analyze:
 - Chosen private and public sector delivery options
 - Private sector financing and public sector funding and financing solutions, including:
 - PABs, TIFIA, equity, taxable bonds, bank debt and State and Federal grants
- Model can include “breakeven” analysis functionality
- Model can include NPV analysis functionality

Developing a Financial Model – the Process

- Coordinate with WA JTC to clarify scope of projects and coordinate output of financial model
- Data and input collection, including “gap” analysis
- Sources of data to be confirmed
- Develop a financial model that is aligned with the level of complexity and detail of the inputs

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Financial Model Inputs – Data Sources

Project: I-405

	Source
Revenue	
Construction	
O&M	
Lifecycle	
Financing	

Project: SR 509

	Source
Revenue	
Construction	
O&M	
Lifecycle	
Financing	

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Financial Model Inputs – Data Sources

Project: SR 167

	Source
Revenue	
Construction	
O&M	
Lifecycle	
Financing	

Project: I-5 Columbia River Crossing

	Source
Revenue	
Construction	
O&M	
Lifecycle	
Financing	

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Financial Model Inputs – Data Sources

Project: Monroe Bypass

	Source
Revenue	
Construction	
O&M	
Lifecycle	
Financing	