

Session Objectives

After this session the participant will gain the ability to:

- Explain how financial viability analysis is performed
- Evaluate P3 affordability from public agency perspective
- Describe P3 bankability from lender perspective
- Explain metrics and structures for P3 financing

Session Outline

- Part I Introduction to Financial Assessment
- Part II P3 Affordability Analysis
- Part III P3 Bankability and Credit Enhancement
- Part IV Profitability from Concessionaire Perspective

Part I

Introduction to Financial Viability Assessment

What is Financial Viability Assessment

- Also called “Financial Feasibility” assessment
- Uses financial modeling to
 - Examine the viability of capital structure assumption
 - Evaluate financing capacity
 - Develop financing plan
- Performed before, along with, or after VfM analysis
- May involve iterative process

Use of Financial Viability Assessment

- Viability means different things to different stakeholders:
 - Public agencies – for affordability assessment
 - Lenders – to evaluate debt capacity and for “stress” testing under extreme scenarios , e.g., higher than expected costs and lower than expected revenues
 - Concessionaires – to determine capacity for equity investment, dividend policy, and bid price
- Financial modeling involves “discounting” of cash flows

Financing Plan

- Ensuring sufficient financial resources to complete the project at the lowest realizable cost
 - Debt capacity
 - Public and private financial resources
- Minimizing the project sponsors' credit exposure to the project
- Establishing debt repayment and dividend policy
- Achieving the most beneficial regulatory treatment

- Optimal Financing Plan is achieved when
 - Debt is maximized as a percentage of total capitalization
 - Debt amortization schedule is matched to project cash flows

Use and Source of Funds

Use of Funds

■ Short-term Costs Include:

- Planning and Permitting
- Project Admin
- Procurement
- Design and Engineering
- Construction
- Contract Management and Oversight

■ Long-term Costs Include:

- Operations
- Routine Maintenance
- Periodic Maintenance

Source of Funds

■ Equity

- Infrastructure development companies
- Investment banks
- Infrastructure funds
- Pension funds, foundations, insurance companies, etc.

