Methods of Valuing Utility Assets

IPU Advanced Regulatory Studies Program

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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?

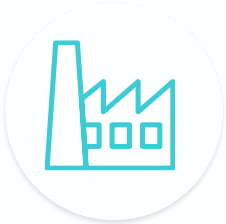
Mergers / Acquisitions / Consolidation

Condemnation / Eminent Domain

Other Situations:

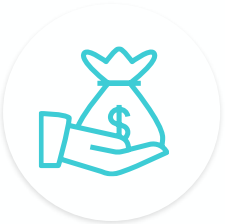
- Redistribution of system capacity (joint ownership)
- Pricing of utility service
- Insurance and tax purposes
- Financial planning and reporting

What is unique about valuing public utilities?



SPECIAL PURPOSE

- **Monopoly (natural/regulated)**
- **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)

What do we mean by value?

IRS Rev. Rul. 59-60 further states…

"…in addition that the hypothetical buyer and seller are assumed to be able, as well as being willing, to trade and to be well informed about the property and concerning the market for such property."

FMV Assumptions:

1. A hypothetical buyer and seller are both willing and are able to enter into a transaction, implying a hypothetical buyer has sufficient funds and seller has sufficient rights;

2. A hypothetical buyer is prudent, implying a rational buyer, and is considered to be a "financial" and not a "strategic" buyer;

3. Willing buyer and willing seller are are presumed to be dedicated to achieving their individual maximum economic advantage, but absent any compulsion to buy or sell;

4. Both parties are assumed to understand the industry and other economic conditions and their effects on the Subject Assets, as of the Valuation Date, in a sale of a majority ownership in the Subject Assets;

5. A hypothetical buyer is assumed to represent an independent third party; and

6. A hypothetical sale will be for cash.

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* and *National Association of Valuators and Analysts* 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
- Jurisdictional exceptions

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
- Normalization

5

Consider & Apply Value Approaches

- Hypothetical
- Extraordinary
- Assess appropriateness
- Apply appropriately
- DLOC
- DLOM

6

Reconcile Results

- Develop opinion of value

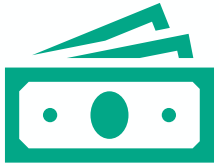
Reconciling Opinion of Value

USPAP Standards Rule 9-5 "…an appraiser must:"

a. Reconcile quality and quantity of data available and analyzed…
b. Reconcile applicability and relevance of approaches, methods, and procedures..

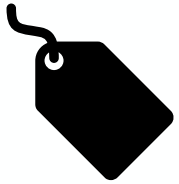
- **Qualitative**
  - Extra mathematical step introduces more "error" (generally undisclosed)
  - Reduces risk of indicating a value that would not be preferred
- **Quantitative**
  - Generally, provides for inclusion of all approaches
  - Provides explanation of opinion that can be calculated

Valuation Approaches



Income Approach

PRINCIPLE OF ANTICIPATION



Market Approach

PRINCIPLE OF SUBSTITUTION

Asset Approach

PRINCIPLE OF SUBSTITUTION

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 economic benefits (net income, profits, or free cash flows).

Income Approach

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

- Economic Benefits*
- Discount Rate
- Growth Rate

* NORMALIZED

Economic Benefits - Net Cash Flows

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

Enterprise Value to Invested Capital

Net cash flows or Economic Benefit = NOPAT + depreciation and amortization +/- changes in working capital additions - capital expenditures + interest expenses (net of taxes)

NOPAT = Net operating profit after taxes

Discount Rate – Theoretical Basis

Components of Discount Rate

- Time value of money
- Expected return on money (opportunity cost)
- Industry risk
- Specific risk

Discount Rate - Application

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
- Constant benefit stream
- A constant growth rate that does not terminate

Discounted Cash Flow

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

- Allows for variable growth rate and income stream
- Adds terminal value (capitalized) if needed

Direct Capitalization Method (Example)

Discount Rate = 7.5%

Growth Rate = 2.0%

Net Cash Flow Calculation:

