

# Best Practices for Economic Obsolescence Measurements

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This discussion considers the application of the cost approach to appraise special-purpose industrial and commercial property. This discussion focuses on the identification and measurement of economic obsolescence within application of the cost approach. This topic is particularly relevant to the unit principle appraisals of public utility and utility-type property for state and local ad valorem tax purposes. After considering the differences between unit principle property appraisals and summation principle property appraisals, this discussion describes and illustrates the generally accepted economic obsolescence measurement methods (with particular emphasis on the capitalization of income loss method). Appraisers who develop unit principle property appraisals have to be able to (1) identify and distinguish (qualitatively and quantitatively) the various elements (or types) of obsolescence in a cost approach analysis of special-purpose industrial and commercial property, (2) explain and apply the generally accepted economic obsolescence measurements methods, (3) report and defend the economic obsolescence measurement analysis in a unit principle property tax appraisal, and (4) respond to typical taxing authority objections related to the proposed economic obsolescence adjustment.

## INTRODUCTION

This discussion focuses on the development of, and the reporting of, economic obsolescence measurements as a component of a cost approach appraisal of industrial and commercial property.

The cost approach is a generally accepted approach that is often applied to develop an appraisal of industrial or commercial property prepared for any purpose. In particular, the cost approach is typically the primary approach applied in the appraisal of special-purpose industrial or commercial property.

This discussion focuses on the appraisal of special-purpose industrial and commercial property for state and local ad valorem taxation purposes. This discussion is relevant to special-purpose property appraisals

developed for ad valorem tax planning, compliance, and controversy purpose.

This discussion focuses on unit principle property appraisals—in contrast to summation principle property appraisals. These technical appraisal terms will be defined below.

In summary, the unit principle of property appraisal is applied to appraise complex special-purpose properties that are physically, functionally, and economically integrated. Examples of such properties include electric generation plants, oil and gas refineries, pipelines, gas distribution systems, cable television systems, marinas, mining operations, sports stadiums, telecom systems, railroads, airlines, and many other types of properties.

The unit principle of property appraisal can be applied to complex property appraisals developed for any

purpose. However, this discussion focuses on appraisals developed for state and local property tax purposes.

The identification and measurement of economic obsolescence is one component of every cost approach appraisal of property value. Specifically, this discussion considers the following economic obsolescence measurement topics:

- Introduction to unit principle property appraisal concepts
- Economic obsolescence concepts
- Principles of economic obsolescence measurement
- Generally accepted economic obsolescence measurement methods
- Top 10 most typical assessor objections to economic obsolescence measurements
- Other typical assessor objections to economic obsolescence measurements
- Assessment authority considerations regarding obsolescence adjustments
- Summary and conclusion and bibliography

## UNIT PRINCIPLE AND SUMMATION PRINCIPLE PROPERTY APPRAISAL CONCEPTS

In the property tax appraisal of special-purpose industrial and commercial property, appraisers (and assessment authorities) often apply the unit principle of property appraisal to appraise a bundle of operating property collectively—as “a unit” or a single collection of property.

In the vernacular, appraisers apply the unit principle to appraise the total property unit from the “top down.”

The generally accepted unit principle property appraisal approaches and methods conclude a single value for the total property bundle.

This total unit value may be allocated to the individual property components within the total taxpayer property unit.

Such a total unit value allocation procedure may be necessary for a taxpayer property that crosses multiple taxing jurisdictions (such as a pipeline or gas distribution system). This allocation process allows the taxpayer (and the taxing authority) to assign a value to the property located in each individual taxing jurisdiction.

In the property tax appraisal of general-purpose commercial property (such as warehouses, hotels, office buildings, apartment buildings, etc.), appraisers (and assessment authorities) often apply the summation principle of property appraisal.

Appraisers (and assessment authorities) apply the summation principle to individually appraise each component of a bundle of operating and nonoperating property—as a portfolio of independent properties.

In the vernacular, appraisers apply the summation principle to appraise the total property portfolio from the “bottom up.”

The generally accepted summation principle of property appraisal approaches and methods concludes an individual value for each property in the total property portfolio (e.g., each property in a portfolio of hotels, office buildings, apartment buildings, etc.). Those individual property values may be “summed” to conclude the value of the total property portfolio.

When do appraisers apply the unit principle of property appraisal (instead of the summation principle of property appraisal)?

Particularly with regard to property appraisals developed for state and local ad valorem taxation purposes, appraisers typically apply the unit principle of property appraisal in the following instances:

- 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.”

Property owners (and other interested parties) often ask if there is a value conclusion impact of applying the unit principle of property appraisal versus the summation principle of property appraisal.

The answer is that a unit principle property appraisal and a summation principle property appraisal should conclude approximately the same property value if:

- both appraisal principles are applied to exactly the same bundle of property,
- both appraisals apply consistent valuation variables, and
- there are no scope restrictions on either appraisal

Historically, the unit principle of property appraisal was called the utility principle of property appraisal. That is because the unit principle of property appraisal was originally developed to appraise public utility property. In fact, the unit principle of property appraisal was originally developed to appraise rate-based, regulated public utility property.

However, today this unit principle of property appraisal is frequently applied by state and local tax assessment authorities to value both regulated utility property and many types of nonregulated utility-type property.

## GENERALLY ACCEPTED 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 (also more generally known as the 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

Appraisers typically consider each of these approaches and methods in the unit principle property appraisal. Appraisers typically apply each approach and method for which there are meaningful empirical data available to develop the component valuation variables.

In the selection and application of unit principle approaches and methods, ultimately, appraisers attempt to emulate the analyses of—and the actions of—market participants.

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, experienced property appraisers understand that the particular valuation procedures and analyses may be quite different between the two property appraisal principles.

And, the particular valuation variables applied and data sources used may be quite different between the two property appraisal principles.

It is noteworthy that, in a unit principle property appraisal, the terms “property” and “assets” are not the same. The term “property” is a legal term, generally defined by *Black’s Law Dictionary*, but specifically defined by state statutes. The term “asset” is an accounting term, defined by the Financial Accounting Standards Board Statement of Financial Accounting Concepts No. 8.