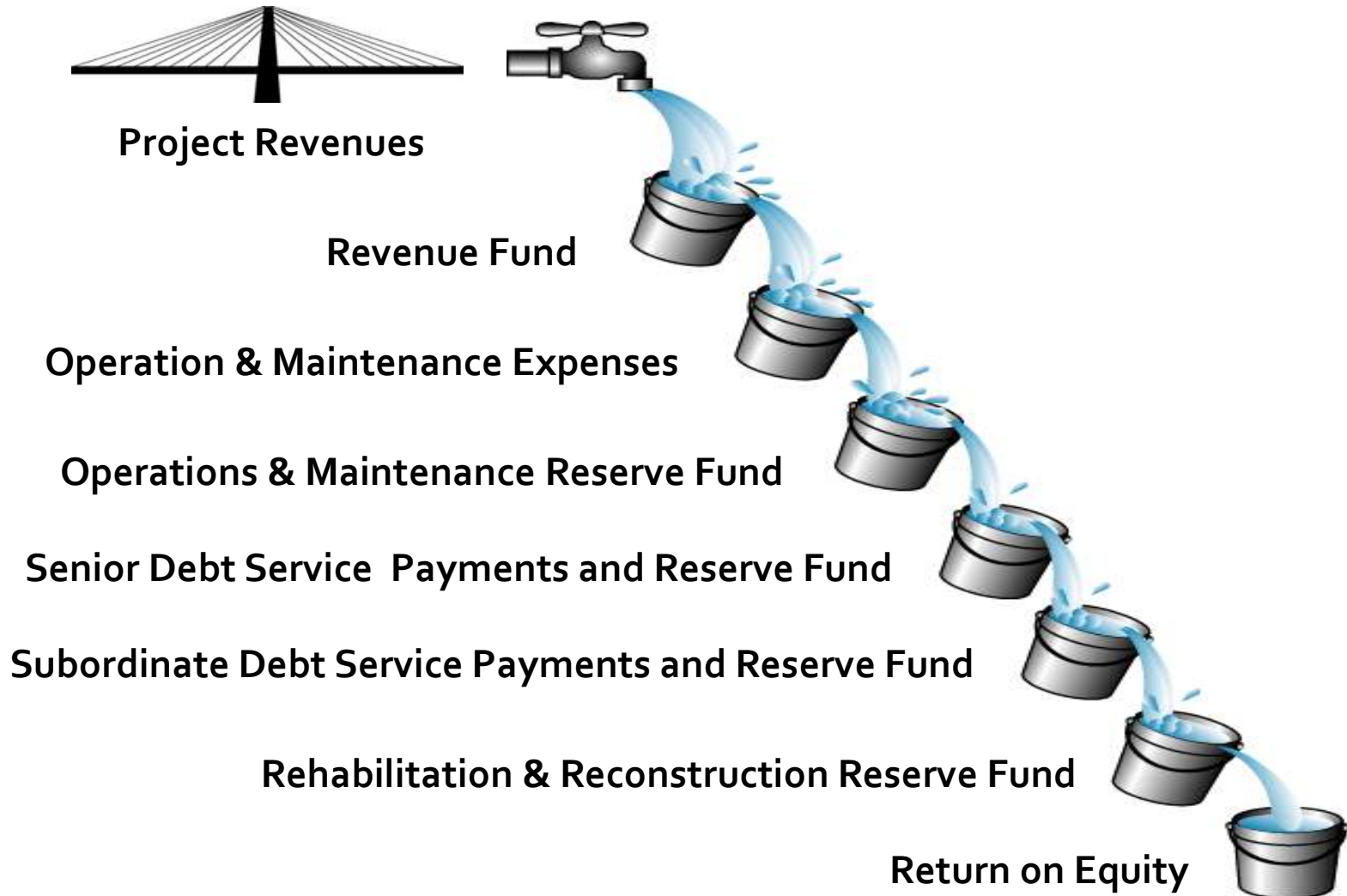
■ Debt

- Loans : Private bank loans, TIFIA, State Infrastructure Bank (SIB) loans; Section 129 loans
- Bonds: Private Activity Bonds (PABs), Corporate bonds, Project revenue bonds

Sources of P3 Project Revenue

- Facility revenues:
 - Tolls from users
 - Ancillary Revenue – e.g., fees from advertising
- Public agency subsidies:
 - Availability Payments
 - Shadow tolls
 - Progress payments and completion payments
- Revenue sources for public agency subsidies:
 - Tolls, general taxation, or value capture strategies (from project beneficiaries)

Repayment – Typical Cash Flow Waterfall



Impact of Leverage on Revenue Required

- Leverage (debt-to-equity ratio, a.k.a. “gearing” ratio) is lower on high risk projects (e.g., toll concessions)
- Equity investors in a concession attempt to maximize leverage, while still ensuring an investment grade rating

	Low leverage	High leverage
Project cost (millions)	\$1,000	\$1,000
(a) Debt	\$500	\$900
(b) Equity	\$500	\$100
(c) Required return on equity: (b) x 15%	\$75	\$15
(d) Annual interest rate on debt	5%	6%
(e) Interest payment: (a) x (d)	\$25	\$54
Revenue required: (c) + (e)	\$100	\$69

Notes: Interest rate can be much higher with high leverage. This simplified example assumes “bullet” repayments of the principal on debt and the equity investment at the end of the concession term.

Financial Model Inputs and Outputs

Funding sources:

- Funding amounts (grants, loans, etc.)
- Revenue stream (traffic forecasts, toll rates, etc.)



Uses of funds:

- Capital and operating expenses
- Financing (interest rate, term, equity rate of return, etc.)



Financial Model



- Cash flow (source and use of funds)
- Capacity of project revenues to repay debt
- Capacity to attract equity
- Public subsidy payments

