Methods of Valuing Utility Assets

IPU Advanced Regulatory Studies Program

November 2023

RAFTELIS

Presenters

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Learning Objectives

Why public utilities need to be valued

Various standards of value

Three common valuation approaches

Methods used to value public utilities

Factors that make valuing public utilities unique and challenging

Why are Public Utility Assets Valued?

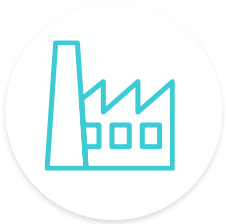
Mergers / Acquisitions / Consolidation

Condemnation / Eminent Domain

Other Situations:

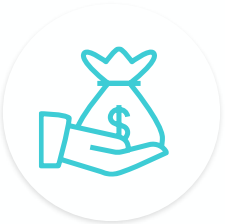
- Redistribution of system capacity (joint ownership)
- Pricing of utility service
- Insurance and tax purposes
- Financial planning and reporting

What is unique about valuing public utilities?



NATURAL MONOPOLIES

- **Economic / rate regulation**
- **Rate making – Valuation circularity**



THINLY TRADED

- **100 – 200 Water / wastewater utility transactions per year**
- **<100 gas / electric utility transactions per year**

DIVERSE MARKET

- **Both private and public buyers and sellers**
- **Different regulatory environments (e.g., traditional vs. fair value)**

What do we mean by value?

- What value?
- From whose perspective?
- For what purpose?
- Value as of when?

Most common value definition

Fair Market Value

The price at which the property would change hands between a willing buyer and a willing seller, where neither is under any compulsion to buy or sell and both parties have reasonable knowledge of the relevant facts.
(Source: IRS Revenue Ruling 59-60)

Valuation Standards (Examples)

- **Uniform Standards of Professional Appraisal Practice (USPAP)** – *Appraisal Foundation*
  Provides ethics and performance standards for the appraisal profession

- **Business Valuation Standards –** *American Society of Appraisers*
  Provides minimum requirements for developing and reporting on the valuation of businesses.

- **Statement on Standards for Valuation Services (SSVS 1)**
  American Institute of Certified Public Accountants (AICPA)
  Provides guidelines for developing estimates of value and reporting of results. Applies to all AICPA members who perform valuation services.

Note: these standards are general in nature and not industry or sector-specific

Valuation Steps at a Glance

1

Understand Assignment

- Purpose
- Client's use

2

Understand Value Premise

- Standard of value
- Premise of value
- Level of control

3

Analyze Market

- Economy
- Industry
- Local factors

4

Analyze the Company / System

- Assets
- Historical financial performance

5

Consider & Apply Value Approaches

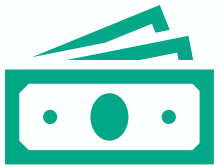
- Assess appropriateness
- Apply appropriately

6

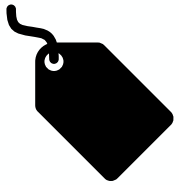
Reconcile Results

- Develop opinion of value

Valuation Approaches



Income Approach



Market Approach

Asset Approach

Income Approach Theory

- The value of a property is the present value of the future economic benefits of owning the property.

- Approach is relevant when the property being valued generates or is anticipated to generate net income, profits, or free cash flows.

