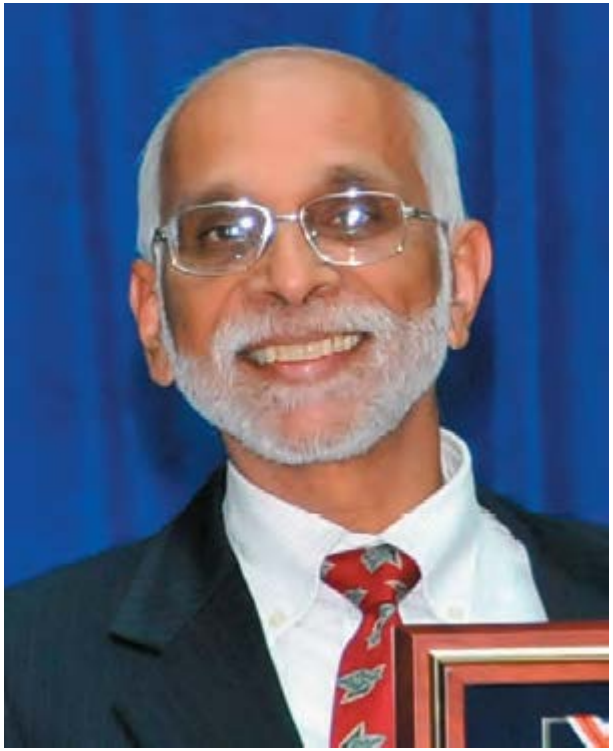
Financial Viability Assessment

P3-VALUE Webinar

March 21, 2016

Instructors



Patrick DeCorla-Souza

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Office of Innovative Program Delivery

Marcel Ham

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P3-VALUE 2.0 Webinars

- **P3:** Public Private Partnership
- **P3-VALUE 2.0:** Analytical tool to help practitioners understand processes used to quantitatively evaluate P3 options
- This is one of a series of webinars on P3-VALUE
  - P3 Evaluation Overview (January 25, 2016)
  - Value for Money Analysis (February 8, 2016)
    - Value for Money Exercise (Feb. 16, 2016)
  - Project Delivery Benefit-Cost Analysis (Feb. 22)
    - Project Delivery BCA Exercise (Feb. 29, 2016)
  - Risk Assessment (March 7, 2016)
    - Risk Assessment Exercise (March 14)
  - **Financial Viability Assessment (today)**

Webinar Outline

Part 1	P3 Project Financing
Part 2	P3 Financial Structure
Part 3	Traffic & Revenue Forecasting
Part 4	Financial Viability Analysis
Part 5	Financial Models
Part 6	Using P3-VALUE for Financial Viability Assessment
Recap	Summary of Webinar

Webinar Objectives

After this webinar you should be able to:

- Explain how P3s are structured
- Describe the process for toll revenue forecasting
- Describe the key metrics used to evaluate the financial viability of a P3 project
- Describe the role of financial models and list key inputs and outputs

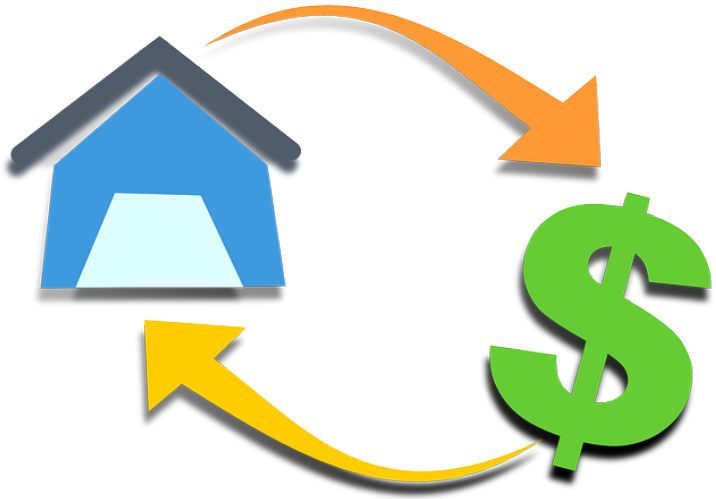
Part 1

What is P3 Project Financing

What is Financing?

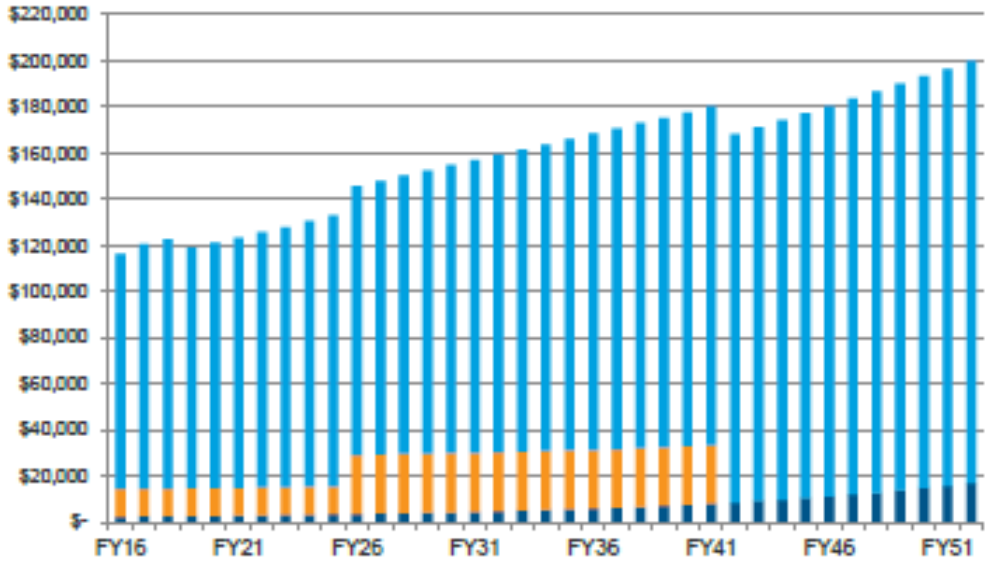
Method by which an investment is paid for:

- A temporary provision of funds in exchange for a return paid to investors from future revenues
- Bridges mismatch in timing between ultimate funding source (e.g. tolls/availability payments) and required investments (e.g. capex)



What is Project Finance?

- Financing of (infrastructure) projects based on future project cash revenues (typically tolls or availability payments for roads)
- Non-recourse debt secured by project assets and repaid from project cash flows only