		Normalized
NOPAT	$	3,000,000
Deprciation		1,000,000
Working Capital		(25,000)
Capital Expenses		(1,200,000)
Net Interest		600,000
Net Cash Flow	**$**	**3,375,000**

Direct Capitalization Value Indicator:

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

$$\text{Value} = \frac{\$3{,}375{,}000}{(7.5\% - 2.0\%)}$$

Value (calc) = $61,363,636

Value (rounded) = $61,000,000

Discounted Cash Flow Method Example

	Pro Forma				
	2025	**2026**	**2027**	**2028**	**2029**
NOPAT	$ 3,000,000	$ 3,072,000	$ 3,145,440	$ 3,220,349	$ 3,296,757
Deprciation	1,000,000	1,020,000	1,040,400	1,061,208	1,082,432
Working Capital	(25,000)	(25,500)	(26,010)	(26,530)	(27,061)
Capital Expenses	(1,200,000)	(1,224,000)	(1,248,480)	(1,273,450)	(1,298,919)
Net Interest	600,000	600,000	600,000	600,000	600,000
Net Cash Flow	**$ 3,375,000**	**$ 3,442,500**	**$ 3,511,350**	**$ 3,581,577**	**$ 3,653,209**
Growth		2.00%	2.00%	2.00%	2.00%

Discounted Cash Flow Method Example

	Cash Flow	Growth	PV Factor	PV
Year 1	$ 3,375,000		0.9302	$ 3,139,535
Year 2	3,442,500	2.0%	0.8653	2,978,908
Year 3	3,511,350	2.0%	0.8050	2,826,498
Year 4	3,581,577	2.0%	0.7488	2,681,887
Year 5	3,653,209	2.0%	0.6966	2,544,674
Terminal value (see calc below)	$ 67,750,413		0.6966	$ 47,192,135
Estimated Value (DCF)				**$ 61,363,636**

Terminal value, beginning in Year 6 using Gordon Growth Model

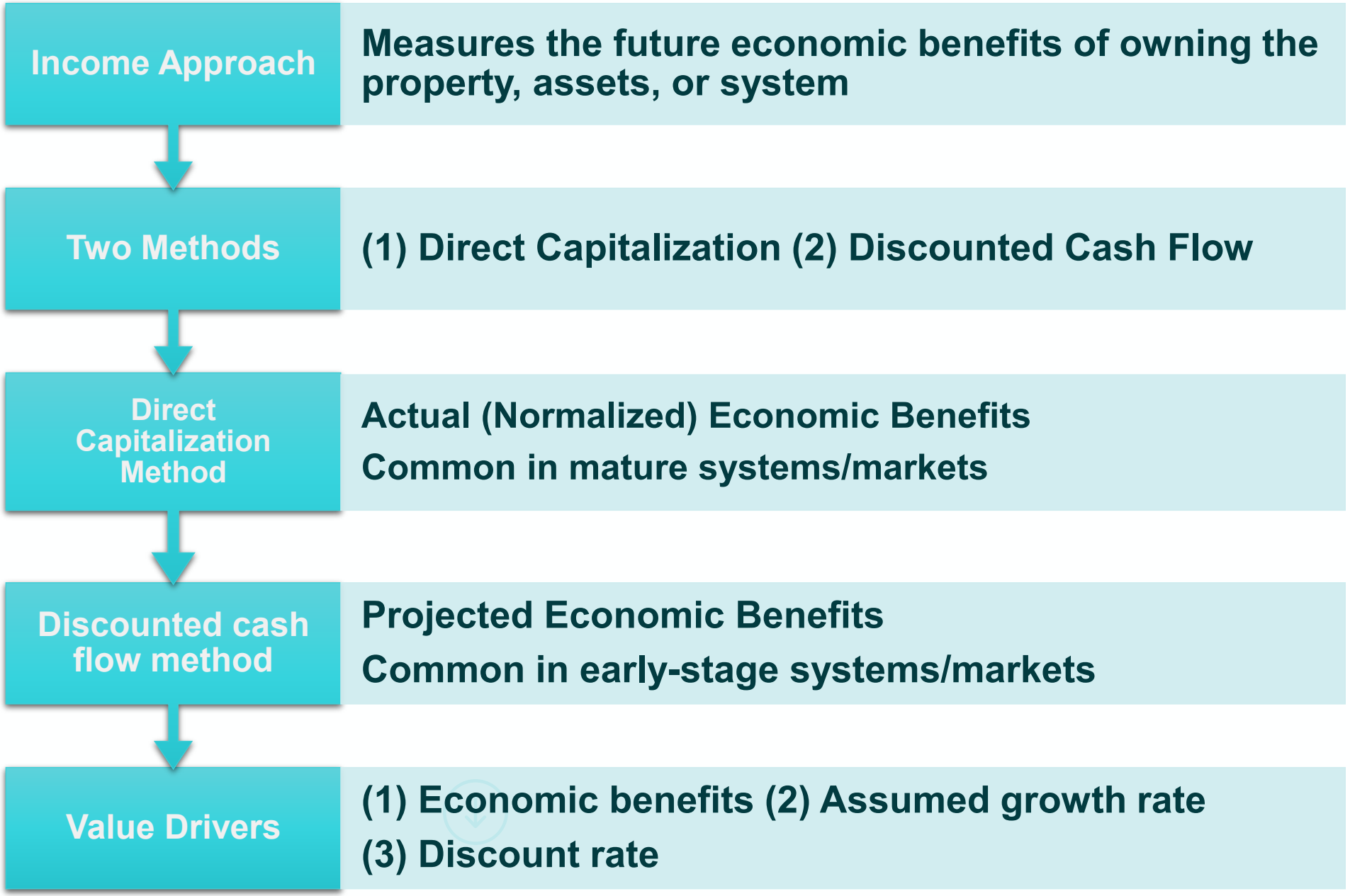
Year 5 cash flow	$ 3,653,209	Net cash flow Year 5
Growth	1.0200	(1 + g)
Year 16 cash flow	$ 3,726,273	
Capitalization rate	5.50%	(k - g)
Total FV Terminal Value	$ 67,750,413	FV of Terminal Value
PV Factor	0.6966	$1/(1+k)^5$
Total PV Terminal Value	$ 47,192,135	

