

Best Practices for Economic Obsolescence Measurement and Reporting

NAPTR-TEC 2022 Conference
Kansas City, Missouri
Tuesday, October 25, 2022

Robert F. Reilly
Willamette Management Associates
rfreilly@willamette.com
(773) 399-4318



Willamette Management Associates

A CITIZENS COMPANY

Portland, Oregon



Chicago, Illinois



Atlanta, Georgia

Discussion Outline

- Introduction to unit principle property appraisal concepts
- Economic obsolescence concepts
- Principles of economic obsolescence measurement
- Generally accepted economic obsolescence measurement methods
- Responses to top 10 objections to economic obsolescence measurements
- Responses to next 10 objections to economic obsolescence measurements
- Assessment authority considerations regarding obsolescence adjustments
- Summary and conclusion; questions and discussion



Unit Principle and Summation Principle Property Appraisals

- Unit principle property appraisal (“UPPA”)
 - Appraise a bundle of operating property collectively—as “a unit” or a single collection of property
 - Appraise the total property unit from the “top down”
 - UPPA approaches and methods conclude a single value for the total property bundle
 - This total unit value may be allocated to the individual property components
- Summation principle property appraisal (“SPPA”)
 - Appraise a bundle of operating and nonoperating property individually—as a portfolio of independent properties
 - Appraise the total property portfolio from the “bottom up”
 - SPPA approaches and methods conclude an individual value for each property in the portfolio
 - Those individual property values may be “summed” to conclude the value of the total portfolio



Unit Principle and Summation Principle Property Appraisals (cont.)

- When do appraisers apply the UPPA?
 - When it is required by statute or regulation
 - When the individual property components are physically, functionally, and economically integrated
 - When financial or operational data for the individual property components are not available
 - When the individual property components would be bought or sold collectively—as a “unit”
- Value impact of applying the UPPA vs. the SPPA
 - The UPPA and the SPPA will conclude approximately the same value if:
 - Both appraisal principles are applied to exactly the same bundle of property
 - Both appraisals apply consistent valuation variables
 - There are no scope restrictions on either appraisal



Unit Principle and Summation Principle Property Appraisals (cont.)

- Historically, the unit principle of property appraisal was called the utility principle of property appraisal
 - The UPPA was originally developed to appraise public utility property
 - In fact, the UPPA was originally developed to appraise rate-based, regulated public utility property



Unit Principle Property Appraisal Approaches and Methods

The following list includes many of the generally accepted unit principle property appraisal approaches and methods:

- Income approach
 - Discounted cash flow method (aka yield capitalization method)
 - Direct capitalization method
- Cost approach
 - Historical cost less depreciation method
 - Original cost less depreciation method
- Market approach
 - Direct sales comparison method
 - Stock and debt method



Unit Principle Property Appraisal Approaches and Methods (cont.)

- The names of some of these unit principle approaches and methods may sound the same as the names of corresponding summation principle approaches and methods; however:
 - The particular valuation procedures and analyses may be quite different
 - The particular valuation variables applied and data sources used will be quite different



Unit Principle Property Appraisal Approaches and Methods (cont.)

- The terms “property” and “assets” are not the same
 - Property is a legal term, generally defined by *Black’s Law Dictionary*, but specifically defined by state statutes
 - Asset is an accounting term, defined by FASB Statement of Financial Accounting Concepts No. 8
 - Not all property may be recorded as an asset on a balance sheet prepared in compliance with U.S. GAAP
 - Not every asset recorded under GAAP may be legally protected as property in a particular taxing jurisdiction
 - For purposes of this discussion only, these two terms may be used interchangeably



Differences in Unit Principle vs. Summation Principle Appraisal Procedures

- There are numerous differences between unit principle and summation principle appraisal procedures and data sources. The more significant differences are summarized on the following slide.
- Without numerous intentional adjustments, the unit principle property appraisal and the summation principle property appraisal will:
 - Appraise two fundamentally different bundles of property
 - Apply two fundamentally different sets of valuation variables/assumptions



Differences in Unit Principle vs. Summation Principle Appraisal Procedures (cont.)

Valuation Variable	Unit Principle	Summation Principle
Income approach		
- Type of income	Business operating income—from the sale of goods and services	Property rental income
- Term of income	Perpetuity	Over the property's UEL
- Asset replacement	Perpetual property replacements	Property retirement after the property's UEL
- Discount rate	Capital market data	Market participant required rates
- LT growth rate	Business income growth—all assets in place	Rental income growth—specific property only
- Direct cap rate	Discount rate minus LTG rate	Extracted from sales of comparable properties
Cost approach		
- Cost metric	Historical/original cost	Replacement/reproduction cost new
- Physical depreciation	Age/life, total based on accounting data	Observed, individually based on effective age/ condition
- Functional obsolescence	Aggregate excess capital costs, capitalized excess operating expense (in perpetuity)	Individual excess capital costs, capitalized excess operating expenses (over property UEL)
- Economic obsolescence	Actual vs. required business income margins or business income ROI	Location-specific rental income loss capitalized over property's UEL
Market Approach		
- Comparables considered	Operating businesses sold; stock and debt securities of “comparable” public companies	Comparable individual properties sold
- Adjustments based on	Size, profit margins, ROI, growth rate	Location and physical characteristics
- Multiples applied	Price/business income metric	Price/physical or operational capacity metric



Unit Principle Appraisal Is Not Business Valuation

- A unit principle appraisal is not a business valuation
- These two valuation analyses apply different generally accepted valuation approaches:
 - The cost approach is not a generally accepted business valuation approach
 - The asset-based approach is not a generally accepted unit principle property appraisal approach
 - The UPPA cost approach is not the BV asset-based approach
- These two valuation analyses have two different objectives:
 - The unit principle appraisal concludes the value of property operating on a value-in-use basis (the valuation premise is: the going-concern premise)
 - The business valuation concludes the value of business debt and equity securities (the valuation subject is: a going-concern business)



Unit Principle Appraisal Is Not Business Valuation (cont.)

- These two valuation analyses conclude the value of two different bundles of assets:

Unit Principle Appraisal

Working capital accounts

Real estate

Tangible personal property

Intangible personal property

Business Valuation

Working capital accounts

Real estate

Tangible personal property

Intangible personal property

PVGO

Intangible investment attributes



Unit Principle Appraisal Is Not Business Valuation (cont.)

- PVGO stands for present value of growth opportunities
 - PVGO is the present value of future tangible property and future intangible property that do not yet exist on the valuation date
 - PVGO includes investor expectations of future M&A transactions, future new products and services, future new territories and innovations, and future expansionary capex
 - After a business acquisition, this value typically would be recorded as goodwill on a GAAP balance sheet
 - This value cannot be subject to property tax because the property does not exist on the assessment date



Unit Principle Appraisal Is Not Business Valuation (cont.)

- Intangible investment attributes include the following value increments associated with using stock and bond capital market data in the unit principle appraisal analysis:
 - Value of stock market liquidity (quick sale, low transaction costs, certain price)
 - Value of stock market limited liability
 - Value of no capital calls on public securities
 - Value of expected appreciation (vs. expected depreciation)
 - Value of no investment replenishment expenditures (vs. maintenance capex)
 - Capital gain tax (vs. ordinary income tax on depreciation recapture) on any gain on sale
 - After a business acquisition, this value typically would be recorded as goodwill on a GAAP balance sheet
 - This value cannot be subject to property tax because these intangible investment attributes are not property



Unit Principle Appraisal Cost Approach

- The following is the typical formula for the UPPA cost approach:
 - Historical (may be original) cost
 - Physical depreciation
 - Functional obsolescence
 - Economic obsolescence
 - = Unit value indication
- Each of these four components (one cost metric and three depreciation metrics) are typically developed in the aggregate—or as a “unit.”
- Data regarding the cost metric and the physical depreciation metric are typically extracted from the property owner’s continuing property record or a similar property accounting data set.



Unit Principle Appraisal Cost Approach (cont.)

- Functional obsolescence is typically measured in the aggregate—or at the “unit” level.
 - However, it may be possible that the functional obsolescence may be caused by one or more individual property components within the overall unit (e.g., an inefficiency at one compressor station or gas processing plant—as a component of the total pipeline unit).
 - Functional obsolescence typically relates to an inadequacy or a superadequacy within the unit.
- Economic obsolescence is typically measured in the aggregate—or at the “unit” level.
 - Since all unit property components contribute to the economically integrated unit, all property components share the unit-level economic obsolescence.
 - Economic obsolescence typically relates to an inadequacy in the unit’s profitability or return in investment (that can be measured many different ways).



Functional Obsolescence (vs. Economic Obsolescence)

- Functional obsolescence is caused by factors internal to the taxpayer's property.
- Functional obsolescence often manifests as an inadequate unit-level return on investment. That inadequate ROI may be caused by either:
 - Inadequate profit or
 - Superadequate investment
- The inadequate profit is typically due to excess operating expenses. These excess expenses relate to the operation of the unit's real estate and/or tangible personal property.



