Financial Analysis and Modeling Overview
Washington Joint Transportation Committee

September 29, 2011
Overview of Financial Analysis
• The financial model is a tool used to quantitatively evaluate various financing and delivery approaches

• Two financial models are used in the Value for Money (VfM) analysis
  • Shadow bid model
  • Public sector comparator (PSC)

\[ \text{VfM analysis compares the total risk-adjusted present value (PV) cost of delivery under a P3 model versus a traditionally financed model} \]
Risk adjusted, whole-life costs of a project if the project is procured traditionally

Design-bid-build (DBB) or design-build (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 (NPV) terms
  - Estimation of project full cost and revenue under traditional delivery
  - Consideration and quantification of project risks
  - Use of discount rate
• Design, build, finance, operate, maintain (DBFOM) model
• Concessionaire receives a periodic payment as compensation
• Payment is dependent upon:
  • Availability
  • Performance
• Deductions for unavailability or non-performance
• Consistent non-performance or unavailability can lead to termination
• Uses state appropriations as pledge for repayment of availability payments
• Tolls (if any) can still be collected by WSDOT and used to pay availability payment
• Handback requirements (which ensure ongoing useful asset life) set forth in P3 agreement and must be met before end of term
• DBFOM model over a period of time (normally longer than availability payment P3 model)
• 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)
• Handback requirements set forth in P3 agreement and must be met by end of term
Public agency issues tax-exempt bonds

- Revenue Bonds – 2.0x coverage, 40 year maximum term
- Triple Pledge General Obligation (GO) Bonds – 1.3x coverage, 30 year maximum term

Net project revenue (revenue less O&M) is generally pledged as source of repayment

Excess toll revenue may be leveraged through future bond issues

Facility users bear the risk of potential toll adjustments to satisfy bond covenants

Toll revenue forecasts for tax-exempt toll revenue bonds are historically more conservative (higher confidence level) than those for equity financing

Investment grade ratings coupled with tax-exempt status results in a lower cost of project capital than taxable bonds or equity

1 Coverage ratios of 1.50x, 1.50x, and 2.0x used for SR167, SR509, and I-405 tolling feasibility studies, respectively.
Private financing of tolled highways and roads often involves private equity in addition to bank or bond debt.

Equity repayments are subordinate to debt repayments; all payments are made from net project revenue.

Banks may provide 5 – 7 year “mini-perm” financing subject to refinance upon construction completion; equity investors are at risk for execution of planned refinancing.

Historically, lenders and equity investors bear the risk of insufficient toll revenues; however, banks are resistant to toll project “revenue risk” in the current market.

Typical private finance capital structure reflects:

- 60-70% debt and 30-40% equity for toll concession P3 model
- 70-80% debt and 20-30% equity for availability payment P3 model

Taxable project debt generally carries higher cost of capital than tax-exempt debt although equity investors enjoy depreciation benefits and tax-deduction of interest.

Equity investors’ toll revenue forecasts are generally more aggressive than lenders’ forecasts. In exchange, equity investors require a higher cost of capital (avg. 13-15% post-tax equity internal rate of return (IRR)).

Attractiveness of private finance structures more dependent on federal TIFIA and PABs programs.
• Equity investors generally do not achieve targeted return on investment for an extended period of time
• Equity is the highest risk capital component

All dates and percentages are hypothetical and for illustrative purposes
For certain projects, equity finance can serve as an additional source of financing that monetizes future cash flows. Equity can supplement debt finance to pay additional up front construction costs and close funding gaps.

Equity repayment is subordinate to debt repayment in the cashflow “waterfall”.

1 Coverage ratios of 1.50x, 1.50x, and 2.0x used for SR167, SR509, and I-405 tolling feasibility studies, respectively.

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## Value for Money and Financial Modeling