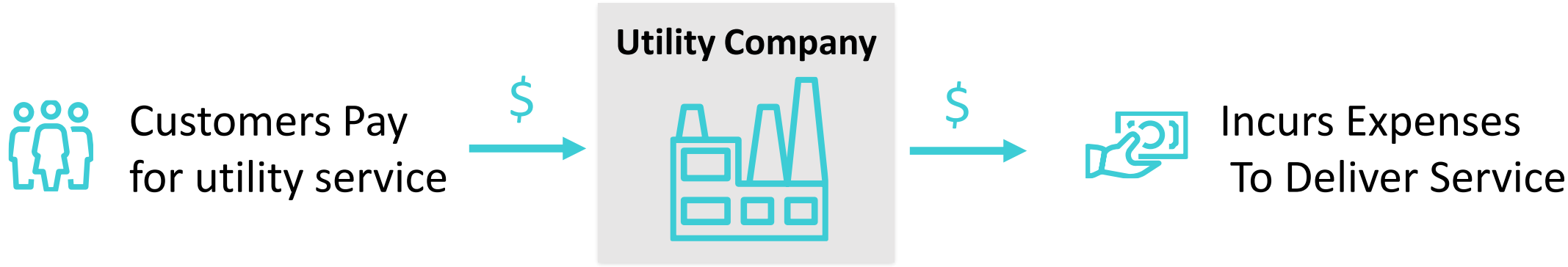
Income Approach

The value under the income approach comes down to basically three things:

- Net Cash Flows
- Discount Rate
- Growth Rate

Net Cash Flows

The cash a company generates after accounting for cash outflows to support operations and maintain its capital assets



Discount Rate

Basic Equation:

Discount Rate = **Risk-Free Rate** + **Premium for Risk**

Weighted Average Cost of Capital:

WACC = **Cost of Equity** x **Equity %** + **Cost of Debt** x **Debt %**

Income Approach Valuation

Most Common Methods

Direct Capitalization Method

$$\text{Value} = \frac{Benefit\ Stream_{n+1}}{\text{Discount Rate} - \text{Growth Rate}}$$

- No variation in the capitalization rate
- A consistent income stream
- A constant growth rate that does not terminate

Discounted Cash Flow

$$\text{Value} = \sum \frac{\text{Benefit Stream}_{\text{n}}}{(1 + \text{Discount Rate})^{\text{n}}}$$

- Allows for variable growth rate and income stream

Direct Capitalization Method (Example)

Direct Capitalization Value Indicator:

$$\text{Value} = \frac{\text{Normalized Free Cash Flow}}{\text{Discount Rate} - \text{Growth Rate}}$$

$$\text{Value} = \frac{\$3{,}375}{7.6\% - 2.0\%}$$

$$\text{Value} = \$60{,}269$$

Discount Rate = 7.6%

Growth Rate = 2.0%

Net Cash Flow Calculation:

Net Income	$3,810
Add: Depreciation Exp	1,016
Add: Interest Exp x (1-t)	-0-
Less: Interest Inc x (1-t)	(70)
Less: Working capital additions[1]	(9)
Less: Capital expenditures[2]	(1,372)
Free Cash Flow	**$3,375**