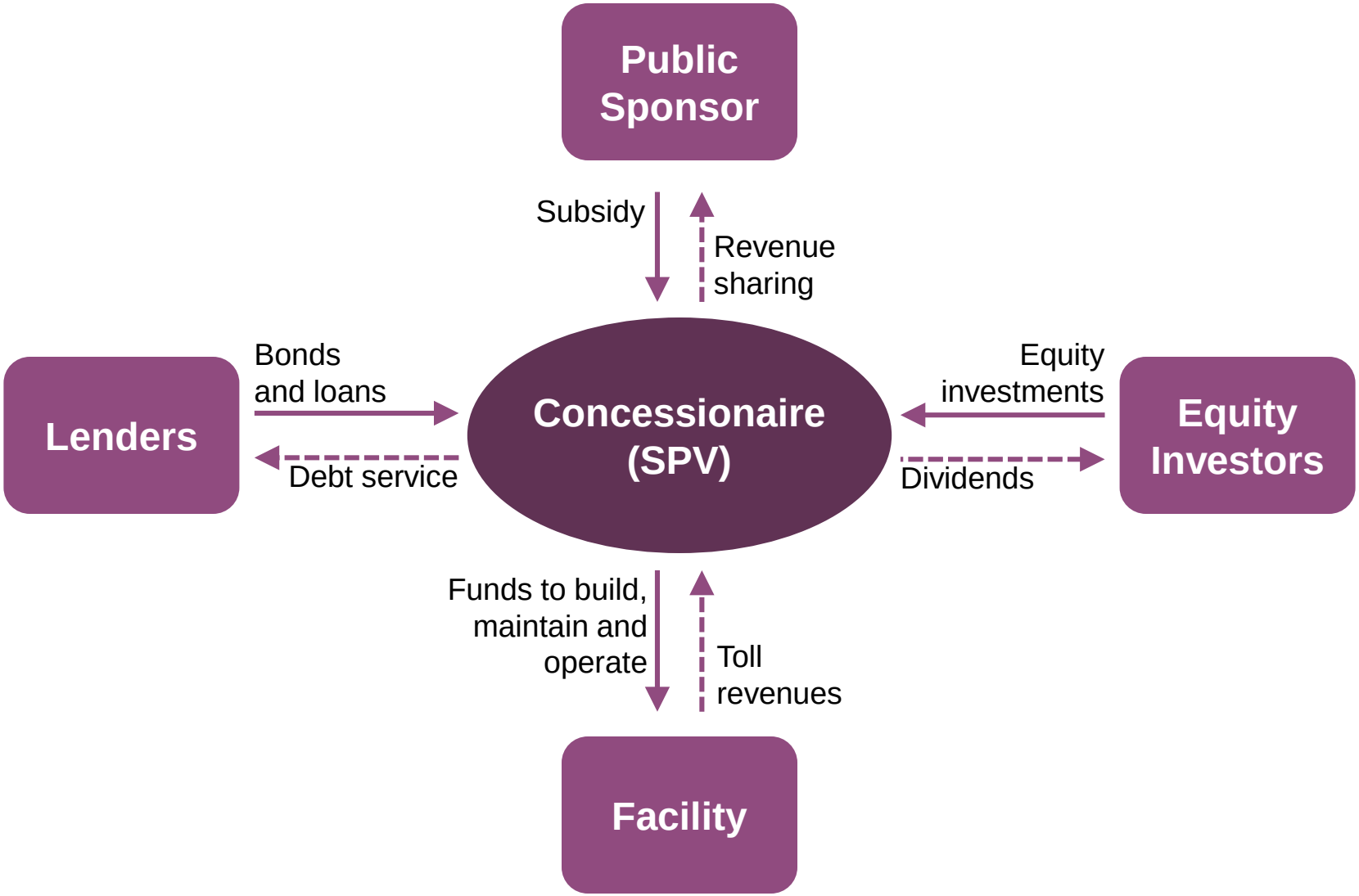


Special Purpose Vehicle

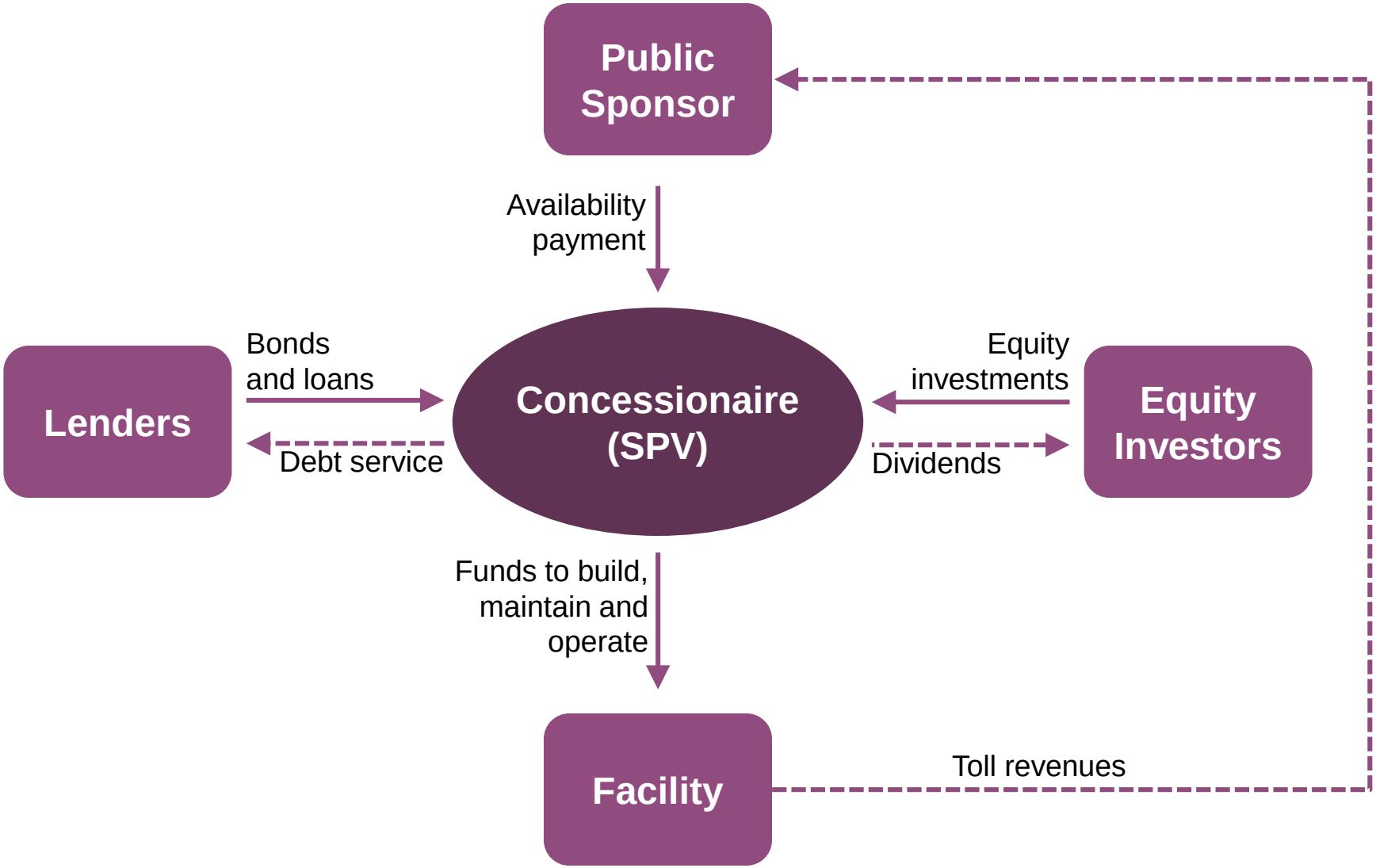
- Set up to finance the activities of a specific project
  - Created to ring fence project's assets and cash flows from private sponsor's other activities
  - No recourse to private sponsor's balance sheet, limiting exposure of private sponsors in case of bankruptcy
- Financiers may ignore the private sponsor's other activities that are not part of the project

COMPANY LLC

Typical Toll Concession



Typical Availability Payment P3



Test Your Knowledge

True or False

- An SPV's debt providers have no recourse to the private sponsor's balance sheet in case of bankruptcy of the SPV.

Questions?