Functional Obsolescence (vs. Economic Obsolescence) (cont.)

- The excess operating expense is typically measured as the difference between the actual unit expense category (e.g., fuel expense, maintenance expense, etc.) and the corresponding:
 - Budgeted/projected expense level
 - Historical expense level
 - Industry average expense level
 - Other benchmark expense level
- The excess operating expense is typically capitalized as an annuity in perpetuity to measure functional obsolescence.
- The superadequate investment typically relates to excess capital costs. These excess costs relate to the taxpayer unit having more (or most costly) real estate and/or tangible personal property than it needs to operate at its current volume.



Functional Obsolescence (vs. Economic Obsolescence) (cont.)

- This functional obsolescence superadequacy is typically measured as the difference between:
 - The actual investment in the actual property and
 - The investment needed to buy/build the ideal property (e.g., smaller diameter pipeline, fewer/smaller compressor stations, etc.)
- A unit can experience both excess operating expenses and excess capital costs, but the appraiser should not double-count the amount of functional obsolescence.
- An inutility analysis is sometimes applied to measure functional obsolescence—since inutility measures the amount of the property capacity that is not needed for the current volume of business operations.



Economic Obsolescence (vs. Functional Obsolescence)

- Economic obsolescence is caused by factors external to the taxpayer's property.
- Economic obsolescence often manifests as an inadequate unit-level (1) profit margin or (2) return on investment. These economic metrics can be measured many different ways.
- Profit margin can be measured:
 - Before or after taxes
 - Before or after debt service
 - Before or after depreciation expense
 - Based on changes in revenue (selling price and/or volume)
 - Based on changes in material, labor, or overhead expenses



Economic Obsolescence (vs. Functional Obsolescence) (cont.)

- Return on investment can be measured:
 - Before or after tax
 - Before or after debt service
 - Before or after depreciation expense
 - Based on gross or net investment
 - Based on historical investment or current value indication
 - Based on changes in expected growth rate



Economic Obsolescence (vs. Functional Obsolescence) (cont.)

- Economic obsolescence can be caused by any factor that is external to the unit's real estate or tangible personal property, including:
 - Changes in technology
 - Changes in industry conditions
 - Competitor actions
 - Management actions
 - Regulatory factors
 - Income tax rate changes
 - Interest rate changes
 - Many other factors



Economic Obsolescence (vs. Functional Obsolescence) (cont.)

- Economic obsolescence is typically measured as:
 - The amount of economic deficiency capitalized as an annuity in perpetuity or
 - The percentage difference between an actual profit/return metric and a market-required profit/return metric



External Obsolescence vs. Economic Obsolescence

- External obsolescence includes two specific types of obsolescence:
 - Locational obsolescence
 - Economic obsolescence
- Locational obsolescence is a decrease in property value due to location-related or “neighborhood” factors
 - Examples of locational obsolescence include:
 - A new structure is built blocking a high-rise apartment’s view of the waterfront
 - A budget motel is built next to a luxury hotel
 - A trailer park is built next to a country club
- Locational obsolescence is typically a consideration in a summation principle appraisal and not in a unit principle appraisal.



External Obsolescence vs. Economic Obsolescence (cont.)

- Locational obsolescence is typically measured as the capitalization of rental income loss—over the property's UEL.
- Economic obsolescence is a decrease in property value due to any factors other than location or change in “neighborhood.”
- Economic obsolescence is typically a consideration in a unit principle appraisal but may be a factor in a summation principle appraisal.
- So, economic obsolescence is one subset or component of external obsolescence. The terms economic obsolescence and external obsolescence are not exactly synonyms.



Economic Obsolescence Measurement Principles

- There is a difference between identifying the existence of economic obsolescence and measuring any unit-specific economic obsolescence.
- Preliminary analyses, analyses of industry-wide data, or analyses of unit data not involving some investment metric are often developed to identify the existence of economic obsolescence in an industry.
- Economic obsolescence is often measured on a comparative basis. The comparison is often: what you have versus what you want.
- The “what you have” metric is typically the unit’s actual economic metric.
- The “what you want” metric is typically the required or benchmark level of the same economic metric.



Economic Obsolescence Measurement Principles (cont.)

- The required or benchmark economic metric should be based on empirical data. That is, it should be derived from industry, public company, or subject unit historical or prospective data.
- The difference between the “what you have” or actual metric and the “what you want” or benchmark metric can be calculated as a percentage. That percentage difference can be applied as the economic obsolescence percentage measurement.
- The difference between the “what you have” or actual metric and the “what you want” or benchmark metric can be converted into a dollar-based economic deficiency. That economic deficiency can be capitalized as an annuity in perpetuity to conclude an economic obsolescence dollar measurement.



Economic Obsolescence Measurement Principles (cont.)

- Economic obsolescence can be measured as a deficiency in profit margin or as a deficiency in rate of return (including the LT growth rate component of return on investment).
 - Profit margin deficiency can be influenced by any factors causing:
 - A deficiency in profits (however measured)
 - A deficiency in revenue (or in related utilization or inutility)
 - Rate of return deficiency can be influenced by any factors causing:
 - A deficiency in profits (however measured)
 - An excess in the amount of (or the value of) investment (however measured)



Economic Obsolescence Measurement Principles (cont.)

- The causes of (or the reasons for) the economic obsolescence should be external to the subject real estate or tangible personal property—but not necessarily external to the subject unit business enterprise.
- Cost is not value
 - Cost is not an indication of value
 - Cost less all forms of appraisal depreciation provides an indication of value
- Economic obsolescence is not an adjustment from value
 - Economic obsolescence is not subtracted from value
 - Economic obsolescence is subtracted from cost
 - Economic obsolescence is not an adjustment from a final value
 - Economic obsolescence is an adjustment to get to a final value



Economic Obsolescence Measurement Principles (cont.)

- Economic obsolescence involves economic data and economic analyses
 - Income data are analyzed in all economic analyses
 - The analysis of income data does not convert the cost approach into the income approach
 - The economic obsolescence measurement can be developed when no income approach analysis is developed and when no income approach value is concluded
 - The income approach—and the cost approach—and the market approach—all consider some measures of the subject unit's income data



Economic Obsolescence Measurement Methods

- There are several generally accepted economic obsolescence measurement methods, including:
 - Market extraction method
 - Matched pair sales comparison method
 - Capitalization of income loss method
 - Inutility method



Economic Obsolescence Measurement Methods (cont.)

- The market extraction method involves the following procedures:
 - Identify sales of comparable properties
 - Compare the property sale prices to the cost less physical depreciation for each comparable property
 - If the sale price exceeds the cost less depreciation, there is no economic obsolescence
 - If the sale price is less than the cost less depreciation, the deficiency is economic obsolescence
 - The economic obsolescence can be divided by the cost (or cost less depreciation) to calculate an economic obsolescence percentage
 - This economic obsolescence percentage can be applied to the subject property



Economic Obsolescence Measurement Methods (cont.)

- The matched pair sales comparison method involves the following procedures:
 - Identify matched pair properties for comparison
 - The matched pairs can be either (1) two comparable properties that sold around the same time—one experiencing economic obsolescence and one not or (2) the same property that sold recently (experiencing economic obsolescence) and that sold years prior (before experiencing economic obsolescence)
 - The matched pair pricing data are analyzed to calculate an economic obsolescence percentage
 - This economic obsolescence percentage can be applied to the subject property



Economic Obsolescence Measurement Methods (cont.)

- The capitalization of income loss method (“CILM”) involves the following procedures:
 - The appraiser analyzes one or more property-specific income (margin or return) metrics
 - The appraiser selects corresponding benchmark (e.g., historical, projected, industry, comparable property) income metrics
 - The appraiser calculates the difference between the property-specific income metric and the benchmark income metric
 - The appraiser applies this difference in the income metric to the subject property (either as a percentage measure or as a capitalization of the income deficiency)



Economic Obsolescence Measurement Methods (cont.)

- The inutility method involves the application of the following formula:

$$\% \text{ inutility} = \left[1 - \left(\frac{\text{intended capacity}}{\text{actual capacity}} \right)^x \right] \times 100$$

where: Intended capacity = design or rated production or utilization

Actual capacity = actual production or utilization

x = scale factor exponent of cost increase compared to volume increase

- This measurement method assumes that economic obsolescence is directly proportional to inutility (or underutilization)
- This measurement method assumes that: all costs of production/utilization are variable; there are no fixed costs; so, the profit margin remains constant (and adequate) at all utilization levels



Economic Obsolescence Measurement Methods (cont.)

- The first two economic obsolescence measurement methods are more applicable to summation principle property appraisals.
- The CILM measurement method is applicable to both summation principle property appraisals and unit principle property appraisals.
- The inutility measurement method typically understates economic obsolescence. It measures the unit's deficiency in volume (production) but not the unit's deficiency in margins or returns.