It is noteworthy that not all property may be recorded as an asset on a balance sheet prepared in compliance with U.S. generally accepted accounting principles (“GAAP”). And, 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 different terms may be used interchangeably.

## DIFFERENCES IN UNIT PRINCIPLE VERSUS SUMMATION PRINCIPLE APPRAISAL PROCEDURES

There are numerous differences between the unit principle and the summation principle with regard to both:

1. appraisal procedures performed and
2. valuation variable data sources applied.

The more significant of these many differences are summarized in Exhibit 1.

It is noteworthy that without numerous intentional adjustments, the unit principle of property appraisal and the summation principle of property appraisal:

1. will appraise two fundamentally different bundles of property and
2. will apply two fundamentally different sets of valuation variables/assumptions.

## THE UNIT PRINCIPLE PROPERTY APPRAISAL IS NOT A BUSINESS VALUATION

A unit principle property appraisal is not a business valuation! These two valuation analyses apply different sets of generally accepted valuation approaches.

That is, the property appraisal cost approach is not a generally accepted business valuation approach. And, the asset-based business valuation approach is not a generally accepted property appraisal approach. The unit principle of property appraisal cost approach is not the business valuation asset-based approach!

These two different types of valuation analyses have two fundamentally different objectives. The unit principle of property appraisal concludes the value of property operating on a value-in-use basis. That means that the valuation premise applied in the analysis is the going-concern premise.

The business valuation concludes the value of business debt and equity securities. That is, the valuation subject of the analysis is a going-concern business enterprise.

**Exhibit 1**  
**Unit Principle Appraisal versus Summation Principle Appraisal**  
**Differences in the Property Appraisal Procedures Applied**

Valuation Variable	Unit Principle Appraisal	Summation Principle Appraisal
<b>Income Approach</b>		
Type of income considered	Business operating income— from the sale of goods and services	Property rental income
Term of income	Perpetuity	Over the property’s useful economic life
Asset replacement	Perpetual property replacements	Property retirement after the property’s useful economic life
Discount rate	Extracted from capital market data	Market participant-required rates
Long-term growth rate	Business income growth—from all assets in place	Rental income growth—from specific property only
Direct cap rate	Discount rate minus long-term growth rate	Extracted from sales of comparable properties
<b>Cost Approach</b>		
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 useful economic life)
Economic obsolescence	Actual vs. required business income margins or business income return on investment	Location-specific rental income loss capitalized over property’s useful economic life
<b>Market Approach</b>		
Comparables selected	Comparable operating businesses sold; stock and debt securities of “comparable” public companies	Comparable individual properties sold
Adjustments based on	Size, profit margin, return on investment, growth rate	Location and physical characteristics
Pricing multiples applied	Price/business income metric	Price/physical or operational capacity metric

These two different types of valuation analyses conclude the value of two fundamentally different bundles of assets. These two different bundles of assets are illustrated in Exhibit 2.

In Exhibit 2, the acronym PVGO stands for “present value of growth opportunities.” PVGO is the present value of all future tangible property and all future intangible property that does not yet exist on the appraisal’s valuation date. PVGO includes investor expectations for the subject business enterprise with regard to future M&A transactions, future new products and services, future new territories and innovations, and future expansionary capital expenditures.

After a business acquisition, this PVGO value typically would be recorded as goodwill on a GAAP basis balance sheet.

This PVGO value cannot be subject to property tax. This is because the PVGO property does not exist on the property tax assessment date.

The term “intangible investment attributes” include the following value increments associated with using stock and bond capital market data in the application of the unit principle appraisal analysis:

- Value of stock market liquidity (including quick sale, low transaction costs, certain price)
- Value of stock market limited investor liability
- Value of having no capital calls on public securities
- Value of expected investment appreciation (vs. expected investment depreciation)
- Value of having no investment replenishment expenditures (vs. maintenance capital expenditures)
- Value of applying capital gain tax (vs. ordinary income tax on depreciation recapture) on any gain at sale

After a business acquisition, this value of intangible investment attributes typically would be recorded as goodwill on a GAAP-basis balance sheet.

This value of intangible investment attributes cannot be subject to property tax. That is because these intangible investment attributes are not considered to be property.

The following is the typical formula for application of the unit principle of property appraisal cost approach:

- Historical (may be original) cost
- Physical depreciation

Exhibit 2 Unit Principle Property Appraisal Bundle of Assets Appraised versus Business Valuation Bundle of Assets Appraised	
Unit Principle Appraisal Assets Appraised	Business Valuation Assets Appraised
Working capital accounts	Working capital accounts
Real estate	Real estate
Tangible personal property	Tangible personal property
Intangible personal property	Intangible personal property
	PVGO
	Intangible investment attributes

- Functional obsolescence
- Economic obsolescence
- = Unit value indication

Each of these four cost approach analysis components (one cost metric and three depreciation metrics) are typically developed in the aggregate—or as a “unit.” The data regarding the cost metric and the physical depreciation metric are typically extracted from the property owner’s continuing property record (“CPR”) or from a similar property accounting data set.

In the unit principle cost approach analysis, functional obsolescence is typically measured in the aggregate—or at the “unit” level.

However, it may be possible that the unit-level 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 one gas processing plant—as a component of the total pipeline unit). In the unit principle cost approach analysis, functional obsolescence typically relates to an inadequacy or a superadequacy within the unit.

In the unit principle cost approach analysis, 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. In the unit principle cost approach analysis, economic obsolescence typically relates to an inadequacy in the unit’s profitability or return on investment. Both metrics can be measured in many different ways.

Functional obsolescence is caused by factors internal to the taxpayer’s property unit. Functional obsolescence often manifests as an inadequate unit-level return on investment.



That inadequate return on investment may be caused by either:

1. inadequate profit or
2. superadequate investment.

The inadequate unit-level profit is typically due to excess operating expenses. These excess operating expenses relate to the operation of the unit's real estate and/or tangible personal property.

The excess operating expense is typically measured as the difference between:

1. the actual unit expense category (e.g., fuel expense, maintenance expense, etc.) and
2. the corresponding budgeted/projected expense level, historical expense level, industry average expense level, and other benchmark expense level.