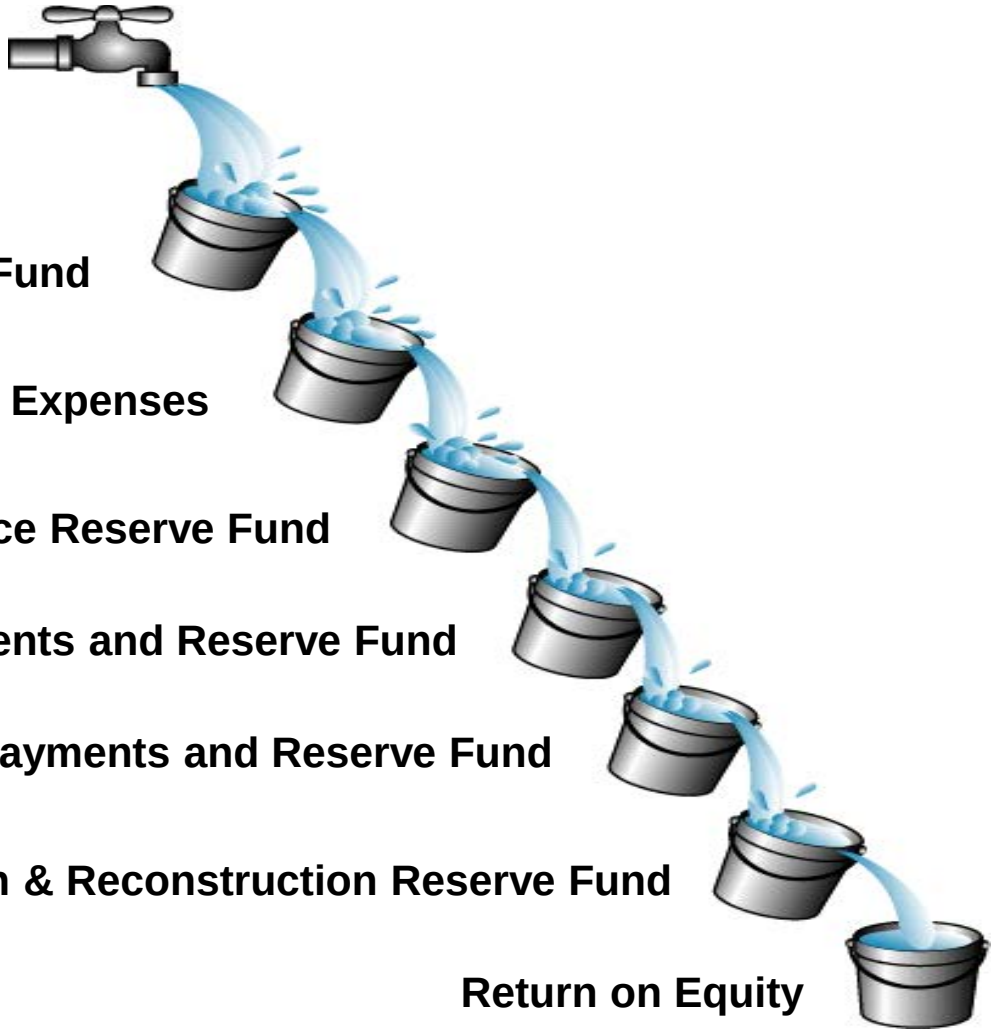
Submit a question using the chat box

Part 2

P3 Financial Structure

Typical Cash Flow Waterfall

Project Revenues



Revenue Fund

Operation & Maintenance Expenses

Operations & Maintenance Reserve Fund

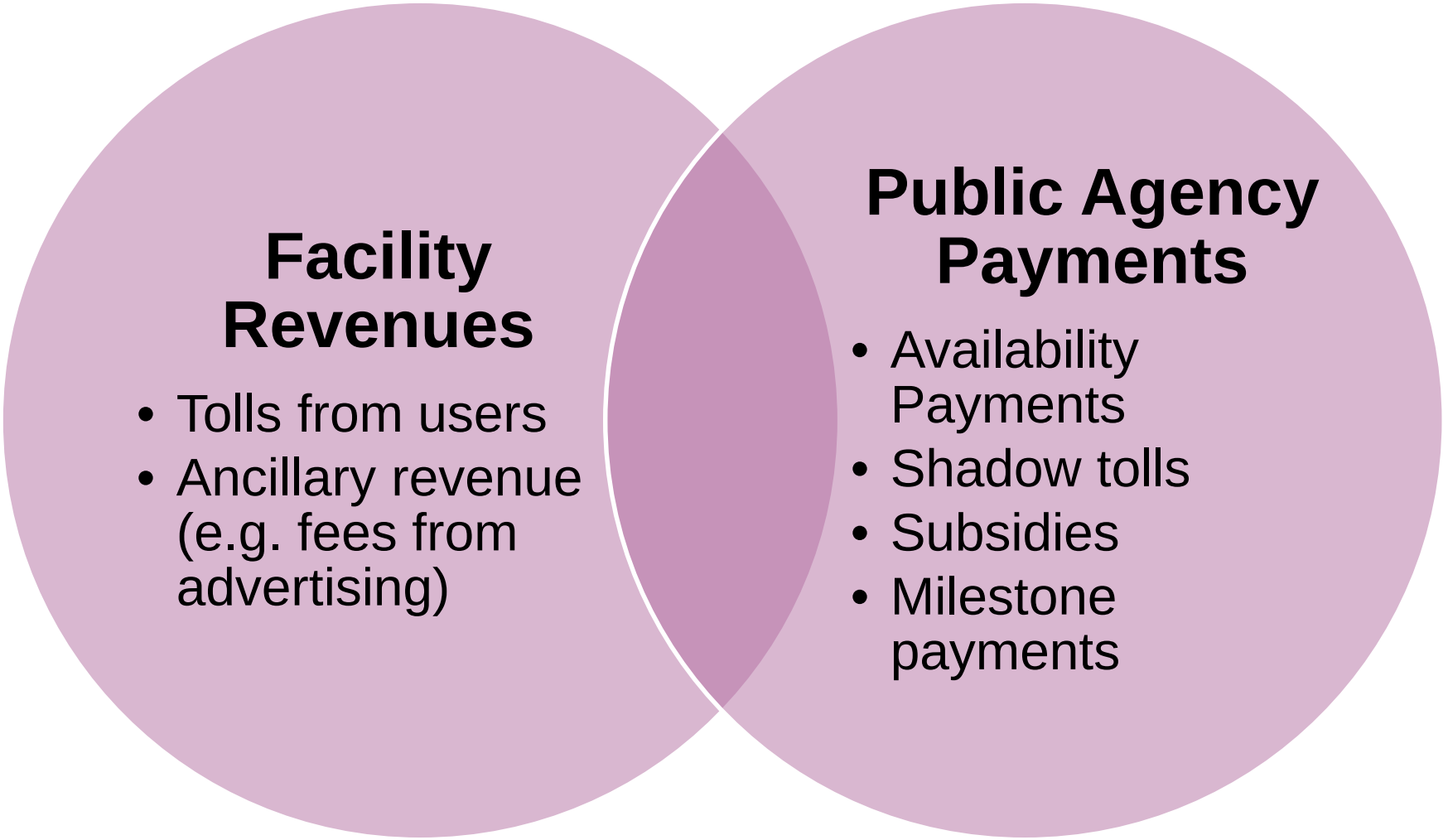
Senior Debt Service Payments and Reserve Fund

Subordinate Debt Service Payments and Reserve Fund

Rehabilitation & Reconstruction Reserve Fund

Return on Equity

Sources of Project Revenues



Sources of Project Financing: Equity

- Infrastructure development companies
- Private equity and infrastructure funds
- Pension funds, foundations, insurance companies, etc.

Sources of Project Financing: Debt

Loans

- Private bank loans
- TIFIA loans

Bonds

- Private Activity Bonds (PABs)
- Project revenue bonds

Debt Repayment

Annuity type:

- Equal payment amount every period
- Multiple tranches may be used with differing maturities

Interest only:

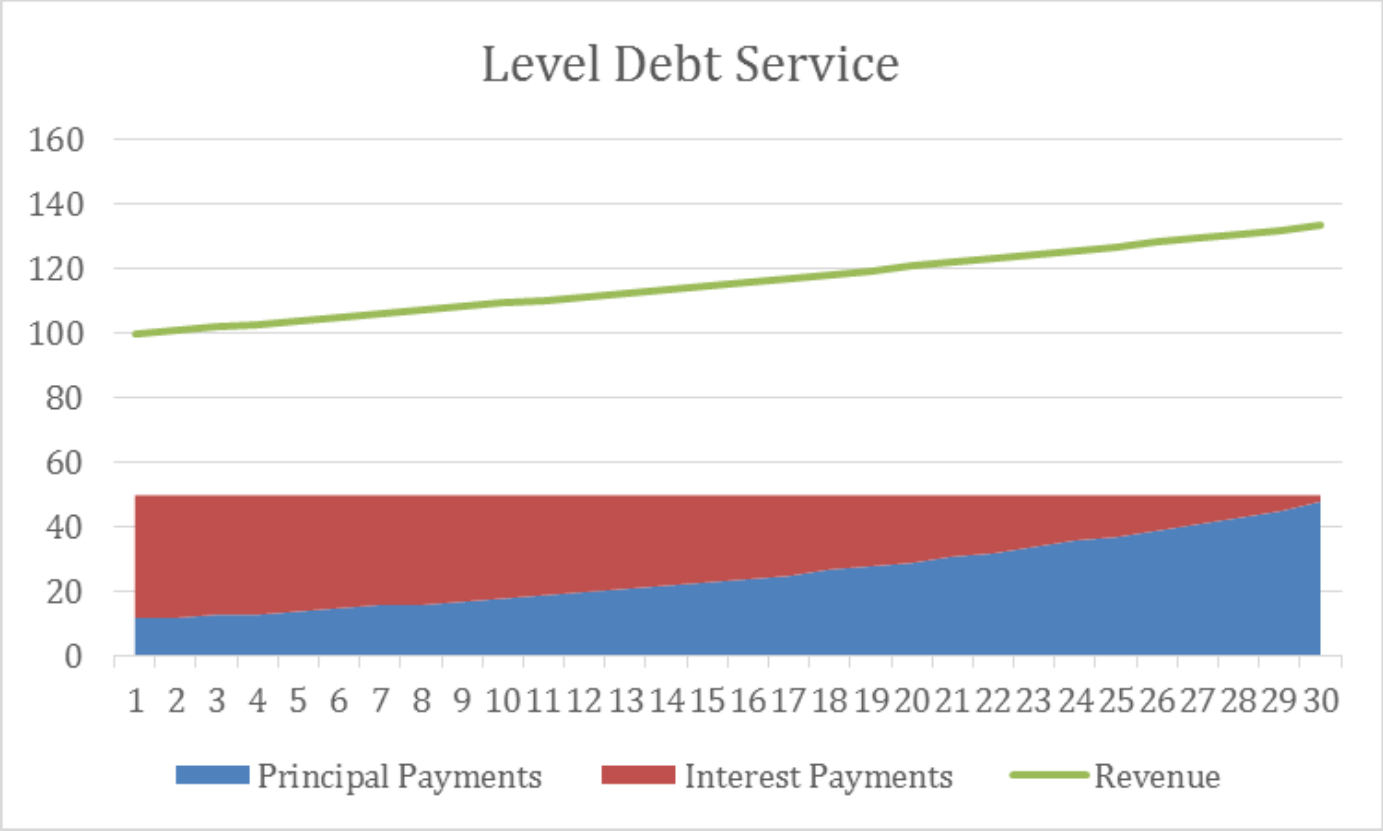
- “Bullet” payment of principal at maturity

Sculpted repayment:

- Debt service payment is a mix of interest and principal that is “sculpted” to match the revenue stream profile