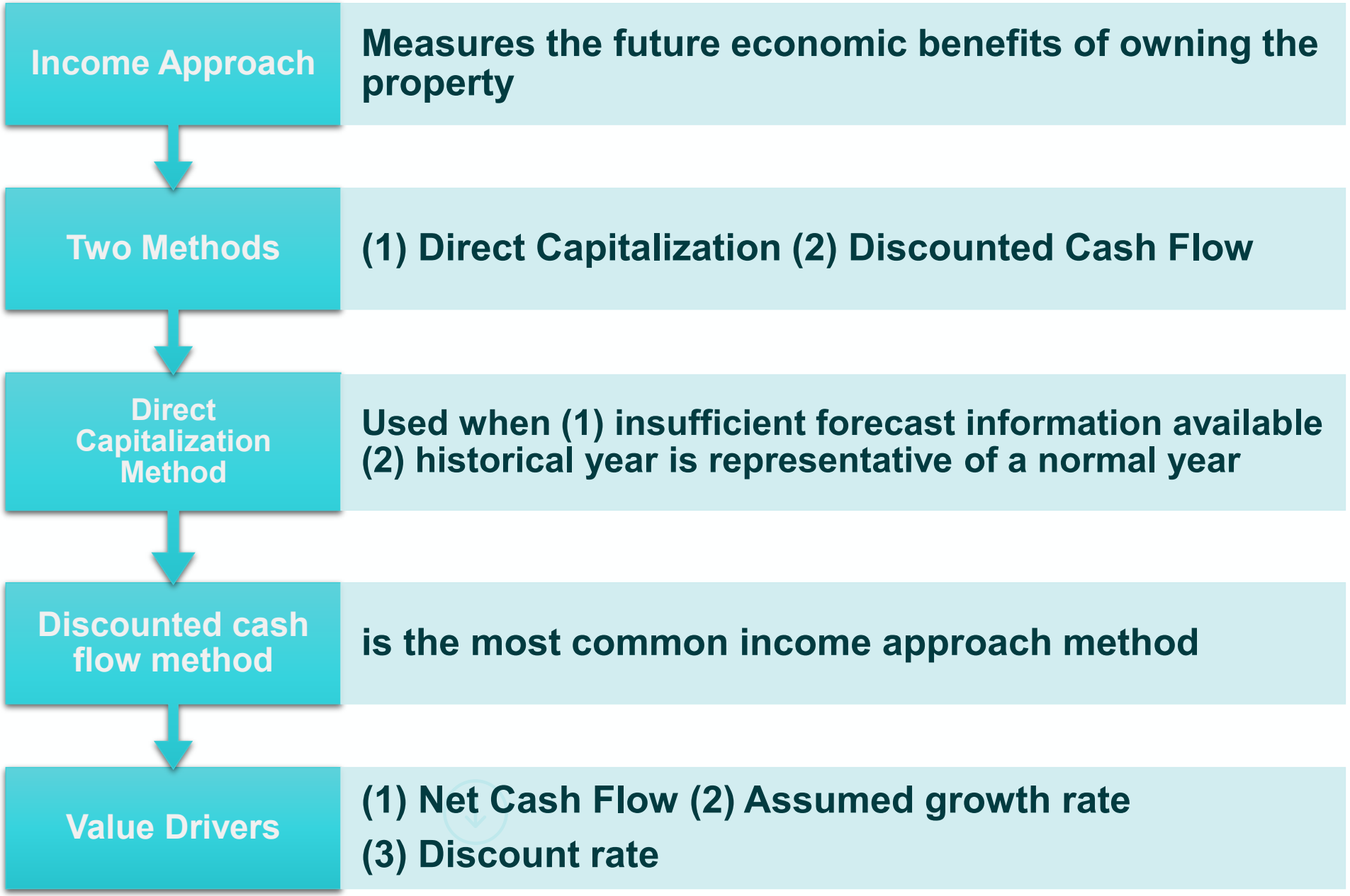
Values shown in $000s.

Discounted Cash Flow Method Example

Description	2023 ($000s)	2024 ($000s)	2025 ($000s)	2026 ($000s)	2027 ($000s)	Terminal Year
Net Income	3,839	3,902	3,964	4,034	4,104	4,104
Add Depreciation Expense	1,016	1,020	1,023	1,025	1,027	1,027
Add: Interest Expense x (1-t)	(7.39)	-	-	-	-	-
Less: Interest Income x (1-t)	(94)	(117)	(146)	(180)	(215)	(215)
Less: Working Capital Additions	(472)	(5)	(5)	(5)	(5)	(5)
Less: Capital Expenditures	(1,290)	(1,316)	(1,343)	(1,369)	(1,397)	(1,335)
Net Cash Flow	**2,990**	**3,485**	**3,494**	**3,504**	**3,515**	**3,576**
Period for PV Calculation	0.5	1.5	2.5	3.5	4.5	4.5
PV Factor @ 7.6%	0.9640	0.8959	0.8327	0.7739	0.7192	0.7192
PV of Cash Flows	2,883	3,122	2,910	2,712	2,528	45,929
Total PV of Cash Flows	**$ 60,083**					

Income Approach

Take-Aways



Market Approach Theory

Based on the principle of substitution

"Market" focused approach

Can be the most difficult to use in valuing public utilities

Two Methods Under the Market Approach

Guideline Transaction Method

Guideline Publicly Traded Company Method

Market Approach Methods

Guideline Transaction Method

1. Identify sales transactions that are similar or comparable to the subject

Guideline Company Method

1. Identify publicly traded companies that are similar or comparable to the subject

2. Various value multiples are calculated
3. The value multiples a compared to the subject company
4. The different indicators of value are reconciled