The excess operating expense is typically capitalized as an annuity in perpetuity in order to measure the unit-level functional obsolescence.

The superadequate investment typically relates to excess capital costs. These excess capital costs relate to the taxpayer unit having more (or having the most costly) real estate and/or tangible personal property than it needs in order to operate at its current volume.

This unit-level functional obsolescence superadequacy is typically measured as the difference between:

1. the actual investment in the actual property and
2. 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. However, the property appraiser should be diligent to not double-count the amount of functional obsolescence.

In a unit principle property appraisal, an inutility analysis is sometimes applied to measure functional obsolescence. This is because inutility measures the amount of the taxpayer's property capacity that is not needed for the current volume of business operations.

Economic obsolescence is caused by factors external to the taxpayer unit 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. For example, the unit-level profit margin can be measured in any of the following ways:

- 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

For example, the unit-level return on investment can be measured in any of the following ways:

- 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 can be caused by any factor that is external to the unit's real estate or tangible personal property, including the following:

- Changes in technology
- Changes in industry conditions
- Competitor actions
- Property owner management actions
- Regulatory factors
- Income tax rate changes
- Interest rate changes
- Many other factors

In a unit principle property appraisal, the unit-level economic obsolescence is typically measured as either:

1. the amount of economic deficiency capitalized as an annuity in perpetuity or
2. the percentage difference between the unit's actual profit/return metric and a market-required profit/return metric.

## EXTERNAL OBsolescence VERSUS ECONOMIC OBsolescence

The term 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. Some examples of locational obsolescence include the following:

- 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 the application of a summation principle property appraisal and not in the application of a unit principle property appraisal.

Locational obsolescence is typically measured as the capitalization of rental income loss—over the subject property's useful economic life.

Economic obsolescence is a decrease in property value due to any external factors other than location or change in “neighborhood.” Economic obsolescence is typically a consideration in a unit principle property appraisal but may also be a factor in a summation principle property appraisal.

So, economic obsolescence is one subset or component of external obsolescence. Accordingly, the terms economic obsolescence and external obsolescence are not exactly synonyms.

## ECONOMIC OBSOLESCENCE MEASUREMENT PRINCIPLES

There is a difference between (1) identifying the existence of economic obsolescence and (2) measuring the unit-specific amount of 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 the taxpayer industry.

Economic obsolescence is often measured on a comparative basis. The economic obsolescence measurement comparison is often simplified as follows: What you have versus what you want.

The “what you have” metric is typically the subject unit's actual economic metric. The “what you want” metric is typically the market participants' required or benchmark level of the same economic metric.

The market participants' required or benchmark economic metric should be based on empirical data. That is, it should be derived from industry, public company, or subject taxpayer historical or prospective data.

The difference between the “what you have” or the actual economic metric and the “what you want” or benchmark economic 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 the actual economic metric and the “what you want”

or benchmark economic metric can also be converted into a dollar-based economic deficiency. That economic deficiency can be capitalized as an annuity in perpetuity in order to conclude an economic obsolescence dollar measurement.

Economic obsolescence can be measured as a deficiency in profit margin or as a deficiency in rate of return (including in the long-term growth rate component of return on investment).

The subject unit's profit margin deficiency can be influenced by any factors causing a deficiency in the unit-level profits (however measured) and a deficiency in the unit-level revenue (or in related utilization or inutility).

The subject unit's rate of return deficiency can be influenced by any factors causing a deficiency in the unit-level profits (however measured) and an excess in the unit level amount of (or the value of) investment (however measured).

The causes of (or the reasons for) the economic obsolescence should be external to the subject unit's real estate or tangible personal property. However, the causes of (or the reasons for) the economic obsolescence are not necessarily external to the subject unit business enterprise.

As a fundamental principle of both summation property appraisals and unit property appraisals, cost is not equal to value. Cost is not an indication of value. Rather, cost less all forms of depreciation provides an indication of value.

Economic obsolescence is not an adjustment from the unit value:

- Economic obsolescence is not subtracted from the unit value.
- Economic obsolescence is subtracted from the unit cost metric.
- Economic obsolescence is not an adjustment from a final cost approach value indication.
- Economic obsolescence is an adjustment in order to get to a final cost approach value indication.

The economic obsolescence measurement typically involves economic data and economic analyses. Experienced property appraisers are aware of the following observations:

- 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 analysis measurement can be developed when no income approach analysis is developed and 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 the following:

- Market extraction method
- Matched pair sales comparison method
- Capitalization of income loss method
- Inutility method

The application of the market extraction method involves the following analytical procedures:

- The appraiser first identifies the sales of comparable properties
- The appraiser second compares each property sale price to the cost less physical depreciation for each comparable property
- If the sale price exceeds the cost less depreciation, then there is no economic obsolescence
- If the sale price is less than the cost less depreciation, then the deficiency is considered to indicate economic obsolescence
- The economic obsolescence can be divided by the comparable property’s cost (or by the comparable property’s cost less depreciation) metric in order to calculate an economic obsolescence percent
- This economic obsolescence measurement percentage can be applied to the cost metric for the subject unit property

The application of the matched pair sales comparison method involves the following analytical procedures:

- The appraiser first identifies 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 sale pricing data are analyzed in order to calculate an economic obsolescence measurement percent

- This economic obsolescence measurement percentage can be applied to the cost metric of the subject unit property

The application of the capitalization of income loss method (“CILM”) includes the following analytical procedures:

- The appraiser analyzes one or more property-specific income (profit margin or rate of 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 actual income (margin or rate of return) metric and the benchmark income (margin or rate of return) metric
- The appraiser applies this difference in the income metrics (i.e., actual vs. benchmark) to the subject unit property (either as a percentage measure or as a capitalization of the income deficiency)

The inutility method of obsolescence measurement typically 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 = the property’s design or rated production or utilization

Actual capacity = the property’s actual production or utilization

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

This inutility obsolescence measurement method assumes that economic obsolescence is directly proportional to inutility (or to underutilization). This obsolescence measurement method assumes that all costs of the unit’s production/utilization are variable. That is, there are no unit-level fixed costs. Therefore, the unit-level profit margin is assumed to remain constant (and adequate) at all property utilization levels.