Strengths and Weaknesses of Economic Obsolescence Measurement Methods

Measurement Method	Application Strengths	Application Weaknesses
Market extraction	Market-based analysis based on empirical transaction evidence	- For most unit appraisals, it is difficult to identify comparable unit sales - For most unit appraisals, it is difficult to measure cost less depreciation of the comparable units
Matched pair sales comparison	Market-based analysis based on empirical transaction evidence	- For most unit appraisals, it is difficult to identify matched pair sales (specifically a subject unit matched pair sale) - It may be difficult to associate the before and after unit value decrease with economic obsolescence
CILM	- Actual profit margins and ROIs are based on empirical evidence - Required profit margins and ROIs are based on empirical evidence - Comparing subject unit ROI to subject unit cost of capital utilizes a perfect comparable	- It may be difficult to identify benchmarks for comparison - It may be difficult to identify benchmark time periods for comparison - At least one application of this method should be based on return on the (pre-EO adjustment) cost approach indication
Inutility	- Both actual and benchmark data generally available at the subject unit “Textbook” formula provides the appearance of precision	- May have to justify the rated or design capacity as an achievable benchmark - Scale factor exponent data are not always available - This method can be associated with either functional obsolescence or economic obsolescence - The 100% variable cost assumption is usually not valid; so this method may understate the measurement of economic obsolescence - Unit price decreases usually accompany unit volume decreases, so profit margins and ROIs typically decrease at a greater rate than does the utilization decrease.



All Cost Approach Methods Should Conclude Same Value

- There should be one synthesized total value conclusion for the subject unit
- There should be one synthesized unit value conclusion developed by the cost approach
- All cost approach methods should conclude mutually supported value indications
- Different cost approach methods should not conclude materially different unit value indications
- While cost metrics may vary between cost approach methods, depreciation metrics should also vary between cost approach methods
- Economic obsolescence measurements should vary between cost approach methods—and bring the various cost method value indications in line with each other



Illustrative Example of Depreciation Metric Changes to Offset Cost Metric Changes

Valuation Variable	HCLD Method	RPCNLD Method	RCNLD Method
A Cost metric	\$1,200,000	\$1,800,000	\$1,500,000
B Physical depreciation [1]	500,000	600,00	600,000
C Functional obsolescence [2]	<u>100,000</u>	<u>200,000</u>	<u>0</u>
D Cost less PD less FO ($A - B - C = D$)	600,000	1,000,000	900,000
E Unit operating income	50,000	50,000	50,000
F Actual unit ROI ($E \div D$)	8.3%	5%	5.6%
G Required unit ROI (cost of capital) [3]	<u>10%</u>	<u>10%</u>	<u>10%</u>
H Return deficiency (rounded) ($G - F$)	1.7%	5%	4.4%
I Income deficiency (rounded) ($H \times D$)	10,000	50,000	40,000
J Capitalization rate [3] ($= G$)	<u>10%</u>	<u>10%</u>	<u>10%</u>
K Capitalization of income loss ($EO = I \div J$)	<u>100,000</u>	<u>500,000</u>	<u>400,000</u>
L Value indication (rounded) ($D - K = \text{value}$)	<u>\$500,000</u>	<u>\$500,000</u>	<u>\$500,000</u>

[1] Effective age varies based on the benchmark.

[2] Functional obsolescence varies compared to the benchmark; the ideal replacement unit has no functional obsolescence.

[3] Capitalization rate = unit cost of capital (assumes 0% LTG rate as a simplifying assumption).



-
- Different cost methods assume different benchmark units of operating property; these different benchmark units manifest different depreciation components.
 - Typically, the changes in the benchmark depreciation components approximately offset the changes in the benchmark cost metrics, so alternative cost approach methods should indicate generally comparable values.



CILM Principles and Procedures

- The application of the CILM quantifies the first principle of economic obsolescence measurement: the difference between:
 - The actual economic condition of the subject unit and
 - The required (or the market participants' opportunity return) economic condition of the subject unit



CILM Principles and Procedures (cont.)

- The difference in economic condition can be measured by:
 - Profit margins
 - Returns on investment
 - The individual components of either of these two financial fundamentals, including:
 - Price or volume changes for goods and services produced by the unit
 - Prices of materials, labor, or overhead consumed
 - Changes in capital asset or working capital investments
 - Changes in income tax rates
 - Changes in cost of capital components
 - Regulatory changes affecting the unit operations



CILM Principles and Procedures (cont.)

- The difference in profit margin can be measured different ways through various income or cash flow components, including:
 - Before or after tax
 - Before or after debt service
 - Before or after nonoperating expense
 - Total revenue or per unit revenue
 - Total expense or per unit expense
 - Market size, market share, or market demand



CILM Principles and Procedures (cont.)

- The difference in return on investment can be measured different ways through various income, cash flow, or investment components, including:

Return

- Before or after tax
- Before or after debt service
- Before or after nonoperating expense
- Any revenue or expense metric
- Growth rate for any of the above return components
- The cost of capital

Investment

- Gross tangible assets
- Net tangible assets
- Current value of tangible assets
- Total assets
- The owners' equity
- Total invested capital (owners' equity plus LTD)



CILM Principles and Procedures (cont.)

- The benchmark for the economic condition performance can be any benchmark that is not (or is less) influenced by economic obsolescence, including:
 - Guideline public companies
 - Specific competitor companies
 - Industry trade association data
 - The industry cost of capital metric
 - The subject unit's cost of capital metric
 - The subject unit's historical results of operations (before economic obsolescence impact)
 - The subject unit's prospective results of operations (without economic obsolescence impact)
 - Management or industry expectations at the time of a subject unit investment



CILM Principles and Procedures (cont.)

- The benchmark level of economic performance can be any benchmark that is not (or is less) influenced by economic obsolescence, including:
 - Mean, median, or other central tendency measures
 - Top 25% or top 10% of the data array
 - Highest data point in the data array (top performing company or best performance time period)
- If the subject industry is generally impacted by economic obsolescence, the use of mean or median benchmarks will understate the economic obsolescence measurement. The mean or median metrics themselves may be impacted by economic obsolescence.



CILM Principles and Procedures (cont.)

- When economic obsolescence impacts the benchmark metrics, the top performing data point (e.g., top 10% or top individual company) may be used to measure economic obsolescence.
- Market participant investors will require the achievable economic metrics produced by the top performer that is not impacted by economic obsolescence.



CILM Simplified Illustrative Example

- Assume the unit principle cost approach analysis concludes the following:

Cost metric (however defined)	\$200 million
- Physical deterioration	80 million
- Functional obsolescence	<u>20 million</u>
= Cost less PD less FO	\$100 million

- Assume the following unit operating results:

Representative operating cash flow	\$6 million
(may be historical average or expected next period)	

- Assume the following actual unit economic condition:

Representative operating cash flow	\$6 million
÷ Cost less PD less FO investment	<u>100 million</u>
= Actual income return on investment	6%



CILM Simplified Illustrative Example (cont.)

- Assume the following required unit economic condition:

Unit weighted average cost of capital	12%
– Expected LT growth rate in selected income metric	<u>2%</u>
= Direct capitalization rate (required income ROI)	10%
- Assume the following economic obsolescence measurement:

Required income ROI (direct cap rate)	10%
– Actual ROI	<u>6%</u>
= ROI deficiency	4%
Rate of return deficiency	4%
÷ Required rate of return	<u>10%</u>
= Economic obsolescence percent	40%



CILM Simplified Illustrative Example (cont.)

- Assume an alternative economic obsolescence measurement:

Cost less PD less FO	\$100 million
× Required income ROI (direct cap rate)	<u>10%</u>
= Required income level	\$10 million

Required income level	\$10 million
– Actual income level	<u>6 million</u>
= Income loss	\$4 million

- Economic obsolescence measurement conclusion:

Cost less PD less FO	\$100 million
× Economic obsolescence percent	<u>40%</u>
= Economic obsolescence measurement	\$40 million



CILM Simplified Illustrative Example (cont.)

- Capitalization of income loss method conclusion:

Income loss	\$4 million
÷ Direct capitalization rate	<u>10%</u>
= Economic obsolescence measurement	\$40 million

- Illustrative example cost approach value conclusion:

Cost less PD less FO	\$100 million
– Economic obsolescence	<u>40 million</u>
= Cost approach unit value indication	\$60 million



Top 10 Economic Obsolescence Objections

The following list presents the most typical assessment authority objections to unit economic obsolescence measurements:

1. Economic obsolescence converts the cost approach into the income approach
2. The CILM does not rely on empirical data
3. The CILM is the income shortfall method
4. The selected CILM benchmarks are not achievable
5. The CILM is not the measurement method described in *The Appraisal of Real Estate*
6. The appraiser needs to identify and quantify the specific causes of economic obsolescence



Top 10 Economic Obsolescence Objections (cont.)

7. Economic obsolescence was caused by management's bad decisions
8. Investors/owners expect to earn inadequate rates of return (for the subject unit or in the subject industry)
9. Economic obsolescence is caused by factors external to the subject taxing jurisdiction
10. The appraiser can't associate the unit economic obsolescence with specific real estate or tangible personal property



EOM Objection 1: The Cost Approach Becomes the Income Approach

Objection: Economic obsolescence converts the cost approach into the income approach.