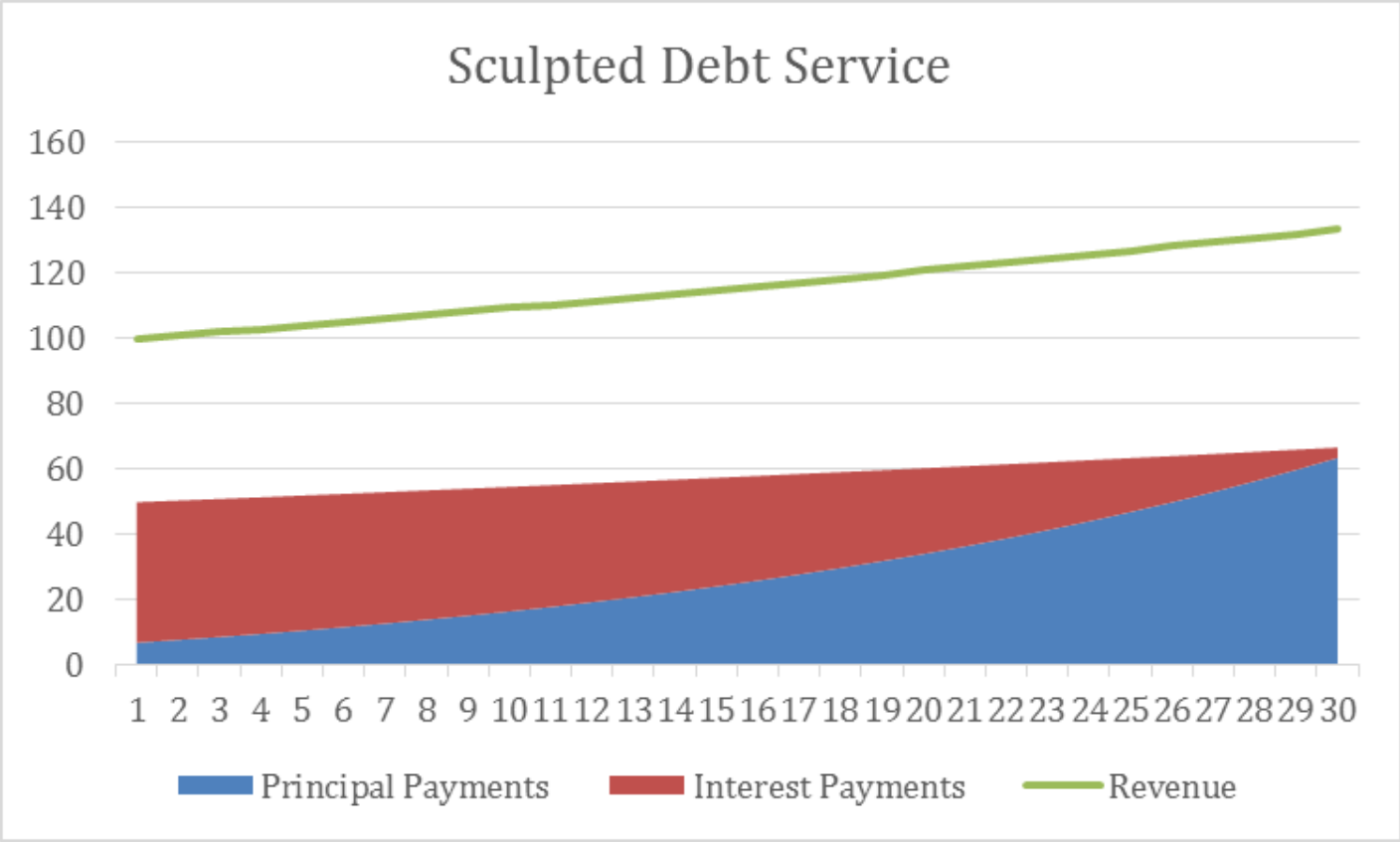
Annuity Debt Repayment

Example of annuity type debt service: Equal debt service payments in all years



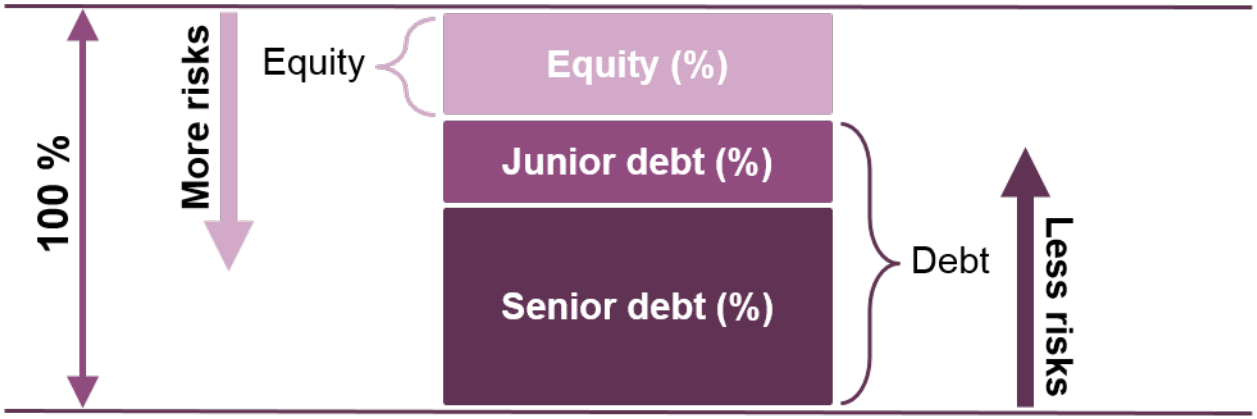
Sculpted Debt Repayment

Example of sculpted debt service: Debt service follows net revenue profile, hence optimizing debt capacity



Risk and Leverage

- Leverage (or gearing or debt-to-equity ratio) indicates debt as a share of total required financing
- As debt service is paid before dividends, equity finance forms a buffer for debt, making debt less risky
- Lenders require less equity for projects with lower risks



Leverage vs. Required Revenues

	50/50 leverage	90/10 leverage
Project cost (millions)	$1,000	$1,000
(a) Debt	$500	$900
(b) Equity	$500	$100
(c) Required rate of return on equity	15%	15%
(d) Annual return on equity: (b) x (c)	$75	$15
(e) Annual interest rate on debt	5%	6%
(f) Interest payment: (a) x (e)	$25	$54
Annual revenue required to pay for financing: (d) + (f)	**$100**	**$69**

Note: *This simplified example assumes "bullet" repayments of the principal on debt and the equity investment at the end of the concession term. It also does not consider minimum DSCR requirements (see later).*

Equity in US Transportation P3s

Project	Concession Type	Equity (% of Financing)	Equity (% of Cost)
I-95 HOT Lanes	**Toll**	**35%**	**32%**
LBJ-635 Corridor	Toll	31%	25%
North Tarrant Express	Toll	29%	21%
I-495 HOT Lanes	Toll	23%	18%
Midtown Tunnel	Toll	17%	11%
SH-130 Segment V-VI	Toll	16%	16%
I-595	AP	13%	11%
Presidio Parkway	AP	12%	12%
Port of Miami Tunnel	AP	11%	7%
East End Crossing	**AP**	**10%**	**10%**

Source: Official bond statements

Credit Enhancements

External:

- Letters and lines of credit
- Bond insurance
- Construction risk guaranties
- Governmental guaranties

Internal

- Cash reserves
- Debt tranches (senior vs. junior)
- Cash flow optimization (apply excess cash to prepay ahead of scheduled amortization)

Test Your Knowledge

True or False

- A sculpted debt repayment schedule is able to optimize debt capacity.

Questions?

Submit a question using the chat box

Part 3

Traffic & Revenue Forecasting

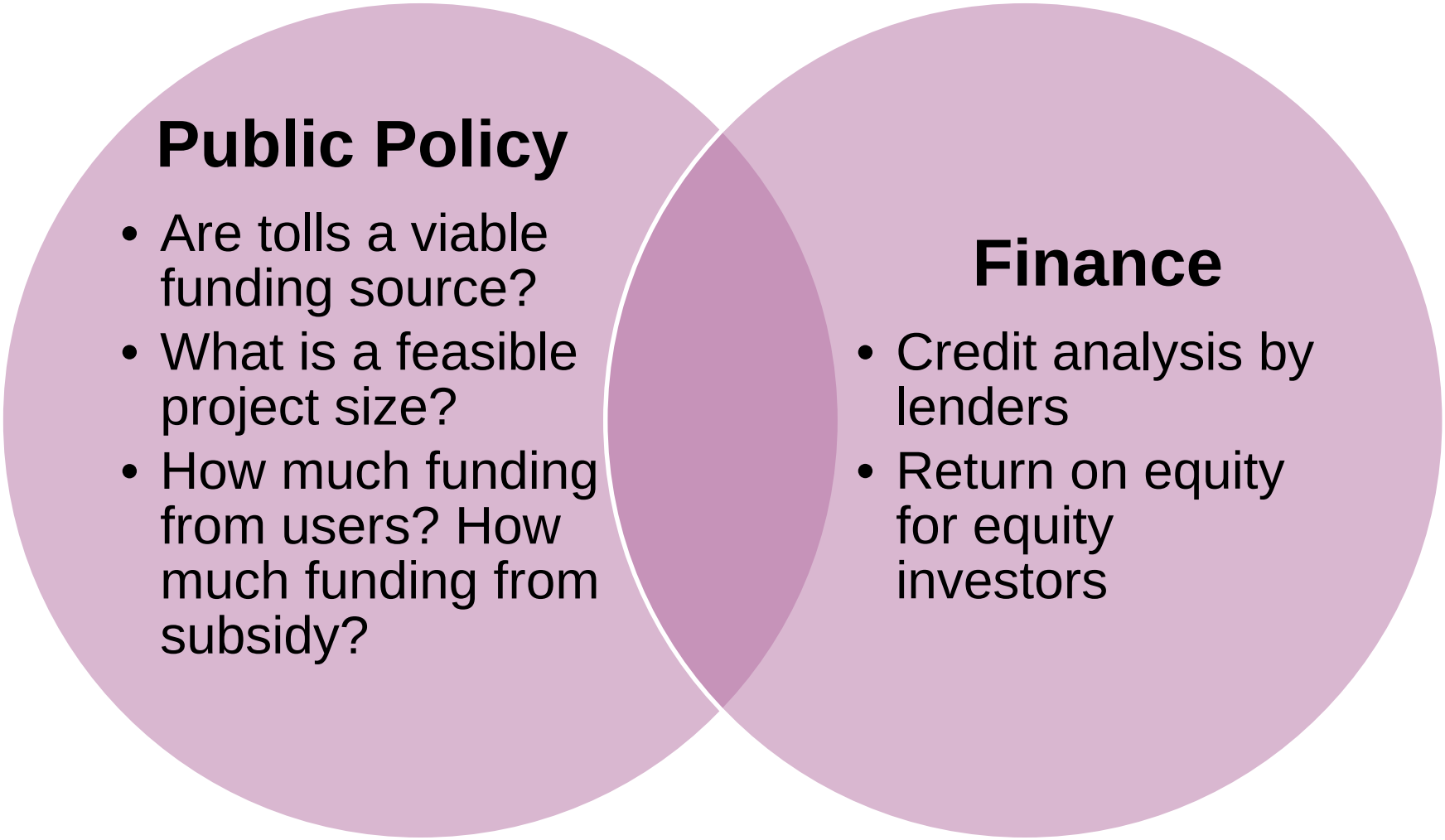
Traffic & Revenue Forecasts

Level 1: Conceptual, based on available information

Level 2: Requires current and comprehensive survey data and full analysis

Level 3: "Investment-grade" forecast with toll plan, fully supported data and assumptions