### Financing Comparison: Tax-Exempt Toll Revenue Bonds vs. Private Finance

<table>
<thead>
<tr>
<th></th>
<th><strong>Tax-Exempt Toll Revenue Bonds</strong></th>
<th><strong>Private Finance</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Debtor</strong></td>
<td>Public agency</td>
<td>Private concessionaire</td>
</tr>
<tr>
<td><strong>Pledge</strong></td>
<td>Net project revenue (toll revenue less O&amp;M)</td>
<td>Net project revenue (toll revenue less O&amp;M)</td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>Bonds (maturity up to 40 years)</td>
<td>Construction bank loan (avg. 5-7 years), refi. in bank market with final maturity 2-4 years prior to end of concession term</td>
</tr>
<tr>
<td><strong>Coverage Ratios</strong></td>
<td>• 2.0x toll revenue bonds</td>
<td>• 1.2x – 1.4x senior bank debt</td>
</tr>
<tr>
<td></td>
<td>• 1.3x triple pledge GO bonds</td>
<td>• 1.1x – 1.2x global (TIFIA)</td>
</tr>
<tr>
<td><strong>Cost of Capital</strong></td>
<td>5.0%&lt;sup&gt;1&lt;/sup&gt;</td>
<td>6.0 – 7.0%&lt;sup&gt;2&lt;/sup&gt; bank debt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13.0 – 15.0% equity</td>
</tr>
<tr>
<td><strong>Capital Structure</strong></td>
<td>100% debt</td>
<td>• Toll concession: 60-70% debt; 30-40% equity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• AP: 70-80% debt; 20-30% equity</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>• Public agency, users, and lenders bear the risk (and potential benefit) of fluctuations in toll revenue</td>
<td>• Concessionaire bears the risk (and potential benefit&lt;sup&gt;3&lt;/sup&gt;) of fluctuations in toll revenue</td>
</tr>
<tr>
<td></td>
<td>• Triple pledge GO bonds have balance sheet implications</td>
<td>• Non-recourse debt issued at special purpose vehicle (SPV) level</td>
</tr>
<tr>
<td></td>
<td>• TIFIA federal financing program</td>
<td>• TIFIA and PABs federal financing programs are important to private finance structure</td>
</tr>
</tbody>
</table>

1. 5.0% all-in rate = municipal market data (MMD) 30-year rate of [3.5%] + 1.5% spread
2. 6.0 - 7.0% all-in rate = 30-year forward rate in 3 years US London Interbank Offered Rate (LIBOR) of [3.0%] + 2.0 – 3.0% margin
3. Subject to negotiated revenue share formula
Financial Model Development
Value for Money and Financial Modeling

Developing a Financial Model: Core Components

**Inputs**
- Unit Tolls (Adjust to give target returns and ratios)
- Traffic Forecast
- Government Funding
- Ancillary Revenue
- Operating Cost Assumptions
- Construction and Lifecycle Cost Assumptions
- Financial Cost Assumptions

**Calculations**
- Project Revenues
- Operating Expenditures
- Capital Expenditures
- Inflation
- Financing

**Outputs**
- Equity Returns
- Debt Service Coverage Ratios
- NPV of Cash Flows
- Financing Requirements
# Value for Money and Financial Modeling

## Developing a Financial Model: Inputs

<table>
<thead>
<tr>
<th>PSC</th>
<th>Shadow Bid Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue</strong></td>
<td>Baseline projections considering Investment Grade Debt view</td>
</tr>
<tr>
<td><strong>Construction</strong></td>
<td>Baseline cost projections for construction of facility using DBB or DB model</td>
</tr>
<tr>
<td><strong>O&amp;M</strong></td>
<td>Baseline projections for O&amp;M assuming WSDOT as provider</td>
</tr>
<tr>
<td><strong>Lifecycle</strong></td>
<td>Baseline projections for lifecycle assuming ‘status quo’ approach</td>
</tr>
</tbody>
</table>
| **Tax** | Not applicable | • Federal, state, and local taxes  
• Depreciation and concessionaire tax liability |
| **Financing** | • For toll projects: toll revenue-bond (or alternative GO bonds) financing terms  
• TIFIA  
• For non-toll projects: GO or GARVEE bond financing terms | Private finance terms for:  
• 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** | Match shadow bid model | • Generally, for availability payment P3: avg. 30-35 years post-construction completion  
• Generally, for toll concession P3: avg. 50 years |
| **Risk adjustments** | Input from risk workshop | Input from risk workshop |
Value for Money and Financial Modeling
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 using inflation and discount rate assumptions
- Financial capacity assessments for both tax-exempt debt and taxable debt/private equity, depending on delivery option
Value for Money and Financial Modeling
Developing a Financial Model: Sample Outputs

Sources and Uses During Construction

<table>
<thead>
<tr>
<th>Sources</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Contribution</td>
<td>Capital construction costs</td>
</tr>
<tr>
<td>Equity</td>
<td>Debt interest during construction</td>
</tr>
<tr>
<td>TIFIA</td>
<td>Debt fees</td>
</tr>
<tr>
<td>Bank debt I</td>
<td>MMRA deposit</td>
</tr>
<tr>
<td>PABs</td>
<td>DSRA deposit</td>
</tr>
<tr>
<td>Interest earned</td>
<td>Capitalized interest fund deposit</td>
</tr>
<tr>
<td></td>
<td>Concession payment</td>
</tr>
</tbody>
</table>

Total

Sources during Construction

Uses during Construction

All figures are hypothetical and for illustrative purposes
Value for Money and Financial Modeling