Best practices response:

- All property appraisal literature, standards, and professional guidance recognize three generally accepted property appraisal approaches:
 - Cost approach
 - Market approach
 - Income approach
- All unit principle property appraisal literature, standards, and professional guidance recognize three generally accepted unit principle property appraisal approaches:
 - Cost approach
 - Market approach
 - Income approach



EOM Objection 1: The Cost Approach Becomes the Income Approach (cont.)

- All appraisal literature, standards, and professional guidance recognize three types of appraisal depreciation within the application of the cost approach:
 - Physical deterioration
 - Functional obsolescence
 - External (including economic) obsolescence
- There is one economic obsolescence measurement method that does convert the cost approach into the income approach: the income shortfall method. For that reason, the income shortfall method is not considered a generally accepted economic obsolescence measurement method.



EOM Objection 1: The Cost Approach Becomes the Income Approach (cont.)

- The income shortfall method is applied (or misapplied) as follows:

Step 1

- A. Cost less PD less FO
- B. Income approach value indication
- = C. Income shortfall

Step 2

- A. Cost less PD less FO
- C. Income shortfall
- = D. Cost approach value indication



EOM Objection 1: The Cost Approach Becomes the Income Approach (cont.)

- As indicated in the above income shortfall method illustration:
 - The appraiser has to develop an income approach analysis and conclusion before completing the cost approach analysis
 - The income shortfall method always forces the cost approach value to exactly equal the income approach value
- Neither the capitalization of income loss method (CILM) nor any other generally accepted economic measurement have the conceptual flaws of the income shortfall method.
- In the application of the CILM, the cost approach analysis is independent of the income approach. The cost approach analysis can be concluded when no income approach analysis is developed.



EOM Objection 1: The Cost Approach Becomes the Income Approach (cont.)

- It is true that all economic obsolescence analyses consider economics—that is, some analysis of some income-related data. All market approach analyses consider some type of subject property income-related data (e.g., market-derived pricing multiple x subject property income metric). The consideration of some income data does not convert the cost approach—or the market approach—into the income approach.



EOM Objection 2: CILM Does Not Rely on Empirical Data

Objection: The application of the CILM does not rely on market-derived transactional data to measure economic obsolescence.

Best practices response:

- Actually, the CILM does not rely on anything other than market-derived empirical data to measure economic obsolescence.
- Recall that the CILM compares:
 - The unit's actual economic condition to
 - The unit's required economic condition
- All data related to the unit's actual economic condition (e.g., profit margin or ROI or any component there of—such as market share) are empirical data related to the subject unit's actual results of operations.



EOM Objection 2: CILM Does Not Rely on Empirical Data (cont.)

- All data related to the unit's required economic condition are based on market participants' required profit margin or ROI derived from:
 - Guideline company empirical evidence
 - Selected best comparable company empirical evidence
 - Industry empirical data
 - Subject unit's cost of capital empirical data
 - Subject unit's historical performance empirical data
 - Subject unit's prospective performance empirical data
- It is true that appraisers typically cannot extract required rates of return from actual sales of comparable units because:
 - Few units are comparable to the subject unit
 - Comparable units rarely sell
 - Comparable units that do sell rarely disclose unit-level income



EOM Objection 2: CILM Does Not Rely on Empirical Data (cont.)

- Nonetheless, CILM data are all market-derived empirical data because the profit margin or ROI data were actually earned by market participants who invested in guideline public companies, industry benchmark companies, or the subject taxpayer company.



EOM Objection 3: The CILM Is the Income Shortfall Method

Objection: The income shortfall method is not a generally accepted EOM method. The CILM is a disguised application of the income short method.

Best practices response:

- The CILM is a generally accepted economic obsolescence measurement method. The CILM is described in authoritative literature published by the following valuation professional organizations:
 - American Society of Appraisers
 - The Appraisal Institute
 - American Institute of Certified Public Accountants
 - International Association of Assessing Officers
 - Others



EOM Objection 3: The CILM Is the Income Shortfall Method (cont.)

- The income shortfall method is not a generally accepted economic obsolescence measurement method. The income shortfall method is not accepted:
 - In the appraisal professional literature
 - By valuation professional organization guidance
 - In relevant judicial decisions
- The income shortfall method is based on the difference between:
 - The income approach value indication and
 - The cost approach value indication (before EO)

The mathematical difference between these two values is the economic obsolescence measurement.
- The income shortfall method results in the cost approach value being identical to the income approach value.



EOM Objection 3: The CILM Is the Income Shortfall Method (cont.)

- The CILM is based on the difference between:
 - The unit's actual ROI metric (based on the cost approach pre-EO indication)
 - The unit's required ROI metric (based on a benchmark or opportunity return metric)
- The CILM is not a residual method. It does not equate the cost approach value with the income approach value.
- The CILM can be developed independently from (and without ever developing) the income approach.
- The CILM is not the income shortfall method.



EOM Objection 4: CILM Benchmarks Are Not Achievable

Objection: The benchmark rates of return (or other metrics) used in the CILM analysis cannot be achieved by the subject unit.

Best practices response:

- The benchmarks are typically based on empirical data:
 - Actual taxpayer or taxpayer industry cost of capital data
 - Actual public company results of operations
 - Actual industry (e.g., trade association) results of operations
 - Actual subject unit's historical results of operations
- The benchmark economic metrics are not wishful thinking. The owners or operators of industry participants (public competitors, private competitors, the subject unit) actually achieved the benchmark economic metrics.



EOM Objection 4: CILM Benchmarks Are Not Achievable (cont.)

- The subject unit currently may not be achieving the benchmark metrics: that is the indication of economic obsolescence.
- However, owners or operators could earn the benchmark returns at alternative investment opportunities—or did previously earn the benchmark returns at the subject unit.
- These benchmark returns represent the market participants “opportunity return” on an alternative investment. Therefore, market participants will price an investment in the subject unit (i.e., apply economic obsolescence to cost) so as to earn that opportunity rate of return on the subject unit value.
- The CILM benchmarks were achieved by some industry participants. Therefore, market participants expect to earn the benchmark returns on an investment in the subject unit.



EOM Objection 5: The Unit Principle CILM Is Not Described in *The Appraisal of Real Estate*

Objection: The CILM applied in the unit principle property appraisal is not exactly the same as *The Appraisal of Real Estate* CILM textbook examples.

Best practices response:

- *The Appraisal of Real Estate* describes summation principle property appraisal procedures—not unit principle property appraisal procedures.
- *The Appraisal of Real Estate* CILM description considers a deficiency in property rental income (compared to current market rental income).
- Unlike a single rental property subject to a summation principle appraisal, the subject unit does not generate rental income. The subject unit generates business operating income.



EOM Objection 5: The Unit Valuation CILM Is Not Described in *The Appraisal of Real Estate* (cont.)

- In a unit principle appraisal, the income loss, if any, would relate to business operating income.
- The unit's current market "rental income" corresponds to the level of business operating income required to generate a market-derived required rate of return.
- Instead of the "market" in a summation appraisal being comparable rental properties, the "market" in a unit appraisal is the return offered to investors by benchmark public companies, private company competitors (i.e., the industry), or the subject unit itself (historically).
- *The Appraisal of Real Estate* CILM example measures any deficiency in the income earned by operating a single rental property.



EOM Objection 5: The Unit Valuation CILM Is Not Described in *The Appraisal of Real Estate* (cont.)

- The unit principle CILM measures any deficiency in the income earned by operating the total unit of operating property.
- The unit principle CILM is conceptually identical to *The Appraisal of Real Estate* summation principle (or single property) CILM.
- The unit principle CILM is supported by authoritative literature related to the unit principle of property appraisal.



EOM Objection 6: Quantify the Individual Causes for Economic Obsolescence

Objection: The appraiser must identify and quantify each individual cause of (or reason for) the economic obsolescence.

Best practices response:

- First, there is no valuation professional organization standard, literature, credentialing course, or other guidance that requires—or even recommends—such a procedure.
- ALL professional guidance indicates that the generally accepted formula for the application of the cost approach is:

Cost measure

- Physical deterioration
- Functional obsolescence
- Economic obsolescence
- = Value indication



EOM Objection 6: Quantify the Individual Causes for Economic Obsolescence (cont.)

- NO professional guidance indicates that the generally accepted formula for the application of the cost approach is:
Cost measure
 - Physical deterioration
 - Functional obsolescence
 - Economic obsolescence from cause 1
 - Economic obsolescence from cause 2
 - Economic obsolescence from cause 3= Value indication
- Second, appraisers do not identify and quantify individual causes for any other type of appraisal depreciation.
- Appraisers do not associate specific physical deterioration penalties with individual physical defects at a subject property.



EOM Objection 6: Quantify the Individual Causes for Economic Obsolescence (cont.)