Use of Traffic & Revenue Forecasts

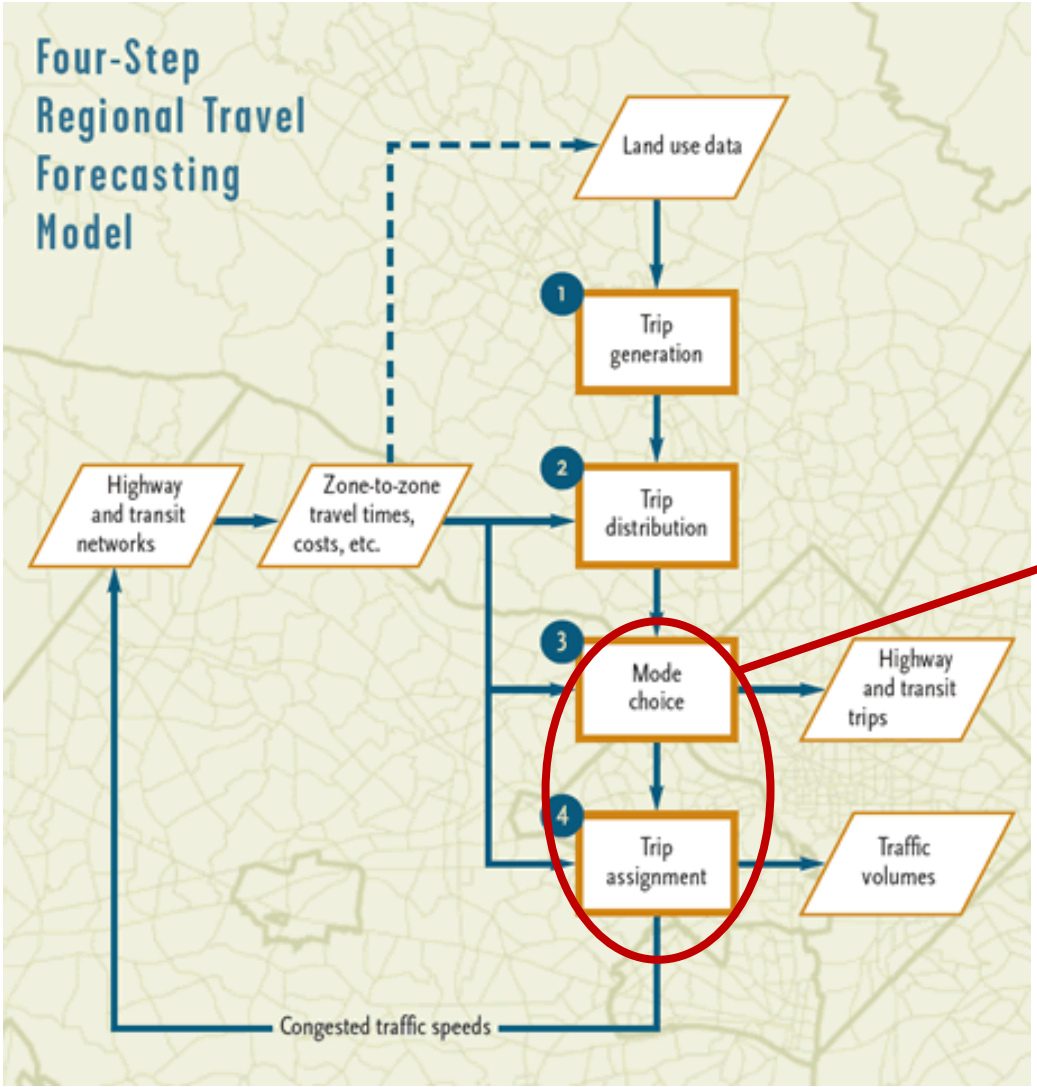


Debt Rating

Credit agencies rate transaction (not forecast):

- Stress test the traffic & revenue (T&R) forecasts
- Assess security of the finance structure (DSCR, leverage)
- Borrowers typically structure a finance plan to the standards of a specific, desired “investment grade” rating

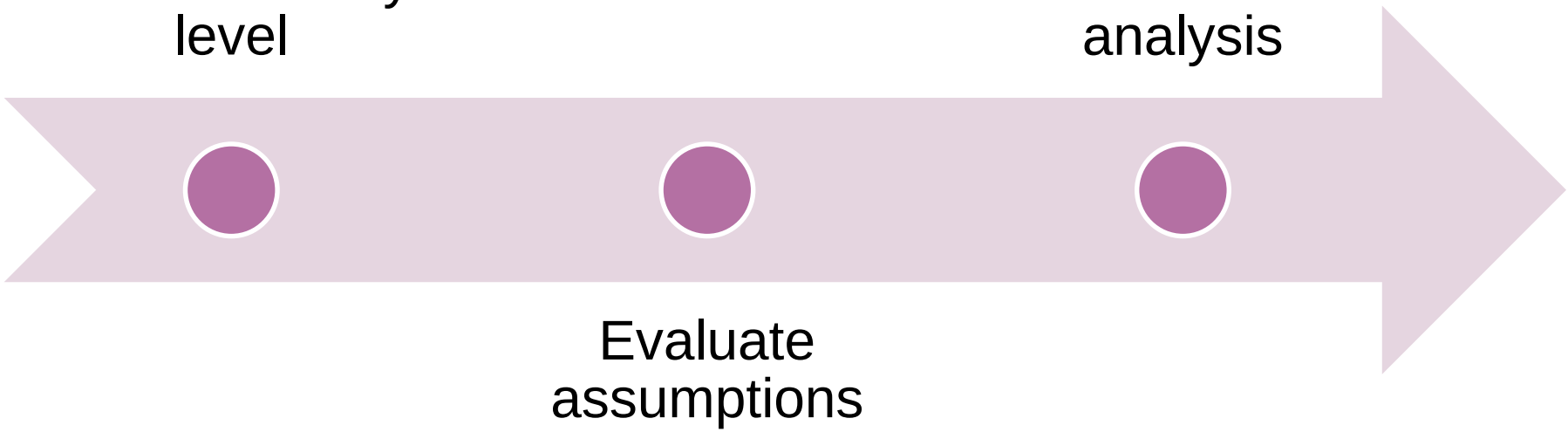
Regional Travel Forecasts



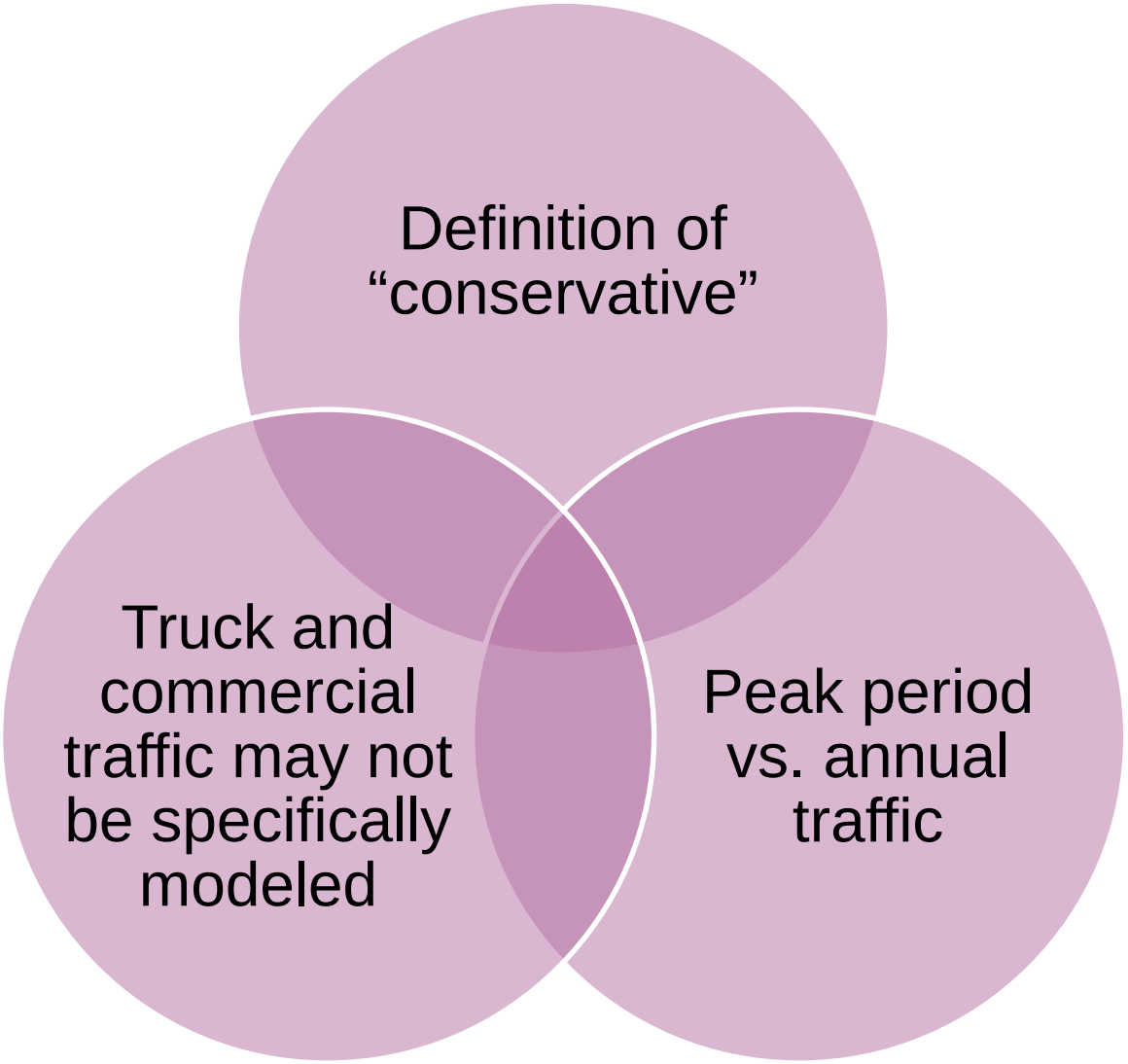
Tolled vs. non-tolled road for work and non-work trips