Value (calc) = $61,363,636

Value (rounded) = $61,000,000

Income Approach

Take-Aways



Market Approach Theory

Based on the principle of substitution

"Market" focused approach

Can be the most challenging 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

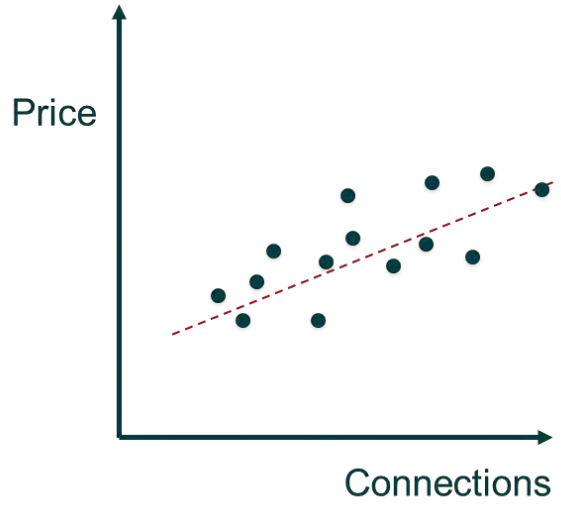
Considerations in Choosing Price Multiples

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

Transaction (Seller)	Purchase Price Multiple per…				
	Revenue	EBITDA	Net Book (1)	RCNLD	Customer
Bass Lake Water	5.17x	12.91x	1.93x	0.34x	$6,628x
Sativa County Water District	3.19x	4.25x	n/a	0.33x	$5,076x
Common Water Supply	5.13x	9.98x	2.51x	0.29x	$4,734x
Esperanza Water Service Company	4.86x	n/a	0.99x	n/a	$6,943x
City of Montebello	4.05x	7.00x	n/a	0.61x	$7,028x
Clear Water Estates Water	6.67x	11.63x	3.70x	0.83x	$5,185x
East Warring Water	4.78x	9.48x	2.23x	n/a	$7,169x
East Pasadena Water	2.26x	n/a	1.79x	0.43x	$2,866x
Bellflower Municipal Water	4.43x	18.10x	1.97x	0.67x	$5,415x
Hillview Water	3.28x	12.46x	4.14x	0.19x	$7,188x
City of Perris	3.94x	n/a	3.68x	0.50x	$3,462x
Mesa Crest Water	1.95x	n/a	6.73x	0.39x	$5,346x
Fruitridge Vista Water	5.64x	8.72x	3.98x	0.58x	$5,068x
Rio Plaza Water	4.00x	12.15x	3.78x	0.68x	$4,243x
Average	**3.90x**	**8.68x**	**2.76x**	**0.42x**	**$5,454x**