- Appraisers do not assign responsibility for:
 - Who was responsible for not maintaining the facility, causing the leaking roof
 - Who was responsible for installing too heavy equipment, causing the cracked floor
 - Which lift truck operator ran into the side of the building, causing the slanted wall
 - Which heavy trucks drove to and from the plant, causing cracks in the driveway
- Instead, the appraiser concludes total physical depreciation
 - The actual age of the property is 20 years
 - The effective (observed) age of the property is 30 years
 - The expected UEL of the property is 40 years
 - The property is in below-average condition for its age
 - The property is 75% (i.e., 30-year effective age ÷ 40-year UEL) depreciated



EOM Objection 6: Quantify the Individual Causes for Economic Obsolescence (cont.)

- The appraiser may note any property physical defects in the appraisal report, but the appraisal does not assign responsibility or individual depreciation penalties.
- Second, related to economic obsolescence, appraisers are not required to identify and quantify:
 - Which competitor was taking market share from the unit
 - Which purchasing executive signed the unfavorable supply contract, causing increased raw materials costs
 - Which financial executive signed the financing agreement, allowing for increased interest rates
 - Which company executive decided to expand the plant capacity during what became an industry downturn



EOM Objection 6: Quantify the Individual Causes for Economic Obsolescence (cont.)

- Third, an appraisal is not a blame game. An appraisal concludes value, not:

- Responsibility
- Liability
- Causation

These are legal concepts to determine who should pay damages to a damaged party. These are not appraisal concepts to determine who should recognize economic obsolescence.

- Fourth, the economic obsolescence measurement itself identifies the economic causes for the obsolescence. Compared to the benchmark economic condition, the subject unit is actually experiencing:

- Decreased revenue (price, volume, market share)
- Increased operating or financing expenses
- Decreased profitability or growth
- Increased capital investment



EOM Objection 6: Quantify the Individual Causes for Economic Obsolescence (cont.)

- These economic variables are the “cause” or the “explanation” for the unit’s economic obsolescence.



EOM Objection 7: Poor Management Causes Poor Performance

Objection: If economic obsolescence exists, it was caused by the unit management's bad decision making.

Best practices response:

- The first inference of this objection is that management deliberately decreased the value of the unit's property in order to decrease the property tax expense. The illogical conclusion is that the unit owner would prefer to own a less profitable business operation than to pay property tax expense.
- The second inference of this objection is that the unit owner would allow incompetent management to continue to inefficiently operate the unit business operations:
 - Whether a public company or a private company, the unit owners will quickly replace incompetent managers with competent managers.



EOM Objection 7: Poor Management Causes Poor Performance (cont.)

- All business decisions should be evaluated when they were made—not in hindsight.
 - It is easy to look back years after the fact and second-guess investment and operational decisions.
 - Management decisions can only be evaluated in light of what were known competitive and economic conditions.
- Unit managers are not expected to make perfect decisions every time. In defense of shareholder litigation claims, company directors are protected by what is called “the business judgment rule.”



EOM Objection 7: Poor Management Causes Poor Performance (cont.)

- Unit managers cannot control the outcomes of their decisions.
 - In regulated industries, management decisions are strongly influenced by regulatory authorities.
 - In nonregulated industries, the outcomes of management decisions are strongly influenced by:
 - Competitor actions
 - Customer preferences
 - General economic conditions
 - General capital market conditions



EOM Objection 7: Poor Management Causes Poor Performance (cont.)

- All that said, bad management decisions still result in economic obsolescence.
 - Economic obsolescence is due to factors outside of the property—NOT outside of the property owner
 - A unit principle appraisal is a property appraisal—NOT a property owner appraisal
 - The decisions of the property owner management are external to the physical property itself
 - If the reason for the inadequate economic condition (e.g., profit margin, ROI, growth rate) are not due to the age, condition, inadequacy, or superadequacy of the physical property, then the inadequate economic condition indicates economic obsolescence.



EOM Objection 8: Economic Obsolescence Is Already Considered in the Income Approach and the Market Approach

Objection: Any unit-level economic obsolescence is already captured in the income approach and the market approach analyses. Therefore, economic obsolescence does not have to be considered in the cost approach.

Best practices response:

- The cost approach is exactly where economic obsolescence should be considered. Like all forms of appraisal depreciation, economic obsolescence is specifically a cost approach concept.



EOM Objection 8: Economic Obsolescence Is Already Considered in the Income Approach and the Market Approach (cont.)

- Any unit-level economic obsolescence is already It is true that a well-developed income approach analysis and market approach analysis will both implicitly consider the subject unit's economic obsolescence. However, the cost approach explicitly considers the subject unit's economic obsolescence. The cost approach is where all forms of appraisal depreciation—including economic obsolescence—are specifically identified and separately quantified.
- Each property appraisal approach should be independent of each other property appraisal approach. Of course, there is only one set of financial and operational data regarding the subject unit. So, all appraisal approaches draw on a common data set regarding the subject property.



EOM Objection 8: Economic Obsolescence Is Already Considered in the Income Approach and the Market Approach (cont.)

- But each property appraisal approach should be calculated independently and completely from each other property appraisal approach.
- Assigning a greater weight to income approach or market approach value indications in the valuation reconciliation does not correct an incomplete cost approach analysis.
- Before any unit value indications are considered in the final value reconciliation, each property appraisal approach should be fully supported—and fully completed. And, each property appraisal approach should provide a completely developed—and credible—value indication of the subject unit property.



EOM Objection 9: Economic Obsolescence Causes Are External to the Taxing Jurisdiction

Objection: The factors that are causing the unit's economic obsolescence are external to the subject taxing jurisdiction.

Best practices response:

- Assessment authorities sometimes think they are being “blamed” or “punished” for economic or industry phenomena that are occurring outside of their taxing jurisdiction.
- A unit principle appraisal is not the blame game. No party is blamed for the existence of economic obsolescence. Economic obsolescence is typically caused by uncontrollable consumer, competitor, capital market, microeconomic, and macroeconomic conditions.
- Economic obsolescence is caused by factors external to the subject property. Those factors are often external to the state or local taxing jurisdiction.



EOM Objection 9: Economic Obsolescence Causes Are External to the Taxing Jurisdiction (cont.)

- Those factors may include environmental conditions, weather patterns, foreign and domestic supplier actions, foreign and domestic customer actions, foreign and domestic competitor actions, capital market conditions, government and regulatory actions, etc.
- There is no appraisal principle that requires (or even implies) that unit property values can only be influenced by factors originating in by the town, county, or state in which the unit property is located.
- Economic obsolescence is caused by factors external to the property—not by factors external to the property AND internal to the subject taxing jurisdiction.
- Assessment authorities are used to residential property values being influenced by Federal Reserve policy, national inflation and unemployment rates, and other factors external to the subject taxing jurisdiction.



EOM Objection 10: Unit Economic Obsolescence Cannot Be Isolated to Property in the Taxing Jurisdiction

Objection: Economic obsolescence is a unit-wide value adjustment. It is not measured or applied specifically to local real estate or tangible personal property.

Best practices response:

- The statement in this objection is correct. In a unit principle appraisal, economic obsolescence is typically measured on a total unit basis. It is not measured separately for each individual taxing jurisdiction.
- In a unit principle appraisal, most valuation variables are measured on a total unit basis, including:
 - Cost trend factors
 - Average total life of each property category
 - Functional obsolescence (capitalized excess operating expense)
 - Economic obsolescence (CILM variables)



EOM Objection 10: Unit Economic Obsolescence Cannot Be Isolated to Property in the Taxing Jurisdiction (cont.)

- If the valuation variables are measured separately for each individual property location, that is not a unit principle appraisal. That is a summation principle appraisal.
- For taxpayer properties that are physically, functionally, and economically integrated, some valuation variables—such as economic obsolescence—have to be measured on a total unit basis.
- Because of the integrated nature of the property components, all property units in all locations experience the same level of economic obsolescence—typically measured as a percentage adjustment.
- It is inconsistent with the unit appraisal principle—and inconsistent with the integrated operations of the unit property—to assign a difference economic obsolescence percentage to properties located in each taxing jurisdiction.



EOM Objection 10: Unit Economic Obsolescence Cannot Be Isolated to Property in the Taxing Jurisdiction (cont.)

- All property units contribute to the unit's economic obsolescence. All property units experience the same influence of economic obsolescence. So, for a physically, functionally, and economically integrated unit, all property units are typically assigned the same pro rata economic obsolescence adjustment.



Next 10 Economic Obsolescence Objections

1. The economic obsolescence measurement can change materially from year to year
2. If there was economic obsolescence, the taxpayer should record a GAAP accounting impairment charge
3. If there was economic obsolescence, the taxpayer should disclose that fact to shareholders/others
4. The appraiser can't subtract economic obsolescence in an HCLD analysis
5. There can be no economic obsolescence if the unit or the industry MV/BV ratio exceeds one.
6. The appraiser double-counted functional obsolescence and economic obsolescence.