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. The inutility method measures the unit's deficiency in volume (production) but not the unit's deficiency in profit margins or rates of return.

Exhibit 3 summarizes and compares the relative strengths and weaknesses of the generally accepted economic obsolescence measurement methods.

## ALL COST APPROACH METHODS SHOULD CONCLUDE ABOUT THE SAME VALUE

There should be one synthesized total unit value conclusion for the subject taxpayer property unit. There should be one synthesized unit value conclusion developed by the application of the cost approach.

All cost approach property appraisal methods should conclude mutually supported unit value indications. The different cost approach property appraisal methods should not conclude materially different unit value indications.

While cost metrics may vary between the various cost approach property appraisal methods, the depreciation measurement metrics should also vary between the cost approach property appraisal methods.

In particular, the economic obsolescence measurements should vary between the various cost approach property appraisal methods—and bring the various method unit-level value indications in line with each other.

This concept of offsetting cost metrics and offsetting depreciation/obsolescence metrics is illustrated in Exhibit 4.

The different cost approach property appraisal methods assume different benchmark units of operating property. These different benchmark units of property typically manifest different depreciation components.

Typically, the changes in the benchmark depreciation components approximately offset the changes in the benchmark cost metrics. Accordingly, alternative cost approach property appraisal methods should conclude generally comparable values for the same unit of operating property.

## CAPITALIZATION OF INCOME LOSS METHOD PRINCIPLES AND PROCEDURES

The application of the CILM quantifies the first principle of economic obsolescence measurement. That is, economic obsolescence considers the difference between:

1. the actual economic condition of the subject unit and
2. the required (or the market participants' opportunity return) economic condition of the subject unit.

The difference in the subject unit's actual economic condition versus required (i.e., market participant) economic condition can be measured by the following:

- Profit margins
- Returns on investment
- The individual components of either of these two margin or return financial fundamentals, including the following:
  - 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 subject unit's operations

The difference in the subject unit's profit margin can be measured different ways through various income or cash flow components, including the following:

- Before or after tax
- Before or after debt service
- Before or after nonoperating expense
- Dollar revenue or per unit revenue
- Dollar expense or per unit expense
- Market size, market share, or market demand

The difference in the subject unit's return on investment can be measured different ways through various income, cash flow, or investment components, including the following:

- 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

Exhibit 3  
 Generally Accepted Economic Obsolescence Measurement Methods  
 Comparison of Application Strengths and Application Weaknesses

Measurement Method	Application Strengths	Application Weaknesses
Market extraction	<ul style="list-style-type: none"> <li>Market-based analysis is based on empirical transaction evidence</li> </ul>	<ul style="list-style-type: none"> <li>For most unit appraisals, it is difficult to identify comparable unit sales</li> <li>For most unit appraisals, it is difficult to measure the cost less depreciation of the comparable units</li> </ul>
Matched pair sales comparison	<ul style="list-style-type: none"> <li>Market-based analysis is based on empirical transaction evidence</li> </ul>	<ul style="list-style-type: none"> <li>For most unit appraisals, it is difficult to identify matched pair sales (specifically a subject unit matched pair sale)</li> <li>It may be difficult to associate the before and after unit value decrease with economic obsolescence</li> </ul>
CILM	<ul style="list-style-type: none"> <li>Actual profit margins and actual ROIs are based on empirical evidence</li> <li>Required profit margins and return on investments are based on empirical evidence</li> <li>Comparing the subject unit ROI to the subject unit cost of capital utilizes a perfect comparable</li> </ul>	<ul style="list-style-type: none"> <li>It may be difficult to identify benchmarks for comparison</li> <li>It may be difficult to identify benchmark time periods for comparison</li> <li>At least one application of this method should be based on a return on (pre-economic obsolescence adjustment) cost approach value indication</li> </ul>
Inutility	<ul style="list-style-type: none"> <li>Both actual and benchmark data are generally available at the subject unit</li> <li>This “textbook” formula provides the appearance of precision</li> </ul>	<ul style="list-style-type: none"> <li>The appraiser may have to justify the rated or design capacity as an achievable benchmark</li> <li>Scale factor exponent data are not always available</li> <li>This method can be associated with either functional obsolescence or economic obsolescence</li> <li>The 100% variable cost assumption is usually not valid; so this method may understate the measurement of economic obsolescence</li> <li>Unit product/service price decreases usually accompany unit product/service volume decreases; therefore, so profit margins and returns on investment typically decrease at a greater rate than does the utilization decrease.</li> </ul>

## Exhibit 4

### Illustrative Example of How Depreciation Metric Changes May Often Offset Cost Metric Changes

Cost Approach 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	600,000	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 ÷ 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 × 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 ÷ J)	<u>100,000</u>	<u>500,000</u>	<u>400,000</u>
L Value indication (rounded) (D – K = value)	<u>\$500,000</u>	<u>\$500,000</u>	<u>\$500,000</u>

EO = Economic obsolescence

FO = Functional obsolescence

HCLD = Historical cost less depreciation

PD = Physical depreciation

RPCNLD = Reproduction cost new less depreciation

RCNLD = Replacement cost new less depreciation

ROI = Return on investment

#### Notes:

[1] Effective age varies based on the benchmark cost metric.

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

[3] Capitalization rate = the unit's cost of capital (assumes a 0 percent expected long-term growth rate as a simplifying assumption).

- Net tangible assets
- Current value of tangible assets
- Total assets
- The owners' equity
- Total invested capital (owners' equity plus long-term debt)
- 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)
- Property owner management or industry expectations at the time of a subject unit investment

The benchmark for the subject unit's economic condition performance can be any benchmark that is not (or is less) influenced by economic obsolescence, including the following:

The benchmark level of economic performance can be any benchmark that is not (or is less) influenced by economic obsolescence, including the following:

- Mean, median, or other central tendency measures
- Top 25 percent or top 10 percent of the benchmark data array
- The highest data point in the benchmark data array (e.g., the top performing company or the best performance time period)

If the subject taxpayer's industry is generally impacted by economic obsolescence, then the use of mean or median benchmarks will typically understate the economic obsolescence measurement. This is because the mean or the median benchmark metrics themselves will be impacted by the existence of industry-wide economic obsolescence.