Source: MWCOG

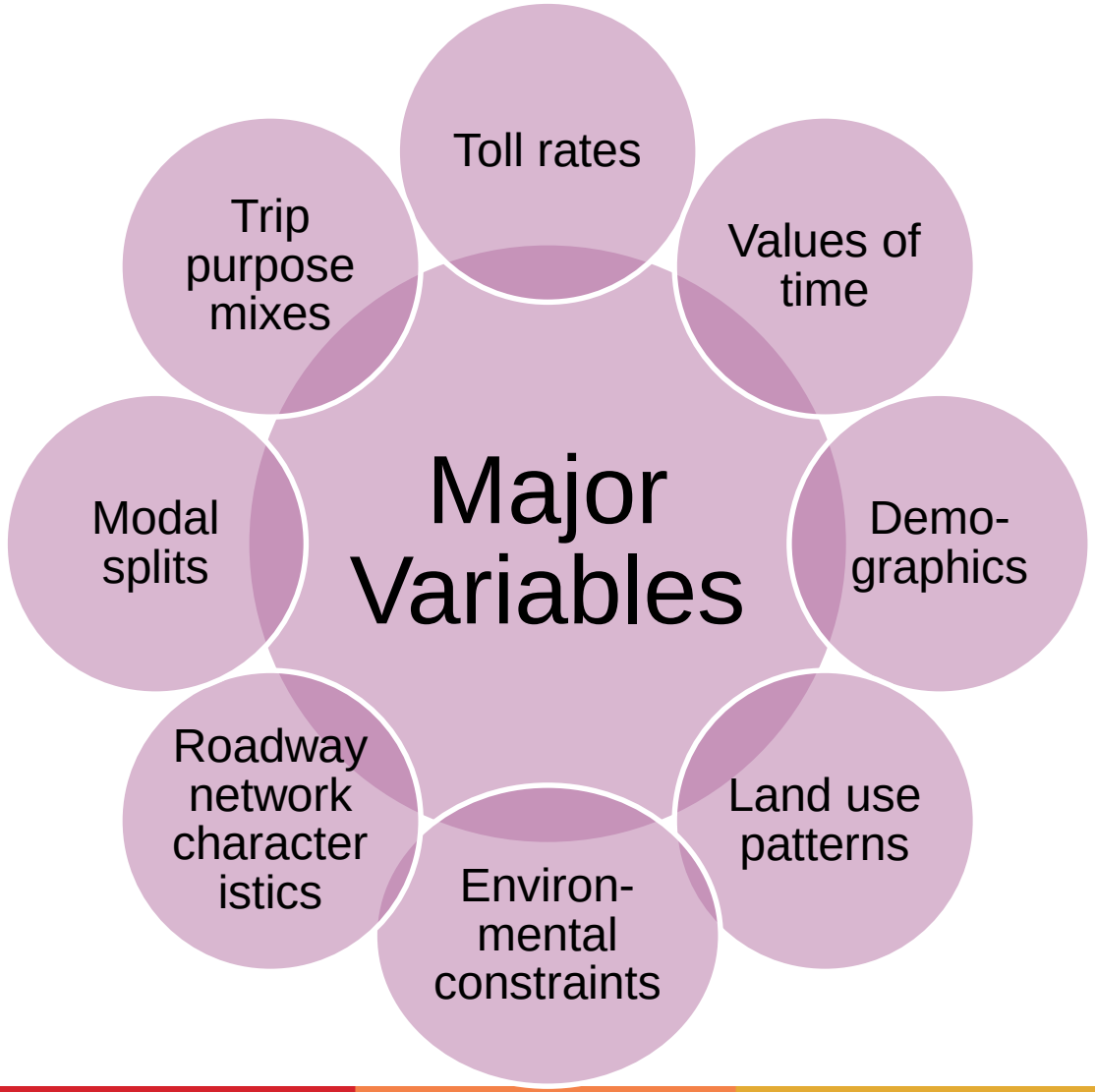
Project Traffic & Revenue Forecast



Modeling Considerations

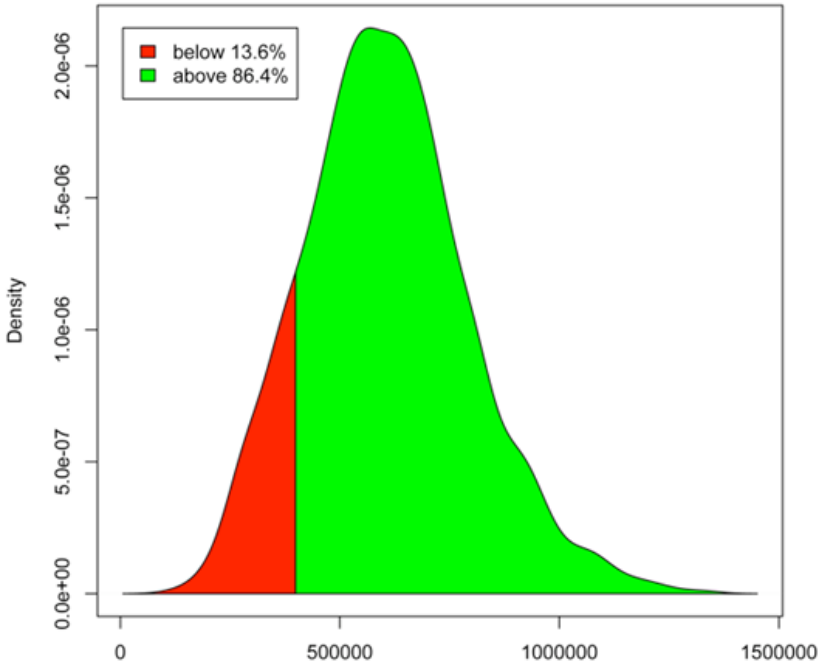


Major Variables



Probabilistic Forecast

- Perform sensitivity analyses for each major variable (separately) to estimate its relative significance
- Develop probability distribution functions for revenues



Probabilistic Confidence Levels

- **P50:** 50% probability of revenue attainment
  "Most likely" case, may be used by equity investors

- **P90:** 90% probability of revenue attainment
  "Severe downside" case, may be used by debt providers

Test Your Knowledge

True or False

- Traffic forecasts obtained from regional travel models developed by MPOs are more than adequate for the purpose of rating debt.

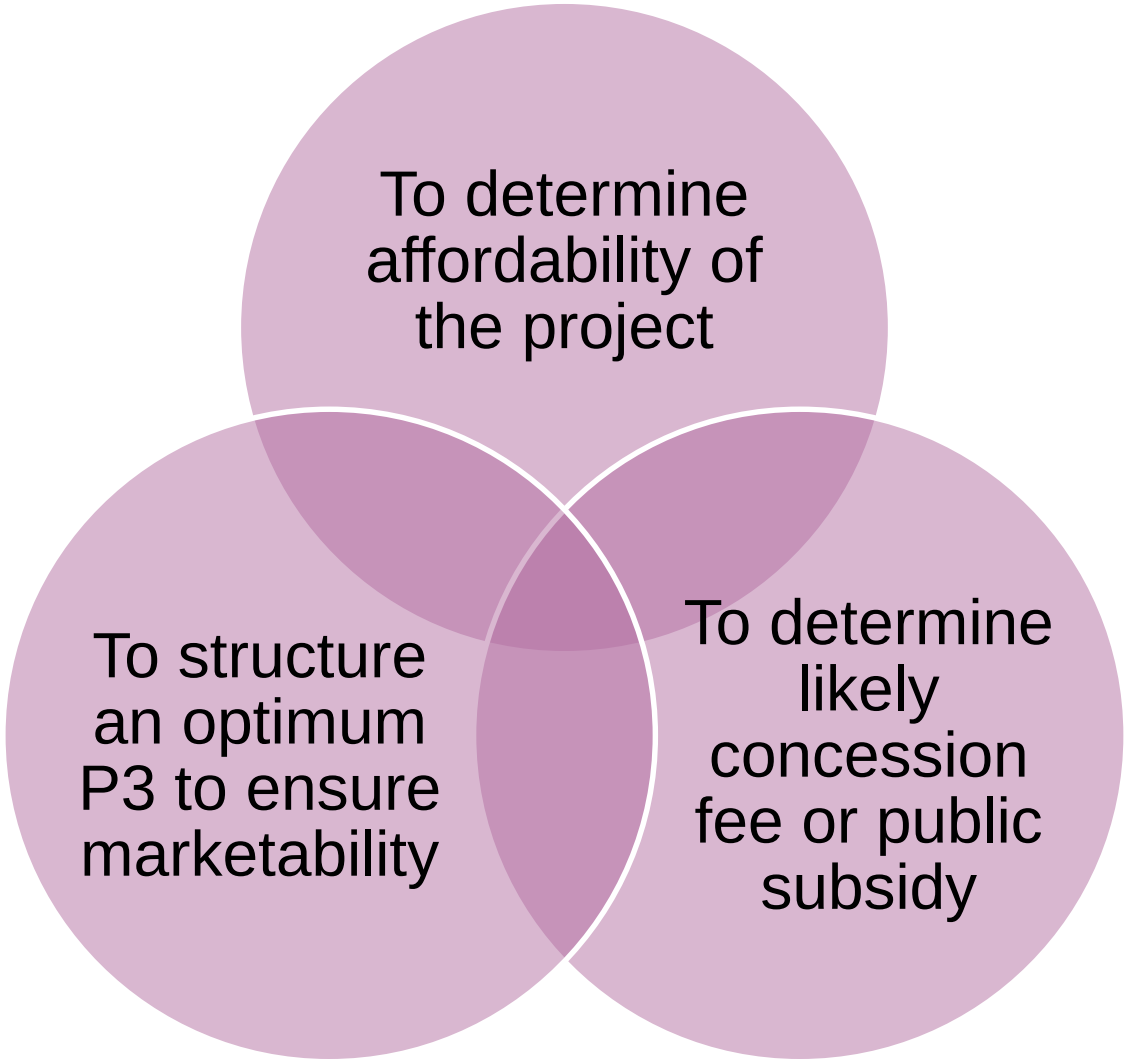
Questions?