Considerations in Selecting Comparable Market Transactions

- Industry
- Size
- Growth Expectations
- Business and Financial Risk
- Regulatory environment
- Transaction date

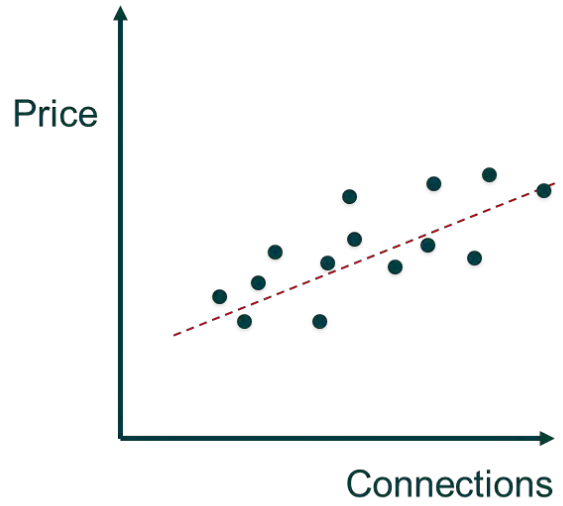
Considerations in Choosing Price Multiples

What price multiples to use?

Common price multiples used for public utilities

Considerations in Choosing Price Multiples

- ✓ Common Sense and Judgement
- ✓ Data Availability
- ✓ Dispersion –
  - › Measures the how dispersive the data is around the mean