When economic obsolescence affects the benchmark metrics, then it may be appropriate to use the top performing data point (e.g., the top 10 percent or the top individual company) to measure the unit-level economic obsolescence.

This is because market participant investors will require the achievable economic metrics produced by the top performer in the taxpayer's industry—that is, the benchmark that is not (or is least) affected by the industry-wide economic obsolescence.

## SIMPLIFIED ILLUSTRATIVE EXAMPLE OF THE CAPITALIZATION OF INCOME LOSS METHOD

This section provides a simplified illustrative example of the application of the capitalization of income loss method of economic obsolescence measurement.

There are numerous specific applications of the CILM, but they all involve some quantification of either a profit deficiency, a return deficiency, or some other measure (price decrease, cost increase, volume decrease, etc.) of income deficiency.

The CILM is a frequently applied economic obsolescence measurement method in a unit principle property appraisal developed for state and local tax planning, compliance, or controversy purposes.

In this illustrative example, let's assume that the appraiser's unit principle cost approach analysis concludes the following results:

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

In this illustrative example, let's assume the following unit-level operating results:

Representative operating cash flow	\$6 million
(may be the unit-level historical average or the unit's expected next period operating results)	

And, let's assume that the appraiser analyzes the following actual unit-level economic condition:

Representative operating cash flow	\$6 million
÷ Unit cost less PD less FO investment	<u>100 million</u>
= Actual unit-level return on investment	6%

Now, let's assume the following required (or market-participant-derived) unit-level economic condition:

Unit weighted average cost of capital	12%
– Expected long-term growth rate in the selected income metric	<u>2%</u>
= CILM direct capitalization rate (i.e., the required income return on investment)	10%

Based on the above-listed hypothetical data, let's assume the following unit-level economic obsolescence measurement:

Required income return on investment (i.e., direct capitalization rate)	10%
– Actual unit-level return on investment	<u>6%</u>
= Rate of return on investment deficiency (i.e., income loss)	4%

Rate of return on investment deficiency	4%
÷ Required income return on investment (i.e., direct capitalization rate)	<u>10%</u>
= Economic obsolescence measurement percentage	40%

Using the same illustrative example data set, let's consider another application of the CILM. Let's assume an alternative economic obsolescence measurement as follows:

Unit cost less PD less FO	\$100 million
× Required income return on investment (i.e., direct capitalization rate)	<u>10%</u>
= Required unit-level income metric	\$10 million

Required unit-level income metric	\$10 million
– Actual unit-level representative operating cash flow	<u>6 million</u>
= Income loss (i.e., required income – actual income = income loss)	\$4 million

The following calculation presents one application of the CILM to quantify the subject unit's economic obsolescence measurement conclusion:

Unit cost less PD less FO	\$100 million
× Economic obsolescence percentage	<u>40%</u>
= Economic obsolescence dollar measurement	\$40 million

The following calculation presents an alternative application of the CILM to quantify the subject unit's economic obsolescence. This CILM application conclusion is presented below:

Income loss (i.e., required income – actual income = income loss)	\$4 million
÷ Direct capitalization rate	<u>10%</u>
= Economic obsolescence dollar measurement	\$40 million

Based on the cost data and the CILM economic obsolescence measurement calculations, we can conclude the unit principle property appraisal cost approach analysis. The illustrative example cost approach unit-level value conclusion is presented below:

Unit cost less PD less FO	\$100 million
– Economic obsolescence dollar amount	<u>40 million</u>
= Cost approach unit-level value indication	\$60 million

## TOP 10 ASSESSOR OBJECTIONS TO ECONOMIC OBSOLESCENCE MEASUREMENTS

Exhibit 5 presents many of the typical assessment authority objections to unit-level economic obsolescence measurements. These typical objections are not presented in any particular order of priority or importance.

These typical objections assume that the state or local assessment authority has been presented with the taxpayer's unit principle property appraisal of the subject industrial or commercial property. The taxpayer's unit principle appraisal includes a cost approach analysis. And, the cost approach analysis encompasses the identification and quantification of unit-level economic obsolescence with regard to the subject taxable property.

A discussion of each of these “top 10” typical objections—and a recommended best practices response to each objection—is presented next.

## ECONOMIC OBSOLESCENCE MEASUREMENT OBJECTION 1: THE COST APPROACH BECOMES THE INCOME APPROACH

### Assessor Objection

Economic obsolescence converts the property appraisal cost approach into the income approach.

### Best Practices Response

All property appraisal professional literature, professional standards, and professional guidance recognize three generally accepted property appraisal approaches:

- Cost approach
- Market approach
- Income approach

All unit principle property appraisal professional literature, professional standards, and professional guidance also recognize three generally accepted unit principle property appraisal approaches:

- Cost approach
- Market approach
- Income approach

All appraisal professional literature, professional standards, and professional guidance recognize three types of property 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. That method is typically called the income shortfall method. For that reason, the income shortfall method is not considered a generally accepted economic obsolescence measurement method.

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

#### Step 1

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



## Exhibit 5 Top 10 Typical Assessor Objections to 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* textbook
6. The appraiser needs to identify and quantify the specific causes of the economic obsolescence
7. Economic obsolescence was caused by management's bad decisions
8. Economic obsolescence is already captured in the income approach and the market approach
9. Economic obsolescence is caused by factors external to the subject taxing jurisdiction
10. The appraiser cannot associate the unit economic obsolescence with specific real estate or tangible personal property

### Step 2

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

As indicated in the above illustrative application of the income shortfall method:

- the appraiser has to develop an income approach analysis and conclusion before completing the cost approach analysis and
- the income shortfall method always forces the cost approach unit value indication to exactly equal the income approach unit-value indication.

Neither the CILM nor any of the other generally accepted economic obsolescence measurement methods 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. In fact, the cost approach analysis can be concluded when no income approach analysis is ever developed.