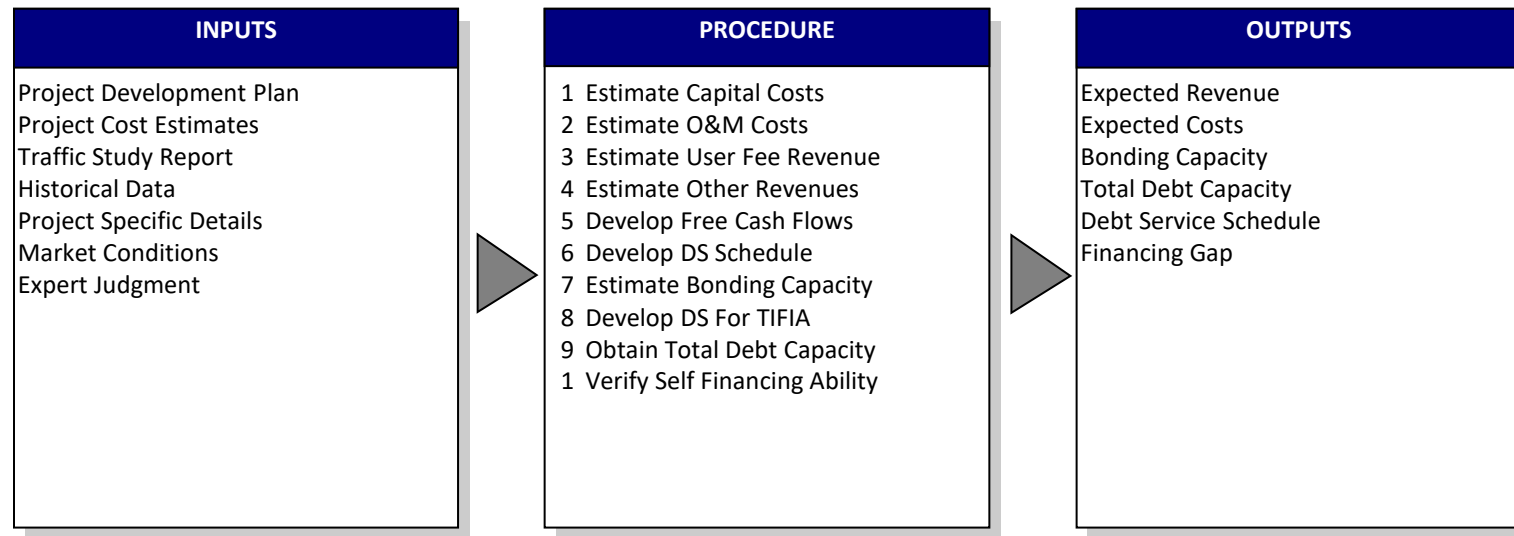
Discussion, Questions and Comments

Part II

P3 Affordability Analysis

What is P3 Affordability Analysis

- Estimate bonding capacity and total debt capacity
- Verify self financing ability and equity needs
- Determine debt structure
- Establish debt service schedule



Data Sources

Typical Revenue Collection Costs

O&M Cost Item	% of Annual Revenue	Source
Uncollectible accounts	2.5%	WSDOT
Credit card fees	3.45%	WSDOT
Back office operations	varied according to staffing needs	
Manual toll collection	varied according to staffing needs	
Enforcement	\$220,000 per officer-year	WYDOT
Annual cost growth	Inflation rate (2 -3%)	

Table 3-4 Pavement Rehabilitation Schedule (Source ACPA and CDOT 2009)

State	Asphalt Pavement	PCC Pavement
Alabama	12 years	20 years
California	20, 25, 30 and 35 years	
Colorado	10, 20, and 30 years	22
Florida	14 years	20 to 35
Georgia	10 years	20
Maryland	14.8 and 26.6 years	
Virginia	12, 22, 32 and 44 years	10 to 30

Table 3-5 Typical Unit Costs of Pavement Maintenance Treatments

Treatment	Cost	Unit	Year	Source
Overlays	\$163,709	lane-mile	2007	Chou 2008
Thin HMA Overlays	\$58,856	lane-mile	2007	Chou 2009
Thin Hot-Mix Overlay	\$2.09	yd ²	2000	FHWA 2000
Thin Cold-Mix Overlay	\$1.50	yd ²	2000	FHWA 2000

Free Cash Flow

■ Cash Flow Available for Debt Service (CFADS)

Facilities	Passenger Car		Truck	
	Min Toll	Max Toll	Min Toll	Max toll
Interstate System Toll Roads	\$0.02	\$0.27	\$0.08	\$1.76
Non Interstate System Toll Roads	\$0.09	\$1.01	0.31	\$2.33
Interstate System Toll Bridges and Tunnels	\$0.18	\$18.30	\$1.15	\$53.44
Non Interstate System Toll Bridges and Tunnels	\$0.02	\$39.42	\$0.50	\$84.72

Gross Revenue

- Operation & Maintenance cost
- Amortization / depreciation
- Tax
- + Amortization / depreciation
- Changes in working capital
- Capital Investments

= Free Cash Flow

	Greenfield Toll Road	Brownfield Toll Road
Ramp-up period	Traffic study	5-year historical average
Till year 30	Regional traffic growth	Regional traffic growth
After year 30	0-2%	0-1%