Submit a question using the chat box

Part 4

Financial Viability Analysis

Purpose


To determine affordability of the project
To structure an optimum P3 to ensure marketability
To determine likely concession fee or public subsidy

Key Metrics for Public Agency

- Concession fee – for “NPV positive” projects
- Public subsidy – for “NPV negative” projects
- Toll rates
- Concession term

Key Financial Metrics

1. Debt service coverage ratio (DSCR)
2. Gearing (or debt-to-equity ratio)
3. Equity internal rate of return (Equity IRR)
4. Weighted average cost of capital (WACC)

Debt Service Coverage Ratio (DSCR)

- Debt service coverage ratio (DSCR) =

$$\frac{\textit{Cash Flow Available for Debt Service (CFADS)}}{\textit{Required Annual Debt Service}}$$

Higher minimum debt service coverage ratio requirement reduces debt capacity

2. Gearing

- Gearing (or debt-to-equity ratio) =

$$\frac{\textit{Debt Amount}}{\textit{Equity Amount}}$$

Higher gearing is the result of higher debt capacity and a lower equity requirement

3. Equity Internal Rate of Return

- Equity IRR is the discount rate at which the NPV of equity cash flows is zero
- Solve for *r* in the formula:

$$\sum \frac{D_i - I_i}{1+r} = 0$$

Where D_i = Equity distributions
I_i = Equity investments

Weighted Average Cost of Capital

- WACC is calculated by combining both cost of debt and equity
- Text book formula (*applicable only if gearing is constant*):

$$WACC = \frac{E}{D+E} \times r_e + \frac{D}{D+E} \times r_d \times (1-\tau)$$

Where E = equity amount
D = debt amount
r_e = required equity return
r_d = debt interest rate
$(1-\tau)$ = tax shield

WACC Calculation: Textbook Example

- Equity amount = 50% of total financing
- Required equity return = 12%
- Debt amount = 50% of total financing
- Interest rate = 6%
- Tax rate = 35%, tax shield = 65%

$$WACC = [50\% \times 12\%] + [50\% \times 6\% \times 65\%]$$

$$WACC = 7.95\%$$

WACC Calculation in Project Finance

- In project finance, debt-to-equity ratio changes over time, so text book WACC formula cannot be applied
- WACC can be calculated by determining the internal rate of return (IRR) of all financing cash flows, i.e., the Project IRR:
  - Debt drawdown & debt service
  - Equity investment & dividend payments
  - Reserve movements

Project Internal Rate of Return

- Project IRR is the discount rate at which the NPV of financing cash flows is zero
- Solve for *r* in the formula:

$$\sum \frac{R_i - I_i - C_i}{1 + r} = 0$$

Where R_i = Revenues
I_i = Investments
C_i = Operating costs

Test Your Knowledge

True or False

- A higher required minimum DSCR will allow a project to obtain a higher amount of debt

Questions?

Submit a question using the chat box

Part 5

Financial Models

Financial Calculations

Funding/financing sources

- Equity & debt
- Subsidies/Agency budget
- Toll revenues

Uses of funds

- Capital expenses
- Operating expenses
- Debt service
- Tax & dividends

P3-VALUE 2.0 Financial Model

- Capacity of project revenues to repay debt
- Capacity to attract equity
- Required public subsidy payments

Discounting of Cash Flows

- Converts future costs and revenues to “present value” terms
- Discount rate reflects risk and the time value of money

$$PV = \sum_{0}^{n} \frac{CF_n}{(1+r)^n}$$

Where PV = Present Value

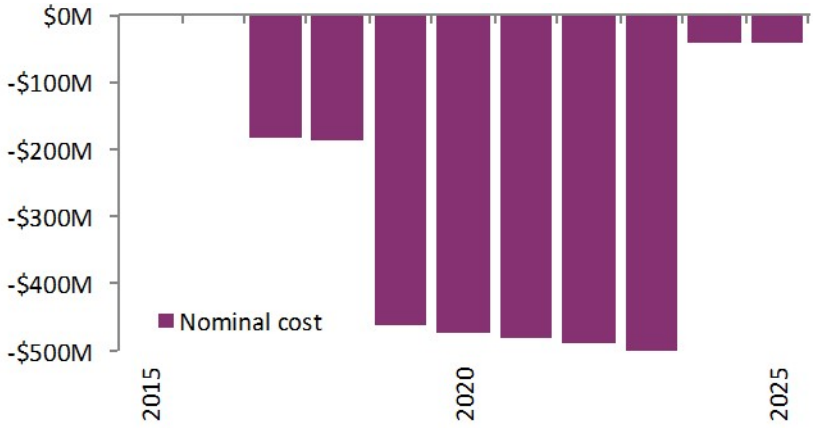
CF_n = Cash Flow in year n

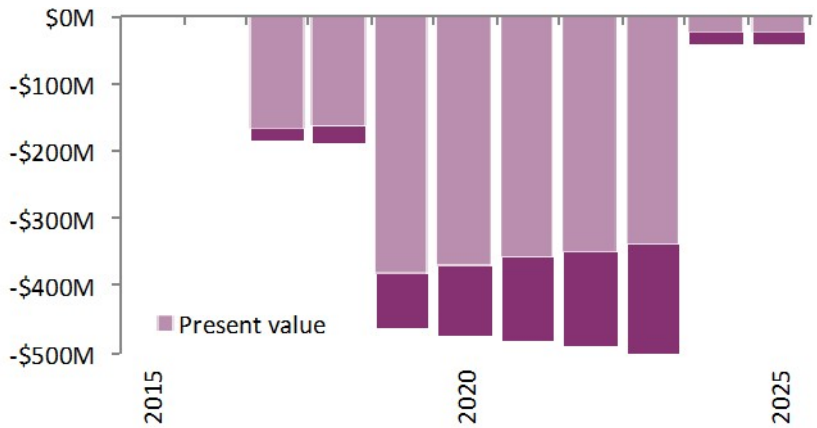
r = discount rate

n = year

Effects of Discounting

- Cash flows later in a concession period will have a relatively lower impact
- In the example depicted below, the nominal and present value of the cost cash flows in year 2020 are:
  - Nominal value: $472M
  - Present value: $370M





Use of Financial Modeling

Project Development

- Determine financial viability
- Assess P3 Value for Money

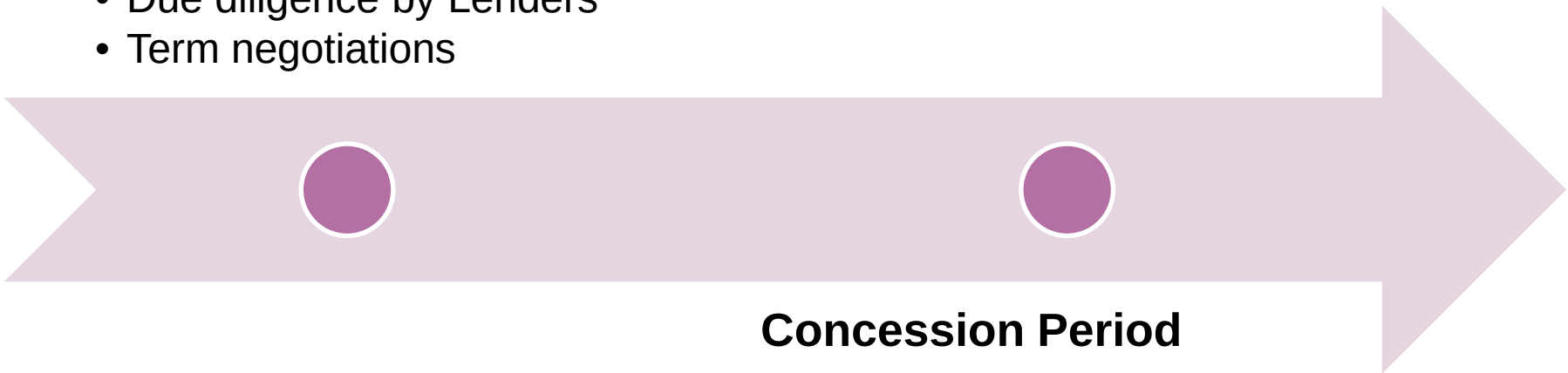
Bid Preparation

- RFP designed to ensure project can be successfully tendered
- Bidders test potential financial structures
- Bid evaluation by public agency

Use of Financial Modeling

Commercial & Financial Close

- Due diligence by Lenders
- Term negotiations



Concession Period

- Monitoring project performance
- Calculate compensation payments
- Calculate any refinancing gains
- Revenue sharing
- Handback

Test Your Knowledge

True or False

- Using a high discount rate with a stream of future cash flows will result in a lower NPV