It is true that all economic obsolescence analyses consider “economics.” That is, all economic obsolescence measurements encompass some analysis of some unit-level income-related data.

All market approach analyses also consider some type of subject property income-related data (e.g., market-derived pricing multiple x subject property income metric). However, the consideration of some income-related data does not convert the cost approach—or the market approach—into the income approach.

## ECONOMIC OBSOLESCENCE MEASUREMENT OBJECTION 2: THE CILM IS THE INCOME SHORTFALL METHOD

### Assessor Objection

The income shortfall method is not a generally accepted economic obsolescence measurement 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 the authoritative appraisal literature published by numerous valuation professional organizations, including the following:

- American Society of Appraisers
- Appraisal Institute
- American Institute of Certified Public Accountants
- International Association of Assessing Officers
- Other organizations

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, or in relevant judicial decisions.

The typical application of the income shortfall method is based on the difference between:

1. the income approach unit-level value indication and
2. the cost approach unit-level value indication (before the recognition of economic obsolescence).

The mathematical difference between these two unit-level value indications is the economic obsolescence measurement.

It is true that the income shortfall method results in the cost approach unit-level value being identical to the income approach unit-level value.

In contrast, the CILM is based on the difference between:

1. the unit's actual profit margin or return on investment metric (based on the cost approach pre-economic-obsolescence indication) and
2. the unit's required profit margin or return on investment metric (based on a market participant benchmark or opportunity return metric).

The CILM is not a residual measurement method. The CILM does not equate the cost approach unit-level value with the income approach unit-level value. The CILM can be developed independently from (and without ever developing) the income approach.

The CILM is not the income shortfall method.

## ECONOMIC OBSOLESCENCE MEASUREMENT OBJECTION 3: CILM DOES NOT RELY ON EMPIRICAL DATA

### Assessor Objection

The application of the CILM does not rely on any 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.

It is important to recall that the CILM compares:

1. the unit's actual economic condition to
2. the unit's required economic condition.

All data related to the unit's actual economic condition (e.g., profit margin or return on investment or any component there of—such as market share) are empirical

data related to the subject unit's actual results of operations.

All data related to the unit's required economic condition are based on market participants' required (or opportunity) profit margin or return on investment economic condition.

These market participants' required margins or returns are derived from the following:

- Guideline company empirical evidence
- Selected most comparable company empirical evidence
- Taxpayer 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 unit property appraisers typically cannot extract required rates of return from the actual sales of comparable property units. This is because for special-purpose properties:

- few other property units would be sufficiently comparable to the subject unit,
- comparable property units rarely sell, and
- the comparable property units that do sell rarely disclose their unit-level operating income data.

Nonetheless, the data applied in the typical CILM analysis are all market-derived empirical data. This is because the profit margin or the return on investment data were actually earned by market participants who invested in actual guideline public companies, industry benchmark companies, or the subject taxpayer company.

## ECONOMIC OBSOLESCENCE MEASUREMENT OBJECTION 4: CILM BENCHMARKS ARE NOT ACHIEVABLE

### Assessor Objection

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

### Best Practices Response

The financial or operational benchmarks included in the CILM analysis are typically based on empirical data related to one or more of the following:

- Actual taxpayer unit or actual taxpayer industry cost of capital data
- Actual public company results of operations
- Actual taxpayer industry (e.g., trade association) results of operations
- Actual subject unit historical results of operations

The benchmark economic metrics are not the property owner’s “wishful thinking.” Rather, the owners or operators of industry participants (e.g., public competitors, private competitors, the subject unit) actually achieved the benchmark economic metrics. That is how the benchmark metrics became the benchmark metrics.

As of the valuation date, the subject unit may not be achieving the benchmark metrics. In fact, that income deficiency (compared to the benchmark) is the indication of economic obsolescence with regard to the subject unit.

However, market participants did earn the benchmark returns at alternative investment opportunities. Or, the subject taxpayer did previously earn the benchmark returns at the subject unit.

These benchmark returns represent the “opportunity return” on an alternative investment available to the market participants. Therefore, the market participants will price an investment in the subject unit (i.e., they will apply economic obsolescence to the subject unit cost metric) in order to earn that opportunity rate of return on the subject unit-level value.

The CILM benchmarks were achieved by some industry participants. That is how those margins or returns became the benchmark data. Therefore, market participants expect to earn the benchmark returns on an investment in the subject unit.

## ECONOMIC OBSOLESCENCE MEASUREMENT OBJECTION 5: THE UNIT PRINCIPLE CILM IS NOT DESCRIBED IN THE *APPRAISAL OF REAL ESTATE* TEXTBOOK

### Assessor Objection

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

### Best Practices Response

The *Appraisal of Real Estate* textbook describes summation principle property appraisal procedures—not unit

principle property appraisal procedures. *The Appraisal of Real Estate* CILM description considers a deficiency in a single property rental income (i.e., a deficiency compared to the current market comparable property rental income).

Unlike a single rental property subject to a summation principle appraisal, the subject unit does not generate rental income. Rather, the subject unit generates business operating income. In a unit principle property appraisal, the income loss, if any, would relate to business operating income.

The current market rental income (described in the *Appraisal of Real Estate*) 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 principle appraisal being comparable rental properties, the “market” in a unit principle appraisal is the return offered to investors by benchmark public companies, by private company competitors (i.e., the taxpayer industry), or by 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. The unit principle CILM measures any deficiency in the income earned by operating the subject total unit of operating property.

The unit appraisal principle CILM is conceptually identical to the *Appraisal of Real Estate* summation appraisal principle (or single property) CILM. The unit principle CILM is supported by authoritative professional literature related to the unit principle of property appraisal.

## ECONOMIC OBSOLESCENCE MEASUREMENT OBJECTION 6: QUANTIFY THE INDIVIDUAL CAUSES FOR ECONOMIC OBSOLESCENCE

### Assessor Objection

The appraiser must identify and quantify each individual cause of (or each individual 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 causation-identification procedure.