Debt Service Coverage Ratio

- Debt Service Coverage Ratio (DSCR) =
$$\frac{\text{Cash Flow Available for Debt Service (CFADS)}}{\text{Required Debt Service}}$$
- Based on project risk analysis: consider tolling regime, tolling culture in the region, toll escalation, forecast horizon, and toll facility characteristics

Toll Facility Type	DSCR
Brownfield toll facilities	1.30
Greenfield toll facilities:	
High congestion suburban areas	1.30
Outlying portions of metro areas	1.50
Developed corridors with many alternatives	1.75
Least-developed areas	2.0
Shadow toll/availability payment	1.20

Senior Debt Capacity

- Annual Senior Debt Service = Cash Flow Available for Debt Service / DSCR

$$\text{Borrowing capacity} = \sum_{t=1}^N \frac{(\text{Senior_Debt_Service})_t}{(1+\text{discount_rate})^t}$$

How DSCR affects debt capacity:

ADSCR requirement	1.50	1.20
Debt term	25 years	25 years
Interest rate	6%	6%
CFADS	\$1,000	\$1,000
Max. annual debt service : CFADS/ ADSCR	\$667	\$833
Amount of debt which can be raised (based on annuity repayment)	\$8,522	\$10,652

TIFIA

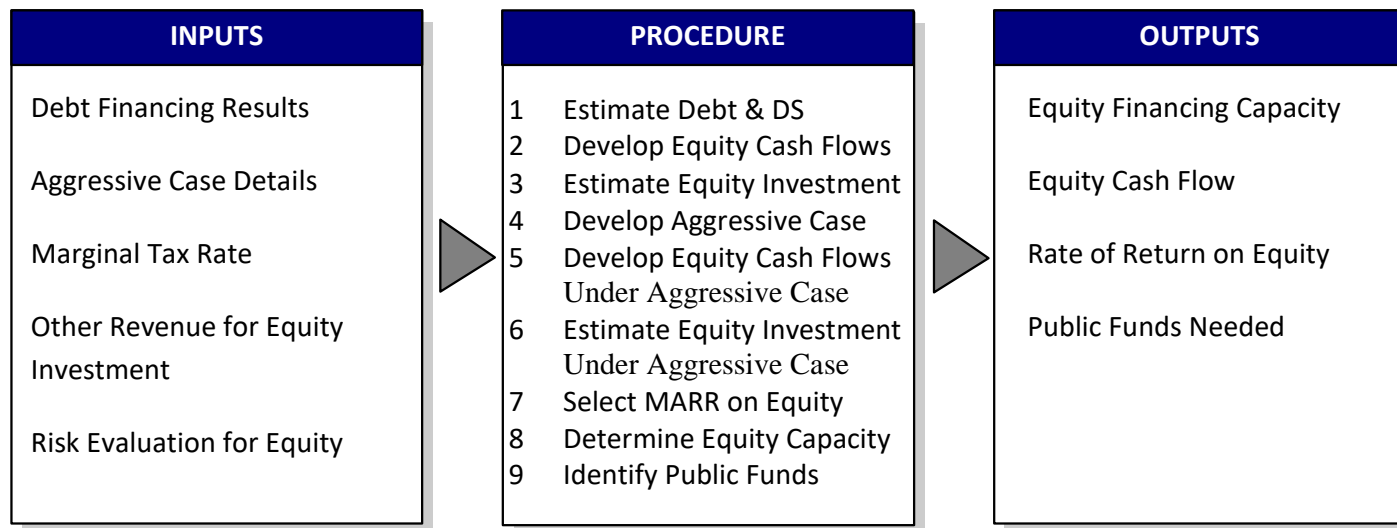
- Large surface transportation projects (\$50M generally, \$15M for intelligent transportation systems – ITS)
- TIFIA contribution limited to 33 percent in practice
- Senior debt must be rated investment grade
- Dedicated revenues for repayment
- Flexible repayment schedule
- Subordinate to senior debt unless bankruptcy related event (BRE)

Debt Capacity Enhancement

- Improved Governance Structure
 - Improved Revenue Stream
 - Cost Reduction or Reallocation
 - Risk Reallocation and Management
- Tranching
- Credit Enhancement
 - Public Subsidies
 - Revenue or Traffic Guarantees
 - Credit Enhancement Instruments

Equity Capacity

- Estimate Equity Cash Flow
- Determine the rate of return on equity investment
- Estimate equity financing capacity
- Identify public funding requirement