  - › Coefficient of variation (CV) = Standard Deviation / Mean
  - › Price multiples with the least dispersion may be selected



Sources for Company and Acquisition Market Data

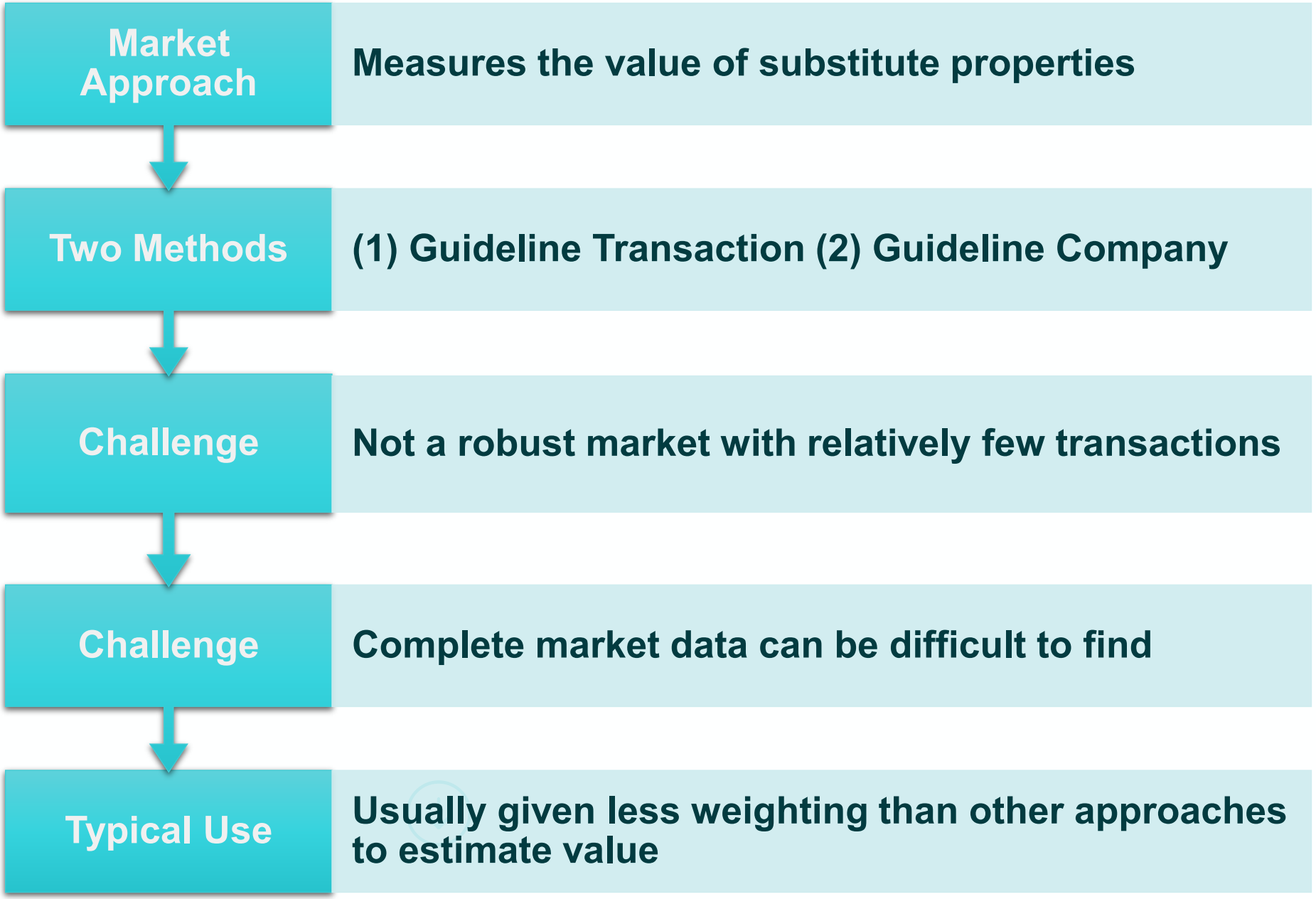
1. Public Utility Commission Docket Information
2. SEC Filings
   - 10-K Reports
   - 10-Q Reports
   - 8-K Reports of special events
3. Investment and Data Services
   - Bloomberg
   - Mergerstat
   - Morning Star
   - Value Line
4. Company Investor Presentations