It is noteworthy that ALL professional guidance indicates that the generally accepted formula for the application of the cost approach is as follows:

Cost measure

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

That is, NO professional guidance indicates that the generally accepted formula for the application of the cost approach is as follows:

Cost measure

- Physical deterioration
- Functional obsolescence
- Economic obsolescence from cause number 1
- Economic obsolescence from cause number 2
- Economic obsolescence from cause number 3
- = Value indication

Second, property appraisers do not identify and quantify the individual causes for any other type of appraisal depreciation. For example, property appraisers do not associate specific physical deterioration penalties with individual physical defects at a subject property.

In any other property appraisal, appraisers do not assign responsibility for the following:

- Who was responsible for not maintaining the subject facility, thereby causing the leaking roof.
- Who was responsible for installing too heavy equipment, thereby causing the facility's cracked floor.
- Which lift truck operator ran into the side of the building, thereby causing the facility's slanted wall.
- Which heavy trucks drove to and from the plant, thereby causing cracks in the facility's driveway.

Instead, in any other property appraisal, the appraiser concludes total physical depreciation. For example, the physical depreciation analysis for the typical industrial or commercial property may conclude any of the following:

- The actual age of the subject property is 20 years.
- The effective (observed) age of the subject property is 30 years.



- The expected useful economic life (“UEL”) of the subject property is 40 years.
- The subject property is in below-average condition for its age.
- The subject property is, therefore, 75 percent (i.e., 30-year effective age ÷ 40-year UEL) depreciated.

It is true that the property appraiser may note any subject property physical defects in the property appraisal report. But, the appraisal report does not assign responsibility for—or individual depreciation penalties to—individual depreciation “causes.”

Second, related to the measurement of economic obsolescence in the unit principle appraisal, property appraisers are not required to identify and quantify the following:

- Which competitor was taking market share from the subject unit
- Which purchasing executive signed the unfavorable supply contract, causing increased raw materials costs to the subject unit
- Which financial executive signed the financing agreement, allowing for increased interest rates to the subject unit
- Which taxpayer executive decided to expand the plant capacity during a period that ultimately became an industry downturn

Third, a property appraisal (whether a summation principle appraisal or a unit principle appraisal) is not a blame game.



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## “[U]nit managers typically cannot control the outcomes of their investment or operational decisions.”

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A property appraisal concludes value, not responsibility, liability, or causation. These are legal concepts that may determine who should pay damages to a damaged party. These legal concepts are not appraisal concepts related to determining who or what caused the unit-level 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 the following:

- Decreased revenue (e.g., decreased price, volume, or market share)
- Increased operating or financing expenses
- Decreased profitability or growth rate
- Increased capital investment

These economic variables are the “cause” or the “explanation” for the subject unit-level economic obsolescence.

## ECONOMIC OBSOLESCENCE MEASUREMENT OBJECTION 7: POOR MANAGEMENT CAUSES POOR PERFORMANCE

### Assessor Objection

If economic obsolescence does exist at the subject unit, it was caused by the unit management’s bad decision making.

### Best Practices Response

The first inference of this common assessor objection is that the taxpayer management deliberately decreased the value of the unit property in order to decrease the property tax expense. The illogical conclusion of this objection is that the unit property owner would prefer to own a less profitable business operation than to pay property tax expense.

The second inference of this common assessor objection is that the unit property owner would allow incompetent management to continue to inefficiently operate the subject unit’s business operations. Of course, the fact is that whether the unit is owned by a public company or a private company, the unit property owners will quickly replace incompetent managers with competent managers.

It is also noteworthy that all unit-level business decisions should be evaluated when they were made—not in hindsight.

It is easy for an assessor (or any other party) to look back years after the fact and second-guess the unit management’s investment and operational decisions. But, of course, unit management decisions can only be evaluated in light of the known competitive and economic conditions that existed at the time that those management decisions were made.

Unit managers are not expected to make perfect investment or operational decisions every time. In defense of shareholder litigation claims, company directors are typically protected by what is called “the business judgment rule.” In the case of unit principle appraisals, unit management decisions should be evaluated by reference to a similar business judgment rule.

It is also noteworthy that unit managers typically cannot control the outcomes of their investment or operational decisions.

In regulated industries, management decisions are strongly influenced by regulatory authorities. And, in nonregulated industries, the outcomes of management decisions are strongly influenced by competitors’ actions, customer preferences, general economic conditions, and general capital market conditions.

All that said, so-called “bad” management decisions still result in economic obsolescence with respect to the unit property. Economic obsolescence is due to factors outside of the subject property—NOT outside of the subject property owner. A unit principle appraisal is a property appraisal—and NOT a property owner appraisal.

The decisions of the property owner management are external to the unit’s physical property itself. If the reason for the unit’s inadequate economic condition (e.g., profit margin, return on investment, growth rate) are not due to the age, condition, inadequacy, or superadequacy of the physical property, then the inadequate economic condition indicates the existence of unit-level economic obsolescence.

## ECONOMIC OBSOLESCENCE MEASUREMENT OBJECTION 8: ECONOMIC OBSOLESCENCE IS ALREADY CONSIDERED IN THE INCOME APPROACH AND THE MARKET APPROACH

### Assessor 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 also 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.

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.

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 for the subject unit property.

## ECONOMIC OBSOLESCENCE MEASUREMENT OBJECTION 9: ECONOMIC OBSOLESCENCE CAUSES ARE EXTERNAL TO THE TAXING JURISDICTION

### Assessor Objection

The factors that cause the subject unit to experience economic obsolescence are external to the subject taxing jurisdiction.

### Best Practices Response

Assessment authorities sometimes believe that they are being “blamed” or “punished” for any economic or

industry phenomena that are occurring outside of their taxing jurisdiction. However, a unit principle property appraisal is not the blame game.

No party is blamed for the existence of economic obsolescence—in the subject unit or in the subject industry. Economic obsolescence is typically caused by uncontrollable customer, competitor, capital market, microeconomic, and macroeconomic conditions.

Economic obsolescence is always caused by factors that are outside of (or external to) the subject unit property. Those factors may also be external to the state or local taxing jurisdiction.

Those factors that cause the subject unit's economic obsolescence 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, and so forth.