Source: CPUC Transfer Applications and Decisions; Notes: Purchase price is adjusted to exclude strategic value and inflated to 2023 values. n/a = not available; (1) Rate base for regulated systems, net book value for non-regulated systems.

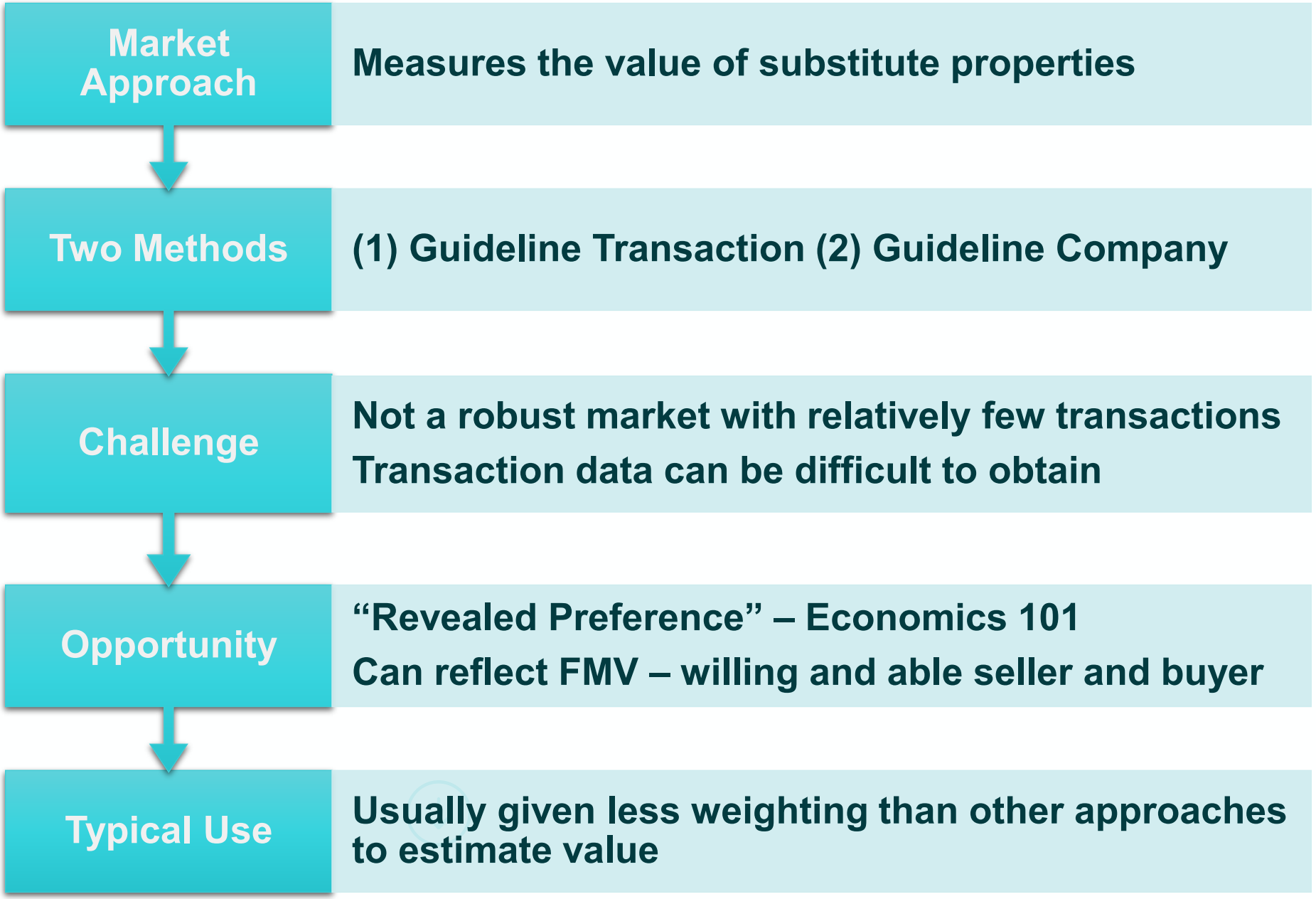
Example Guideline Public Company Method

Company (Symbol)	Enterprise Value Multiple per…				
	Size Adj.	Revenue	Net Plant [2]	EBITDA	EBIT
American States Water Co. (AWR)	1.7	3.68x	1.16x	10.50x	13.17x
American Waterworks, Inc. (AWK)	1.9	4.55x	0.76x	10.13x	16.10x
California Water Services Group (CWT)	2.4	2.00x	0.43x	8.79x	26.61x
Essential Utilities, Inc. (WTRG)	1.6	5.15x	0.88x	13.74x	24.52x