Example Guideline Transaction Method
(ABC Company)

Value Indicator	Target Firm Value Indicator	Value Multiple		Median Valuation Multiple		Indication of Value		Weight		Weighted Indication of Value
Net Plant Book Value	$49,607	Price/NPBV	x	1.25	=	$ 62,170	x	0.4	=	$ 24,868
EBITDA	$7,076	Price/EBITDA	x	9.46	=	$ 66,940	x	0.6	=	$ 40,164
Total weighted indication of value										$ 65,032

Market Approach

Take-Aways



Asset (or Cost) Approach Theory

Based on the principle of substitution

An asset accumulation approach

Relevance

Asset Accumulation Approach

Public Utility Asset Components

Tangible "Plant"

- Supply
- Treatment Plants
- Transmission Piping
- Distribution Piping
- Meters and Services

Cost Approach

Real Property

- Land and Easements

Market Approach

Intangible Assets

- Customer data
- Agreements
- Goodwill

Combination of Approaches

Cost Approach Used for Tangible Assets

How much money would a prudent investor pay for the subject property in its present location, condition, and operating under present and potential regulatory restrictions?

Cost Approach = Cost – Depreciation

- What cost should be used to measure the value of the tangible assets?
- What forms of depreciation should be considered?

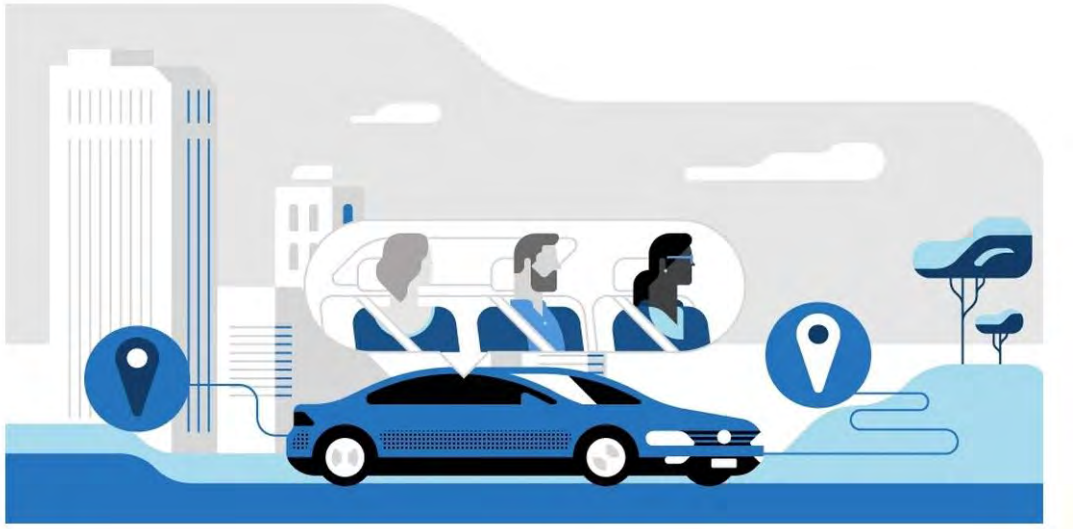
What forms of depreciation should be considered?

- **Physical Deterioration** = Loss in value due to normal wear and tear on the property.
- **Functional Obsolescence** = Loss in value from the functional deficiencies or inadequacies of the property.
- **Economic Obsolescence** = the loss in value of a property caused by factors external to the property, such as economic regulation

Economic Obsolescence

A form of depreciation in which the loss of value of the property is caused by factors external to the property.

Uber Ride Share



Scenario 1: Uber can charge a market rate of $50 from the airport to downtown

Scenario 2: A local law is passed that limits what Uber can charge from the airport to downtown to $40

Under Scenario 2, economic obsolescence is $10.

Reproduction Cost New Less Depreciation

Example

Item	Description	Reproduction Cost New	% Depreciated	Depreciated Cost New
Pipe Section 1	60-inch Branch w/ valves, metering, manholes	$ 43,177,500	25%	$ 32,383,125
Pipe Section 2	36-Inch Branch w/ valves, metering, manholes	8,631,000	23%	6,645,870
Pipe Section 3	42-Inch Tunnel Branch	54,600,000	19%	44,226,000
Booster Station	Structure, pumps, valves electrical and instruments	9,363,000	38%	5,805,060
Storage Tank	Steel Tanks (3) 2 MG	10,270,500	32%	6,983,940
Subtotal		$ 126,042,000		$ 96,043,995
Soft Costs	Design, Inspection, Permitting	$14,782,000		14,406,599
Financing	Construction Interest			4,802,200
Real Estate	Real Property			9,015,000
Total				**$124,267,794**