Next 10 Economic Obsolescence Objections (cont.)

7. Industry-wide economic obsolescence does not result in a taxpayer-specific value adjustment.
8. The economic obsolescence is temporary—or cyclical.
9. Investors expect economic obsolescence in the taxpayer industry, so the appraisal should not adjust for it.
10. Investors expect the subject unit to underperform, so the appraisal should not adjust for economic obsolescence.



EOM Objection 11: EOM Changes Materially over Time

Objection: The subject unit's economic obsolescence measurement can change materially from year to year.

Best practices response:

- The statement in the objection is correct. Property values—including unit property values—can change year to year.
- Most unit principle appraisals involve income-producing, special-purpose properties.
- The income generated by the subject unit may change from year to year, so the unit's actual economic returns may fluctuate over time.
- Economic and capital market conditions may change from year to year, so the unit's required economic returns may fluctuate over time.



EOM Objection 11: EOM Changes Materially over Time (cont.)

- The difference between the subject unit's actual returns and the market participants' required returns may change year to year, so unit economic obsolescence may fluctuate.
- Assessment authorities often experience fluctuations in property values due to economic obsolescence. For example, residential property values change (inversely) due to changes in mortgage interest rates.
- Like homeowners, unit property owners may decide not to sell their property during periods when property values are depressed. However, the owner's decision not to sell the property does not invalidate the fact that the property value (residential or unit) is depressed.
- The objective of the unit principle appraisal (or of any property appraisal) is to estimate a current property value—not a constant property value over time.



EOM Objection 12: There Is No Economic Obsolescence without a GAAP Impairment Charge

Objection: If the taxpayer actually experienced economic obsolescence, the taxpayer would have to record an impairment “write-down” on its GAAP financial statements.

Best practices response:

- There are very specific accounting tests for determining the impairment for a long-lived asset under U.S. GAAP. The guidance for such an asset impairment is provided by FASB ASC topic 360, *Property, Plant, and Equipment*.
- Specifically, asset impairment accounting guidance is provided in ASC topic 360-10, *Impairment or Disposal of Long-Lived Assets*.



EOM Objection 12: There Is No Economic Obsolescence without a GAAP Impairment Charge (cont.)

- ASC 360-10 provides for a very specific test for asset impairment:
 - If the sum of future cash flow over the asset's remaining useful life equals or exceeds the NBV, then an impairment is not permitted
 - If the sum of the future cash flow over the asset's remaining useful life is less than NBV, then an impairment is required
- The company cannot elect to take on impairment. Either an impairment is required or it is prohibited.
- There is no provision in ASC 360-10, or in any other U.S. GAAP, for any consideration of economic obsolescence.
- Simplified ASC 360-10 illustrative example assumptions:
 - Subject property NBV = \$10,000,000
 - Subject property remaining useful life = 10 years
 - Subject property annual cash flow = \$1,000,000



EOM Objection 12: There Is No Economic Obsolescence without a GAAP Impairment Charge (cont.)

- ASC 360-10 asset impairment test:
 - Sum of cash flow over asset's RUL \$10,000,000
 - Subject asset NBV \$10,000,000
 - Conclusion: Asset impairment is not allowed
 - Property's actual IRR (ROI over property's RUL) 0%
- Economic obsolescence consideration:
 - Any positive market-derived required ROI % compared to a 0% property IRR would indicate a substantial amount of economic obsolescence.
- Under ASC 360-10, an asset impairment is not allowed until the property's actual IRR is negative (not less than the property's required rate of return—but negative).



EOM Objection 12: There Is No Economic Obsolescence without a GAAP Impairment Charge (cont.)

- Economic obsolescence benchmark
 - Market-required rate of return compared to the cost metric
- Asset impairment benchmark
 - Sum of undiscounted cash flow compared to the NBV
- ASC 360-10 test is intended to be extremely difficult to fail:
 - An asset impairment is permanent
 - An asset impairment cannot be reversed
 - An impaired asset value cannot be “written up” when the economic conditions improve
 - In contrast, a unit value will increase in the future when economic conditions improve (and economic obsolescence decreases)



EOM Objection 12: There Is No Economic Obsolescence without a GAAP Impairment Charge (cont.)

- There is absolutely no relationship between ASC 360-10 asset impairment accounting and the recognition of economic obsolescence.
- There is also no provision in ASC 360-10 to explain the reasons for—or the causes of—an asset impairment.



EOM Objection 13: The Property Owner Should Make a Public Disclosure of Economic Obsolescence

Objection: If the unit really experienced economic obsolescence, the company would have to publicly disclose that obsolescence.

Best practices response:

- There is no FASB requirement to disclose economic obsolescence.
- There is no IASB requirement to disclose economic obsolescence.
- There is no SEC requirement to disclose economic obsolescence.
- There is no NYSE requirement to disclose economic obsolescence.
- There is no Nasdaq requirement to disclose economic obsolescence.
- There is no IRS requirement to disclose economic obsolescence.
- There is no requirement to disclose economic obsolescence.



EOM Objection 14: Can't Subtract EO from HCLD

Objection: It is not appropriate to subtract economic obsolescence in a historical cost less depreciation analysis.

Best practices response:

- Economic obsolescence is not a “subtraction” from any cost measurement. Like all other types of appraisal depreciation, economic obsolescence is an adjustment from a cost metric indication that is applied to conclude a value indication.
- The cost approach HCLD appraisal method is not the same as accounting net book value. It is correct that accounting net book value does not recognize economic obsolescence. Net book value only considers accounting depreciation.
- The HCLD method is based on (1) the unit historical cost (or original cost, if available) less (2) all forms of appraisal depreciation.



EOM Objection 14: Can't Subtract EO from HCLD (cont.)

- Appraisal depreciation includes:
 - Physical deterioration
 - Functional obsolescence
 - External obsolescence (including economic obsolescence)
- Typically, total appraisal depreciation does not equal total accounting depreciation (because accounting depreciation is intended to systematically allocate the cost of a property investment over the expected UEL of the property). Typically, accounting depreciation is not intended to indicate a current market value for a property.



EOM Objection 14: Can't Subtract EO from HCLD (cont.)

- Some regulated industry entities have to apply regulatory accounting principles (including so-called regulatory depreciation principles) for certain compliance purposes. These entities can elect to apply regulatory accounting principles as their GAAP accounting principles under the provisions of FASB ASC topic 980, *Regulated Operations*. In such instances, the regulatory accounting depreciation becomes the financial accounting depreciation for those regulated entities.



EOM Objection 14: Can't Subtract EO from HCLD (cont.)

- So, the HCLD method is summarized as follows:
 Historical cost
 – Appraisal depreciation (including regulatory depreciation)
 = Value indication

The HCLD method is NOT summarized as follows:

- Historical cost
 – Financial accounting depreciation
 = Value indication
- There is no generally accepted valuation professional organization appraisal literature, standard, credentialing course, or other professional guidance that states that economic obsolescence should not be considered in the application of the HCLD method.



EOM Objection 15: There Can Be No Economic Obsolescence if the MV/BV Ratio Exceeds One

Objection: The only appropriate test for economic obsolescence is the market value/book value ratio. If that ratio exceeds 1, there is no economic obsolescence.

Best practices response:

- Some assessors calculate the market value to book value ratio based on stockholders' equity only.
- Some assessors calculate the market value to book value ratio based on total invested capital (i.e., LTD plus stockholders' equity).
- In either case, the data used to calculate the MV/BV ratio are selected guideline publicly traded companies.



EOM Objection 15: There Can Be No Economic Obsolescence if the MV/BV Ratio Exceeds One (cont.)

- This MV/BV ratio comparison assumes that all market value—and any market value premium over BV—relates entirely to the tangible property recorded on the company's GAAP balance sheet.
- However, there are numerous reasons why a company's MV of equity (or of TIC) can be greater than the company's BV of tangible property.
- In addition to the value of real estate and tangible personal property, a company's MV of equity (or of TIC) encompass the value of:
 - Working capital accounts
 - Identifiable intangible assets
 - Intangible value in the nature of goodwill
 - Present value of growth opportunities
 - Intangible investment (public security) attributes



EOM Objection 15: There Can Be No Economic Obsolescence of MV/BV Ratio Exceeds One (cont.)

- The meaningless nature of the MV/BV ratio comparison is illustrated by the following simplified example.

Any Company Book Value Balance Sheet

Assets		Liabilities & Equity	
Current assets	\$400	Current liabilities	\$200
Plant, property, equipment	<u>1,000</u>	Long-term debt	500
		Stockholders' equity	<u>700</u>
Total	\$1,400	Total	\$1,400

Any Company Market Value Balance Sheet

Assets		Liabilities & Equity	
Current assets	\$400	Current liabilities	\$200
Plant, property, equipment	800	LTD	500
Intangible personal property	400	Stockholders' equity	<u>1,100</u>
Goodwill and PVGO	<u>200</u>		
Total	\$1,800	Total	\$1,800



EOM Objection 15: There Can Be No Economic Obsolescence of MV/BV Ratio Exceeds One (cont.)