Global Water Resources, Inc. (GWRS)	2.1	3.56x	0.58x	8.46x	17.38x
Middlesex Water Company (MSEX)	2.4	3.72x	0.62x	10.71x	18.99x
SJW Group (SJW)	1.7	3.19x	0.68x	10.88x	23.55x
York Water Co. (YORKW)	1.7	5.82x	0.84x	11.25x	16.52x
Weighted Average [1]	**1.8**	**4.28x**	**0.77x**	**10.96x**	**18.37x**

Source: SEC 10-K Reports (12/31/2023); Notes: Enterprise value is defined as the sum of shareholder equity and long-term debt (excluding cash equivalents) and is consistent with value of invested capital; (1) Weighted average. (2) OCLD or Book Value

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?

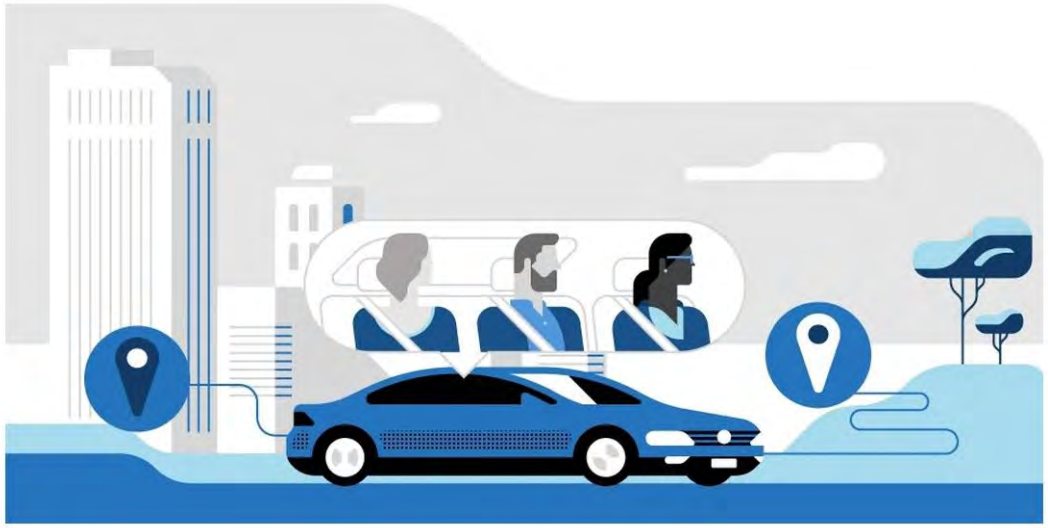
What forms of depreciation should be considered?