Equity IRR

Project/Company	Type	Expected Return
Dulles Greenway	Brownfield	12.60%
Chicago Skyway	Brownfield	12.30%
Indiana Toll Road	Brownfield	12.50%
Pocahontas Parkway	Brownfield	12.60%
SR-125	Greenfield	15-20%
SR-91	Greenfield	13.50%
I-81	Greenfield	13%
Cintra shares	Common stock	22%
Macquarie shares	Common stock	18.4%

Long-Term Affordability

- Debt management at state/agency level
- State/agency debt capacity (e.g. 6% of transportation revenue)
- P3 may or may not preserve state/agency debt capacity
 - Public debt and subsidy
 - Availability Payment
 - Guarantees

Discussion, Questions and Comments

Part III

Bankability and Credit Enhancement

What is Bankability

Acceptance by a bank and sure to bring a profit

Lenders' perspective

- To determine the project's capacity to repay debt
 - Are the revenues and expenditures relatively predictable?
 - Are the projected net cash flows adequate to cover debt service payments?
- To analyze the project's long-term prospects and risks
 - To conduct "due diligence" of project contracts and related risks
- Stress testing under extreme scenarios:
 - Cost extremes – e.g., inflation
 - Revenue extremes – e.g., traffic demand
- To track the project's loan performance

Key Metric Used by Lenders

- Annual Debt Service Coverage Ratio (ADSCR) =

$$\frac{\text{Cash Flow Available for Debt Service (CFADS)}}{\text{Required Debt Service}}$$
- Loan Life Coverage Ratio (LLCR) =

$$\frac{\text{PV of CFADS for over the loan life}}{\text{Outstanding debts}}$$
- Project Life Coverage Ratio (PLCR) =

$$\frac{\text{PV of CFADS over the project life}}{\text{Outstanding debts}}$$

Stress Test

- Base Case vs Stress Case
- Fitch Stress Case
 - 10-20% cost overrun (5%-10% for simple project)
 - 6-24 months delay (3-6 months for simple project)
 - Additional 1% over base case for O&M growth
 - Minus 0-1% over base case for traffic growth (established)
 - 50-75% reduction on Value of Time assumption for determining opening year base traffic (start-up)
 - Toll rate increase at minimal elasticity levels (CPI plus 0-100bps for first 10-year and CPI minus 0-150 bps for year 11-50)
 - DSCR 1.0, LLCR 1.25, and PLCR 1.5
 - Debt rate used for discounting

Credit Enhancement

- Credit-enhancement measures from project sponsors
 - Performance guarantees
 - Temporary financing facilities that provide liquidity
 - Insurance against certain project related risks
- Public sector support
 - Direct support
 - Indirect support
- Loan guarantee

Discussion, Questions and Comments

Part IV

Profitability from Concessionaire Perspective

Purpose of Financial Assessment

Concessionaire perspective

- To determine the potential value of the project, i.e., bid price:
 - Concession fee for revenue positive projects
 - Public subsidy for revenue negative projects
- To compare potential financing structures and optimize financing structure:
 - Type of debt – bonds vs. loans
 - Timing of debt -- grace period, maturity, etc.
 - Optimum shares of debt and equity
 - Upside potential for equity return

Key Metric for Concessionaire

- WACC is what it costs the company to obtain capital (both debt and equity)
 - Investing company's WACC does not account for project risks
 - Concessionaire WACC includes project risk premiums
- Formula: $WACC = (\text{Proportion of Equity} * \text{Cost of Equity}) + [(\text{Proportion of Debt} * \text{Cost of Debt}) * (1 - \text{Corporate Tax Rate})]$

Note: Proportion of equity and debt can change over time as project risk changes
- Hurdle Rate is used to integrate risk premium into WACC

Calculating Equity Distributions

- Equity distributions are made after tax payments.
- Calculation of tax payments involves estimating taxable income which includes consideration of depreciation
- It is a complex process involving calculation of:
 - $CFADS = \text{Revenue} - O\&M$
 - $\text{Taxable income} = CFADS - \text{Interest portion of debt service} - \text{Depreciation}$
 - $\text{Income after taxes} = \text{Taxable income} - \text{Tax}$
 - $\text{Equity distributions} = \text{Income after taxes} - \text{Principal portion of debt service} + \text{depreciation} - \text{reserve deposits}$

Discussion, Questions and Comments

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