Developing a Financial Model: Sample Outputs

Sources and Uses During Operations

<table>
<thead>
<tr>
<th>Sources</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>O&amp;M</td>
</tr>
<tr>
<td>Availability</td>
<td>Capital asset renewal</td>
</tr>
<tr>
<td>Interest</td>
<td>Debt interest</td>
</tr>
<tr>
<td>Interest on cash</td>
<td>Debt principal</td>
</tr>
<tr>
<td>Refinance</td>
<td>Equity repayment</td>
</tr>
<tr>
<td></td>
<td>Taxes (paid)/ refunded</td>
</tr>
<tr>
<td></td>
<td>Transfers to/(from) reserve accounts</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
</tr>
</tbody>
</table>

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Functionality within the model allows a user to analyze:

- Chosen public and private sector delivery options
- Public sector funding and financing and private sector financing solutions, including:
  - “Governmental Purpose” tax-exempt bonds
  - Private activity bonds (PABs)
  - TIFIA
  - Equity
  - Taxable bonds and bank debt
  - State and Federal grants

- Model will include “breakeven” analysis functionality
- Model will include net present value (NPV) analysis functionality
A discount rate is needed to convert project cash flows into net present values (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 generally 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 weighted average cost of capital (WACC)) – discount rate is from the project’s perspective, reflective of risk inherent in cash flows.

Choice of discount rate is both an economic and policy decision.
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Developing a Financial Model: Next Steps

- Determine traditional delivery model for each project (DBB vs. DB)
- Further development of the PSC and Shadow Bid models is dependent upon receipt of the following inputs:
  - Revenue
  - Construction Costs
  - O&M Costs
  - Lifecycle Costs
  - Financing (KPMG to provide)
- Perform analyses and refine inputs as needed
- Present preliminary findings
Appendix 1: Case Studies
• Replacement of 73-year old south access roadway to the Golden Gate Bridge
• Non-tolled facility
• Business case analysis showed that a P3 offered better value for money than traditional delivery for Phase II of the project
• VfM results estimated $147m in cost savings if procured using DBFOM instead of DBB.
  • This was primarily due to an estimated $93m savings in construction cost but also estimated savings in maintenance and finance costs (on a PV basis) over the 30-year concession term.
• Procured using an availability payment structure (DBFOM) over a 30-year term
• Milestone payment of $173m due at construction completion
• Availability payments of $28.5m begin at the start of operations and continue until hand back of the asset (30 years), 15% of AP inflated with CPI
• Procured using a DBFOM availability payment structure over a 30-year term
Value for Money and Financial Modeling
Case Study: Presidio Parkway P3 Project

Caltrans / SFCTA

Upgraded Facility
Milestone and Availability Payments

Debt Providers
Debt Service
Construction Finance

PPP Co (Meridiam/Hochtief)
Fixed Price DB Payment
Upgraded Facility
Services

Equity Providers
Equity returns
Subscription

D&B Contractor

O&M Provider
Payment for Services
• P3 concessionaires normally enhance their O&M activities and rehabilitation is not required until later in the asset life, when compared to a traditional delivery model

![Diagram showing semi-annual expenditures with deferred rehabilitation]

Major maintenance costs are not required until later as a result of enhanced O&M activities.
• Milestone payment is anticipated to be paid using federal, state, and local funds

• Availability payments are anticipated to be paid using state highway account

$173m milestone payment payable at construction completion

$35m maximum annual availability payment (bid price was approximately $28.5 per year)
North Tarrant Express PPP Project (Fort Worth)

- DBFOM (52 years) toll concession for 13 miles
- Improvements include three general purpose lanes in each direction with two managed lanes in each direction. In addition, two existing general purpose lanes in each direction.
- Cintra/Meridiam delivering the project for $570 million in exchange for 169 miles (vs. 64 miles) of initial construction. Represents nearly $2 billion in construction plus O&M and lifecycle for 52 years.

Multiple reference cases created during Value for Money analysis:

- During construction (nominal terms), TxDOT had only $600 million in public funds available and an estimated $700 million in debt could be issued
- Cash shortfall during construction of nearly $700 million (which was not available)
- In present value terms, TxDOT required an additional $300 million to develop the project (future surplus cash flows did not offset upfront investment requirements)
Value for Money and Financial Modeling
Case Study: North Tarrant Express P3 Project

[Diagram showing the relationships between Users, TxDOT, Debt Providers, PPP Co (Cintra/Meridiam), Equity Providers, D&B Contractor, and O&M Provider.]

- Users provide User Tolls to PPP Co (Cintra/Meridiam).
- TxDOT provides Up-front Payment to PPP Co (Cintra/Meridiam).
- PPP Co (Cintra/Meridiam) provides Upgraded Facility to Users and Debt Providers.
- Debt Providers provide Debt Service to PPP Co (Cintra/Meridiam) and Construction Finance.
- PPP Co (Cintra/Meridiam) provides Services to O&M Provider.
- Equity Providers provide Equity returns to PPP Co (Cintra/Meridiam) and Equity Subscription.
- O&M Provider provides Payment for Services to PPP Co (Cintra/Meridiam).