- **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**

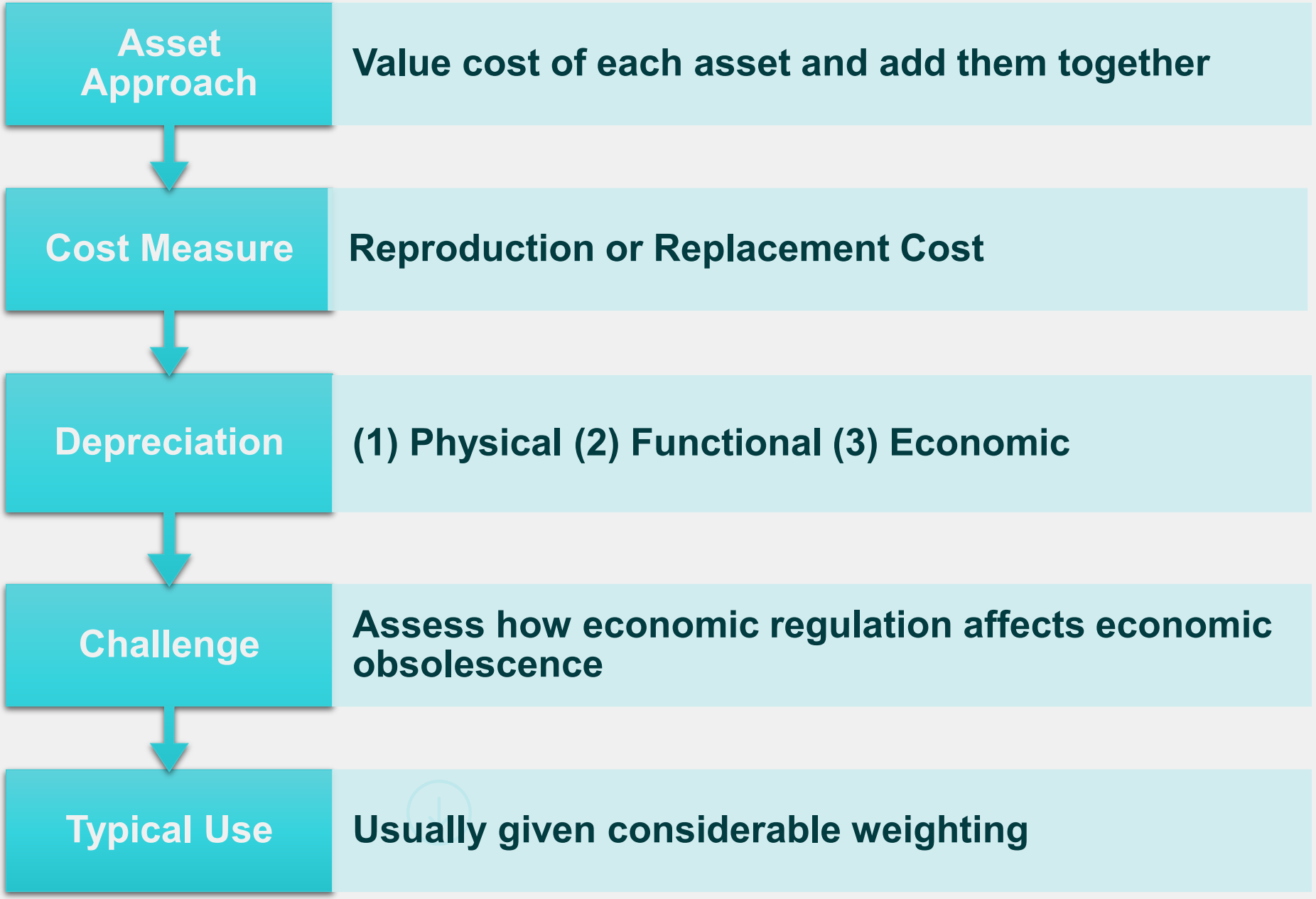
Example Cont'd

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 = Consideration (qualitative or quantitative) of alternative indicators of value to arrive at a final opinion of value.

Consider:

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

Judgement is the key ingredient in reconciling indications of value

Wrap-Up

There are three generally accepted valuation approaches: Income Approach, Market Approach, and the Asset Approach (multiple methods for each)

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 generally closely inter-twined

References and Additional Reading

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Q&A