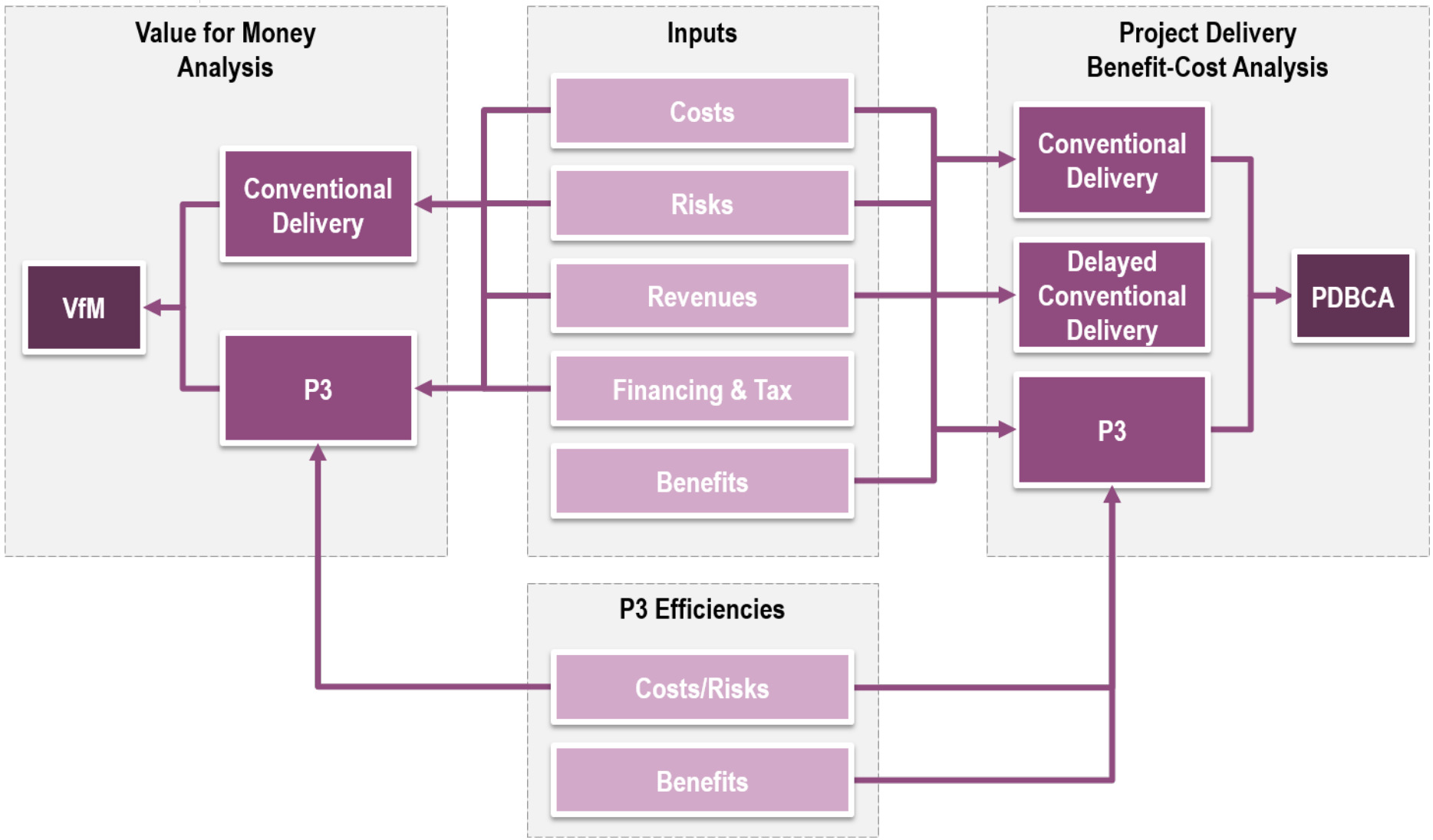
Questions?

Submit a question using the chat box

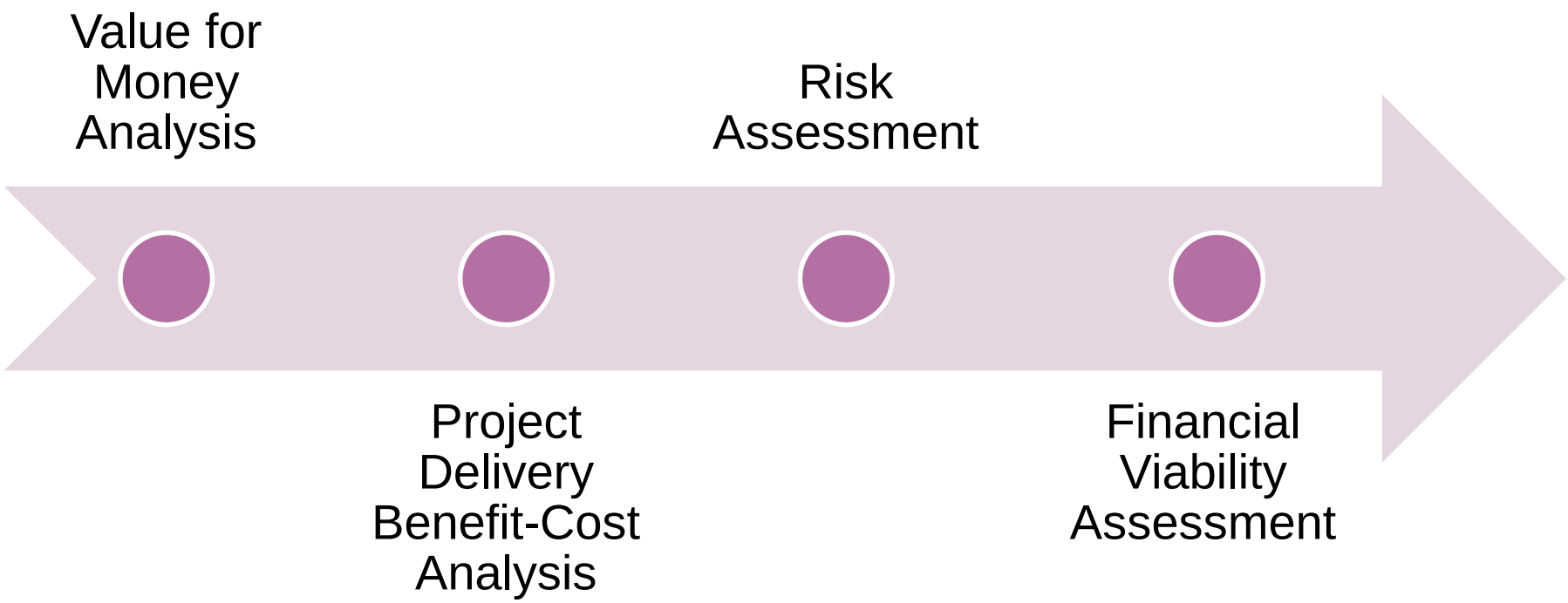
Part 6

Using P3-VALUE for Financial Viability Assessment

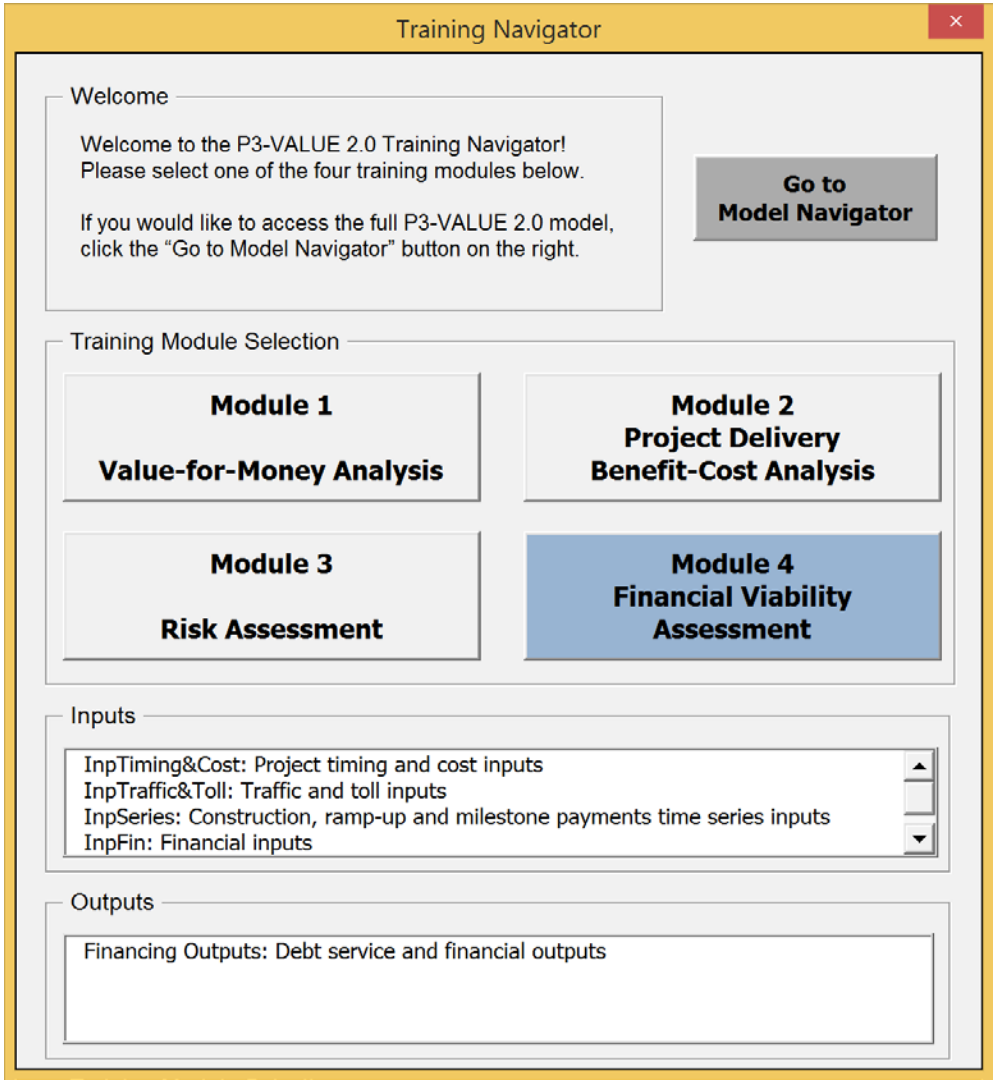
FHWA's P3-VALUE 2.0



Training Modules



Training Navigator User Interface



Training Module selection

Input sheet selection

Output sheet selection

Demonstration of Financial Module

Please stand by as we open the Excel file

Tool and References

P3-VALUE 2.0 Excel Spreadsheet

User Guide

P3 Project Financing Guidebook

Questions?

Submit a question using the chat box

Webinar Summary

Webinar Recap

Part 1	P3 Project Financing
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Resources

FHWA's Office of Innovative Program Delivery Website:
http://www.fhwa.dot.gov/ipd/

P3 Website:
http://www.fhwa.dot.gov/ipd/p3/

Financial Assessment Exercise

- Exercise instructions may be downloaded from the web room
- Technical assistance options:
  - E-mail questions to: patrick.decorla-souza@dot.gov
    - Or call (202)-366-4076
  - Participate in “Exercise Review” webinar
- **Exercise review webinar – March 28 at 12:30pm EST**

To access the Exercise Review webinar, please use the following link and telephone number:

Link: **https://connectdot.connectsolutions.com/p3**

Telephone: 1-888-363-4749, Passcode: 6139168#

Contact Information

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