- The MV/BV ratio indicated from the previous example is:
 - MV/BV based on TIC (LTD & SE) = 1.3x
(\$1,600 ÷ \$1,200)
 - MV/BV based on equity only = 1.7x
(\$1,100 ÷ \$700)
- The actual economic obsolescence implied by the previous example is:

Book value of the plant, property, equipment	\$1,000
– Market value of the plant, property, equipment	<u>800</u>
= Implied economic obsolescence	20%
- This example illustrates that the MV/BV ratio is a meaningless measure of economic obsolescence because the MV/BV ratio ignores all of the other influences on the market value of a company's securities—other than the value of the tangible property.



EOM Objection 16: The Appraiser Double-Counted Functional Obsolescence and Economic Obsolescence

Objection: The economic obsolescence measurement is already captured in the functional obsolescence adjustment.

Best practices response:

- Functional obsolescence and economic obsolescence are two different types of cost approach adjustments. However, both types of obsolescence may be influenced by these two property conditions:
 - The property is earning less income than its benchmark level
 - The property has too much investment compared to its benchmark level
- Functional obsolescence is caused by factors internal to the subject property, including inadequacy and superadequacy



EOM Objection 16: The Appraiser Double-Counted Functional Obsolescence and Economic Obsolescence (cont.)

- Functional obsolescence is caused by factors directly associated with the tangible property, including:
 - Changes in technology (new property is more efficient)
 - Changes in construction or component material (new property would be made from different material)
 - Changes in size (too much or too little)
 - Changes in location (too close or too far away)
- Functional obsolescence is often measured by reference to:
 - Capitalized excess operating expenses (compared to benchmark property)
 - Excess capital costs (compared to benchmark property)



EOM Objection 16: The Appraiser Double-Counted Functional Obsolescence and Economic Obsolescence (cont.)

- Functional obsolescence is sometimes curable; for example, the ideal replacement property would:
 - Be smaller (or larger)
 - Be made of different material
 - Have a different fuel or raw material source
 - Have a different layout or configuration
 - Have more efficient equipment or amenities
- Some functional obsolescence is not curable; for example, there may be physical constraints that prohibit the construction and operation of the ideal replacement property



EOM Objection 16: The Appraiser Double-Counted Functional Obsolescence and Economic Obsolescence (cont.)

- Economic obsolescence is caused by factors that are external to the subject tangible property, including:
 - Actions of competition
 - Consumer demand and preferences
 - Changes in the price of material, labor, and overhead
 - Weather and climate changes
 - Government and regulatory actions
 - Capital market returns and interest rates
 - Property owner responses to the above factors
- Therefore, economic obsolescence is generally considered to be incurable
- Appraisers should be careful to distinguish between value decrements caused by functional obsolescence (internal factors) and by economic obsolescence (external factors)



EOM Objection 16: The Appraiser Double-Counted Functional Obsolescence and Economic Obsolescence (cont.)

- For example, an electric generation plant is experiencing excess fuel costs (compared to a benchmark level). The appraiser should consider: Are the excess fuel costs caused by:
 - Excess fuel consumption due to inefficient heat rate (fuel consumed per KW of electricity produced) compared to a modern plant—i.e., functional obsolescence
 - Increased natural gas prices due to general industry conditions or an unfavorable supply contract—i.e., economic obsolescence
- The appraiser should be careful to not consider the same cause of excess operating expenses (low income metric) and excess capital costs (high investment metric) in both the functional obsolescence measurement and the economic obsolescence measurement.



EOM Objection 17: Industry-Wide Economic Obsolescence Should Not Result in a Taxpayer-Specific Value Adjustment

Objection: If there is industry-wide economic obsolescence, industry participants expect lower returns and the subject unit value should not be adjusted.

Best practices response:

- If the economic obsolescence is industry-wide (e.g., decreased prices for goods or services produced, increased prices for raw materials consumed), then every industry property owner is experiencing some amount of economic obsolescence.
- Economic obsolescence is NOT measured as the difference between
 - The subject property inadequate return on investment and
 - The subject industry inadequate return on investment



EOM Objection 17: Industry-Wide Economic Obsolescence Should Not Result in a Taxpayer-Specific Value Adjustment (cont.)

- The subject industry's (and the subject property's) required return on investment is measured without (or before) economic obsolescence.
- If there is industry-wide economic obsolescence, investors will downward adjust the prices for all industry properties until the investors are earning their required rate of return.
- Assessors are used to dealing with industry-wide economic obsolescence. When mortgage interest rates increase nationwide, all residential property values decrease. Assessors cannot disregard this value decrease simply because it is affecting all residential real estate.



EOM Objection 18: Economic Obsolescence Is Temporary—or Cyclical

Objection: If it exists, the unit's economic obsolescence is temporary—or cyclical. It will resolve itself over time when the industry cycle turns up.

Best practices response:

- The unit's economic obsolescence measurement may, in fact, be temporary or cyclical. The economic obsolescence measurement may increase or decrease materially from year to year based on (1) changes in the unit's actual financial performance over time and (2) changes in the market participants' required return on investment over time.
- This cyclical nature of the measurement is further proof of the fact that economic obsolescence is external to the subject unit property.



EOM Objection 18: Economic Obsolescence Is Temporary—or Cyclical (cont.)

- However, in periods when economic obsolescence exists, it affects the unit property value. During those periods, the unit property value is decreased, and that value decrease should be reflected in the property tax assessment.
- Also, in periods when economic obsolescence does not exist, it does not affect (or little affects) the unit property value. During those periods, the unit property value is not decreased, and that fulsome value should be reflected in the property tax assessment.
- Typically, property owner/taxpayers do not appeal the unit property assessment in periods when there is little or no economic obsolescence. Accordingly, the assessment authority should recognize an appropriate unit property value adjustment during periods when there is a material amount of economic obsolescence.



EOM Objection 18: Economic Obsolescence Is Temporary—or Cyclical (cont.)

- Assessment authorities experience the cyclical nature of economic obsolescence in residential real estate assessments. The impact of the COVID-19 pandemic caused home prices to increase for several years. The impact of increased mortgage interest rates has caused home prices to decrease recently. The same type of cyclical external factors that affect the value of residential property also affects the value of industrial and commercial unit property—sometimes to an even greater degree.



EOM Objection 19: Investors Expect EO in Certain Industries So the Appraisal Should Not Adjust for that Factor

Objection: Due to regulatory lag or historical subject industry performance, investors expect low rates of return. Therefore, the unit principle appraisal should not adjust for such below-market-expectations economic obsolescence.

Best practices response:

- The benchmarks applied in economic obsolescence measurements should be based on market-derived, empirical data. These benchmarks may be prices, volumes, costs, profit margins, returns on investment, and other metrics. The empirical data may relate to guideline public companies, trade association and other industry sources, subject unit historical results of operations, subject unit cost of capital, and other sources.



EOM Objection 19: Investors Expect EO in Certain Industries So the Appraisal Should Not Adjust for that Factor (cont.)

- The point is the benchmarks applied in economic obsolescence measurements are metrics that investors actually expect because they are metrics that investors can actually achieve.
- This benchmark represents the opportunity returns actually available to market participant investors. The market participant investors will either invest in the benchmark investments—and earn the opportunity rate of return—or they will invest in the subject unit.
- If the market participants invest in the subject unit, they will only do so at a price that will yield to them the otherwise available opportunity rate of return.
- The difference between that price (that yields the opportunity return) and the unit's cost metric is called economic obsolescence.



EOM Objection 19: Investors Expect EO in Certain Industries So the Appraisal Should Not Adjust for that Factor (cont.)

- So, if industry returns are consistently low, then market participants incorporate those low returns into their assessment of opportunity returns.
- But if some industry participants (e.g., guideline public companies or industry competitors) are earning higher returns, then market participants will incorporate those higher returns into their assessment of opportunity returns.
- Therefore, the benchmark returns (and the opportunity returns) will be influenced by regulatory lag or by any other external factors causing the economic obsolescence.



EOM Objection 19: Investors Expect EO in Certain Industries So the Appraisal Should Not Adjust for that Factor (cont.)

- If the subject unit's returns are less than the benchmark (or opportunity) returns, the appraisal does have to adjust the cost approach value indication for economic obsolescence.
- All investor expectations are fully incorporated into the benchmark (or opportunity) rates of return.
- If the subject unit cannot generate that benchmark rate of return, the market participants will reduce the bid price (i.e., the value) of the subject unit until the market price yields that benchmark (or opportunity) return on investment.



EOM Objection 20: Investors Expect the Subject Unit to Underperform, so the Appraisal Should Not Adjust for EO

Objection: The subject unit consistently underperforms the benchmark financial or operational metrics. Investors expect the subject unit to underperform. Therefore, the unit principle appraisal should not account for economic obsolescence.

Best practices response:

- The subject unit may have underperformed the benchmark financial or operational metrics for the last five years. The subject unit may be expected to underperform the benchmark financial or operational metrics for the next five years.