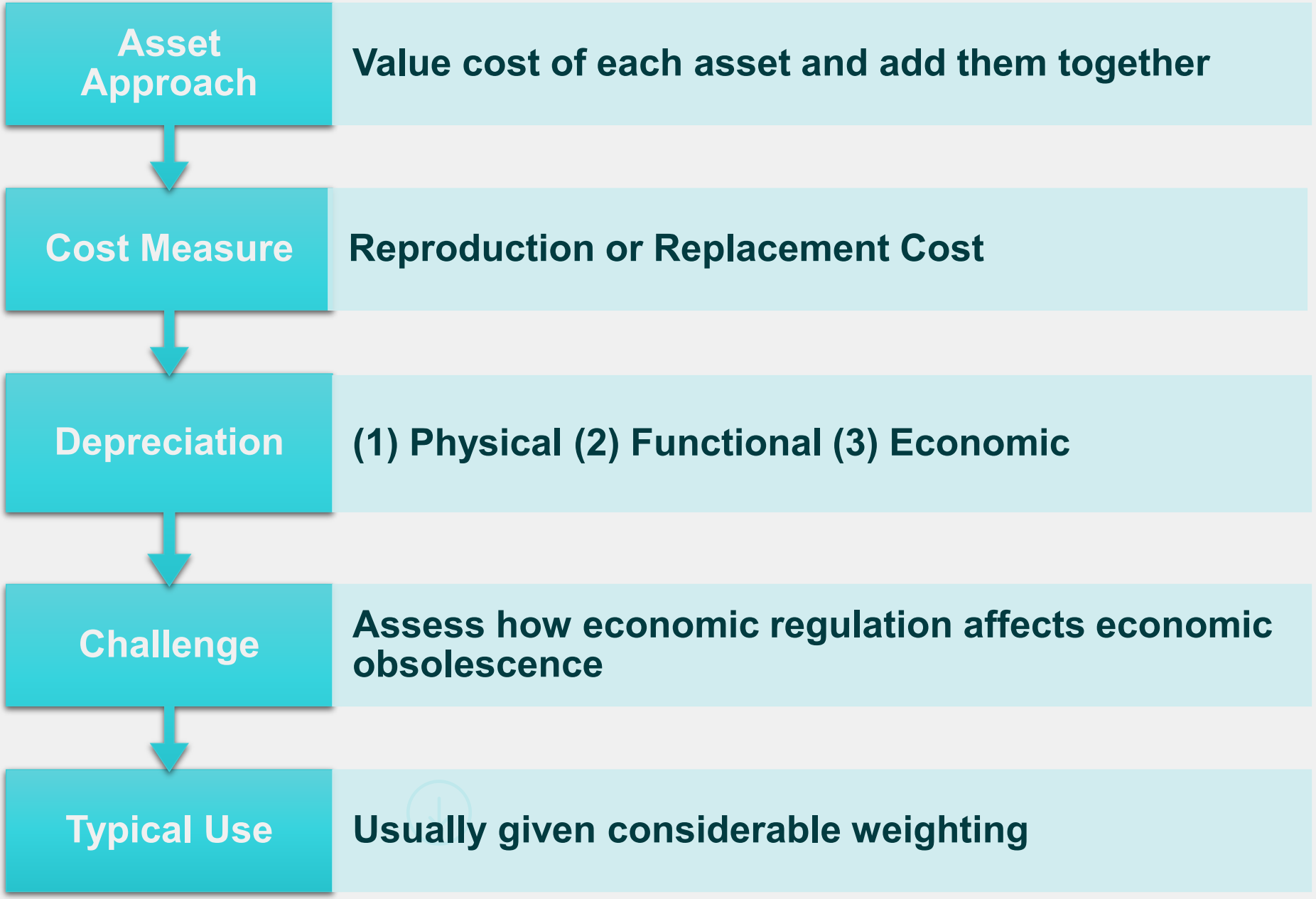
Example Cont'd

Reproduction Cost New Less Depreciation (with Economic Obsolescence)

Description		Amount
Earnings Before Interest Taxes, Depreciation		$ 3,810,000
RCNLD Estimate	124,268,000	
Required Rate of Return	7.6%	
Required Return on Assets		$ 9,444,368
Difference = Income Loss		(5,634,368)
Capitalized Economic Obsolescence ($)		(74,136,421)
Economic Obsolescence (%)		59.7%
RCNLD (with condition-based depreciation only)		$ 124,268,000
Less Economic Obsolescence		(74,136,421)
RCNLD (with Economic Obsolescence)		$ 50,131,579

Asset Approach

Take-Aways



Pulling it All Together - Reconciliation

Reconciliation = Analysis of alternative indicators of value to arrive at a final estimate of value.

Consider:

- strength and weaknesses of the data and procedures used
- quality and quantity of data available and analyzed
- relevance of the approaches, methods, and techniques used

*Judgement is the key ingredient in reconciling the estimates

Wrap-Up

There are three generally accepted valuation approaches: Income Approach, Market Approach, and the Asset Approach

These are standard approaches used in business valuation

Standard approaches should be tailored to public utilities based on their unique characteristics

Valuing public utilities is complex due to economic regulation. Valuation and rate-making are closely inter-twined

References and Additional Reading

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Q&A