EOM Objection 20: Investors Expect the Subject Unit to Underperform, so the Appraisal Should Not Adjust for EO (cont.)

- These facts do not indicate that there is no economic obsolescence associated with the subject unit. Instead, these facts indicate that there is consistent economic obsolescence at the subject unit.
- For example, if the subject unit consistently does not earn its cost of capital, that fact does not imply that the cost of capital is too high. Rather, that fact does imply that the unit's actual return on investment is too low—and should be reflected in an economic obsolescence measurement.
- Market participants look to the market for their opportunity benchmark metrics. Market participants can earn those market-derived opportunity returns elsewhere. So, they expect to earn those market-derived opportunity returns at the subject unit.



EOM Objection 20: Investors Expect the Subject Unit to Underperform, so the Appraisal Should Not Adjust for EO (cont.)

- If the subject unit consistently underperforms the required metrics, market participants will bid down the price of the subject unit. Market participants will continue to bid down the unit price until the participants can earn the opportunity rate of return on an investment in the subject unit.
- This “bid down” price becomes the value of the subject unit.
- And, the difference between the subject unit’s market value and the subject unit’s cost metric is called economic obsolescence.
- If the subject unit consistently underperforms the market’s required return on investment metric, then the subject unit will consistently experience economic obsolescence.



EOM Objection 20: Investors Expect the Subject Unit to Underperform, so the Appraisal Should Not Adjust for EO (cont.)

- The market's required return on investment becomes the subject unit's cost of capital (or required rate of return). That market-derived cost of capital is not reduced because of the subject unit's historical (or expected) underperformance.



Assessment Authority Considerations regarding Economic Obsolescence

Taxpayers and appraisers should be aware of these economic obsolescence considerations are sometimes expressed by assessment authorities:

- If the assessor cannot “see” economic obsolescence, it is easy to reject the concept.
- Assessors often have the presumption of correctness, so taxpayers have to overcome this presumption.
- Assessors often apply a higher burden of proof on taxpayers regarding the measurement of economic obsolescence—compared to the measurement of physical depreciation or functional obsolescence.
- Assessors often believe that any economic obsolescence analysis is an income shortfall method—that is, a way to convert the cost approach into the income approach.



Assessment Authority Considerations regarding Economic Obsolescence (cont.)

- Assessors may believe if they “give” an economic obsolescence adjustment to one taxpayer, then all taxpayers will ask for economic obsolescence.
- Assessors may not understand why any taxpayer would make capital expenditures (or complete an acquisition) if the subject unit is experiencing economic obsolescence.
- Assessors may not understand why any investor would invest in a company—or in a taxpayer industry—that is experiencing economic obsolescence.
- Assessors often believe that any unit that is growing or expanding in any way cannot experience economic obsolescence.



Assessment Authority Considerations regarding Economic Obsolescence (cont.)

- Assessors often believe that any unit that is experiencing any positive profits or any positive ROI cannot experience economic obsolescence.
- Assessors often believe that any unit (or taxpayer industry) that has a business value greater than the tangible property book value cannot experience economic obsolescence.



Summary and Conclusion

- A unit appraisal is different from a summation appraisal is different from a business appraisal.
- Cost does not equal value. Cost minus all types of appraisal depreciation indicates value.
- Economic obsolescence is not a subtraction from value. Economic obsolescence is an adjustment to get to value.
- Economic obsolescence considers some income-related metrics. That fact does not convert the cost approach into the income approach. The market approach also considers income-related metrics.
- Economic obsolescence is typically measured on a comparative basis. Economic obsolescence compares:
 - The unit economic condition you have to
 - The unit economic condition you want



Summary and Conclusion (cont.)

- The economic condition you “want” does not mean the condition you desire or would like to have. It means the economic returns that market participants “require.”
- The benchmarks for economic obsolescence are market-derived empirical returns actually earned by:
 - Guideline companies
 - Other industry participants
 - The subject unit (historically)
- The benchmark returns are the opportunity returns actually available to investors.
- The CILM is one generally accepted EOM method. The CILM is not the income shortfall method. The CILM is not the income approach.



Summary and Conclusion (cont.)

- There is typically not one industry measure of economic obsolescence. There is typically not one company/taxpayer measure of economic obsolescence. Economic obsolescence is measured within the context of an individual cost approach analysis.
- The economic obsolescence is specific to the appraisal cost metric. A unit appraisal based on a \$10 million cost metric will have a different economic obsolescence adjustment than an appraisal of the same unit that is based on a \$50 million cost metric.
- That is, the greater the cost metric, the lower the unit return on investment—and the greater the economic obsolescence adjustment.



Summary and Conclusion (cont.)

- There are best practices responses available to address many of the typical assessment authority objections related to economic obsolescence measurements.



Bibliography for Economic Obsolescence Measurements and the CILM Method

Books

- *Appraisal of Real Estate, The*, 15th ed. Chicago: The Appraisal Institute, 2020, 592–97.
- *Valuing Machinery and Equipment: The Fundamentals of Appraising Machinery and Technical Assets*, 4th ed. Washington: American Society of Appraisers, 2020, 71–72.
- Eckert, Joseph K., ed. *Property Appraisal and Assessment Administration*. Kansas City, MO: International Association of Assessing Officers, 1990.
- Lifflander, John. *Fundamentals of Industrial Valuation*. Kansas City, MO: International Association of Assessing Officers, 2007.



Bibliography for Economic Obsolescence Measurements and CILM Method (cont.)

- Gilliland, Charles E., ed. *Property Taxation*, 4th ed. Atlanta: Institute for Professionals in Taxation, 2015.
- Reilly, Robert F., and Robert P. Schweihs. *Best Practices: Thought Leadership in Valuation, Damages, and Transfer Price Analysis*. Valuation Products and Services, LLC, 2019.
- Reilly, Robert F., and Robert P. Schweihs. *Guide to Property Tax Valuation*. Chicago: Willamette Management Associates Partners, 2008.
- Thimgan, Garth E. *Property Assessment Valuation*, 3rd ed. Kansas City, MO: International Association of Assessing Officers, 2010.
- Woolery, Arlo. *Property Tax Principles and Practice*. Boston: The Lincoln Institute of Land Policy, 1989.



Bibliography for Economic Obsolescence Measurements and CILM Method (cont.)

- Woolery, Arlo. *Valuation of Railroad and Utility Property*. Boston: The Lincoln Institute of Land Policy, 1992.

Journal Articles

- Gilliland, Charles E. "Protesting Makes Cents: Lowering Property Tax Assessments." *Property Taxes*, Real Estate Center of Texas A&M University (April 2003).
- Reilly, Robert. "Economic Obsolescence in the Property Tax Valuation of Industrial or Commercial Properties." *Journal of Multistate Taxation and Incentives* (August 2007): 7–12.
- Reilly, Robert. "Functional Analysis in the Intellectual Property Valuation, Damages, or Transfer Price Measurement." *les Nouvelles* (September 2020): 221.



Bibliography for Economic Obsolescence Measurements and CILM Method (cont.)

- Reilly, Robert. "The Property Tax Valuation of Customer Intangible Assets." *Corporate Taxation*, May/June 2014.
- Reilly, Robert. "The Unit Valuation of Taxpayer Assets for Property Tax Purposes." *The M&TS Journal* 30, no. 2 (2nd Quarter 2014).
- Reilly, Robert. "Measuring Economic Obsolescence in the Valuation of Special-Purpose Properties." *ABI Journal*, September 2007.
- Reilly, Robert. "Obsolescence Considerations in Industrial or Commercial Property Valuation." *Valuation Strategies*, November/ December 2010.
- Reilly, Robert. "Functional and Economic Obsolescence Procedures in Valuing Industrial Property." *Journal of MultiState Taxation and Incentives*, September 2012.



Bibliography for Economic Obsolescence Measurements and CILM Method (cont.)

- Reilly, Robert. "Measure Economic Obsolescence in Commercial Property Appraisals." *Valuation Strategies*, July/August 2013.
- Reilly, Robert. "Best Practices in the Measurement of Functional or Economic Obsolescence in the Valuation of Industrial or Commercial Property." *Journal of Multistate Taxation and Incentives*, July 2020.
- Reilly, Robert. "Measuring Obsolescence in Property Tax Appeals." *Construction Accounting and Taxation*, May/June 2020.
- Rhodes, Lester. "External Obsolescence and Complex Property." *Journal of International Machinery and Technical Specialties* 18, no. 1 (February 2001): 3.



Disclaimer

- The opinions and materials contained herein do not necessarily reflect the opinions and beliefs of the author's employer. In making this presentation, neither the presenter nor Willamette Management Associates, a Citizens company, is undertaking to provide any legal, accounting, or tax advice in connection with this presentation. Any party receiving this presentation must rely on its own legal counsel, accountants, and other similar expert advisors for legal, accounting, tax, and other similar advice relating to the subject matter of this presentation.