There is no appraisal principle that requires (or even implies) that unit property values can only be influenced by factors constrained by the town, county, or state in which the unit property is located.

Economic obsolescence is caused by factors that are external to the subject property—and not by factors that are external to the subject property AND internal to the subject taxing jurisdiction.

Assessment authorities are used to residential property values being influenced by Federal Reserve interest rate policy, national inflation and unemployment rates, and other economic factors that are external to the subject taxing jurisdiction.

## ECONOMIC OBSOLESCENCE MEASUREMENT OBJECTION 10: UNIT ECONOMIC OBSOLESCENCE CANNOT BE ISOLATED TO THE PROPERTY LOCATED IN THE TAXING JURISDICTION

### Assessor Objection

Economic obsolescence is a unit-wide value adjustment. Economic obsolescence is not measured or applied specifically to the local (i.e., within the taxing jurisdiction) real estate or tangible personal property.

### Best Practices Response

The statement included in this common assessor objection is correct. In a unit principle property appraisal, economic obsolescence is typically measured on a total unit-level basis. It is typically not measured separately for

each individual taxing jurisdiction in which the subject taxpayer unit operates.

In a unit principle property appraisal, most of the valuation variables are measured on a total unit-level basis, including the following:

- Cost trend factors
- Average total life of each property category
- Functional obsolescence (e.g., any capitalized excess operating expense)
- Economic obsolescence (e.g., any CILM analysis variables)

If the valuation variables are measured separately for each individual property location, that analysis is not really a unit principle property appraisal. Rather, such an analysis is probably a summation principle property 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-level basis.

Because of the integrated nature of the unit property components, all property located in all taxing jurisdictions typically experience the same level of economic obsolescence. And, that unit-level economic obsolescence adjustment is typically measured as a percentage adjustment to any cost approach value indication.

It is inconsistent with the unit principle of property appraisal—and inconsistent with the integrated nature of the operations of the subject unit property—to assign a different economic obsolescence percentage to properties located in each individual taxing jurisdiction.

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

## OTHER ASSESSOR OBJECTIONS TO ECONOMIC OBSOLESCENCE MEASUREMENTS

The next section of this discussion summarizes other typical assessment authority objections to economic obsolescence measurements. These objections are not quite as common as the previously listed assessor objections. However, these objections are still raised fairly often. And, appraisers (and taxpayer property owners) should be aware that there are also best practices responses to these typical assessor objections.

Exhibit 6 presents a list of these other common assessor objections to economic obsolescence measurements. Each of these other assessor objections are described (and responded to) in the following section.

## ECONOMIC OBSOLESCENCE MEASUREMENT OBJECTION 11: ECONOMIC OBSOLESCENCE MEASUREMENTS CHANGE MATERIALLY OVER TIME

### Assessor Objection

The subject unit's economic obsolescence measurement can change materially from one year to the next year.

### Best Practices Response

The statement included in this common objection is correct. Property values—including unit property values—can change from year to year.

Most unit principle property 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 also change from year to year. Therefore, the unit's required economic returns may fluctuate over time.

The difference between the subject unit's actual returns and the market participants' required returns may change from year to year. Therefore, the unit-level economic obsolescence may fluctuate over time.

Assessment authorities often experience fluctuations in property values due to economic obsolescence. For example, residential property values change (inversely) over time due to changes in mortgage interest rates.

Like homeowners, unit property owners may decide not to sell their property during the 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 (whether residential property or unit property) is depressed.

The objective of the unit principle property appraisal (or of any property appraisal) is to estimate a current property value—and not a constant property value over time.

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 method analysis.
5. There can be no economic obsolescence if the unit or the industry market value/book value ratio exceeds one.
6. The appraiser double-counted functional obsolescence and economic obsolescence.
7. Industry-wide economic obsolescence should not result in a taxpayer-specific value adjustment.
8. Economic obsolescence is temporary—or cyclical.
9. Investors expect economic obsolescence in certain industries so the appraisal should not adjust for that factor.
10. Investors expect the subject unit to underperform, therefore, the appraisal should not adjust for economic obsolescence.

## ECONOMIC OBSOLESCENCE MEASUREMENT OBJECTION 12: THERE IS NO ECONOMIC OBSOLESCENCE WITHOUT A GAAP IMPAIRMENT CHARGE

### Assessor Objection

If the taxpayer's property actually experienced economic obsolescence, then the taxpayer would have to record an impairment charge "write-down" on its generally accepted accounting principles ("GAAP") basis financial statements.

### Best Practices Response

There are very specific accounting tests required for determining the impairment of a long-lived asset under U.S. GAAP. The guidance for such an asset impairment is provided by Financial Accounting Standards Board Accounting Standards Codification ("ASC") topic 360, *Property, Plant, and Equipment*.

Specifically, the asset impairment accounting guidance is provided in ASC topic 360-10, *Impairment or Disposal of Long-Lived Assets*.

ASC topic 360-10 provides for a very specific quantitative test for an asset impairment:

- If the sum of future cash flow over the asset's remaining useful life equals or exceeds the asset's net book value ("NBV"), then an asset impairment is not permitted.
- If the sum of the future cash flow over the asset's remaining life is less than the asset's NBV, then an asset impairment is required.

The taxpayer property owner cannot elect to take an asset impairment charge under U.S. GAAP. Either an asset impairment is required by ASC topic 360 or it is prohibited by ASC topic 360.

There is no provision in ASC topic 360-10, or in any other U.S. GAAP, for any consideration of economic obsolescence.

To illustrate the application of ASC topic 360-10, let's consider a simplified example. Our ASC topic 360-10 simplified illustrative example assumptions are as follows:

- Subject property NBV = \$10,000,000
- Subject property remaining useful life = 10 years
- Subject property annual cash flow = \$1,000,000

The ASC topic 360-10 long-lived asset impairment test would be developed as follows:

- Sum of cash flow over the asset's remaining useful life – \$10,000,000
- Subject property NBV – \$10,000,000
- Conclusion: An asset impairment is not allowed
- Property's actual internal rate of return (i.e., return on investment over the property's remaining useful life) – 0%

Now, let's consider the economic obsolescence implications of the same illustrative data set. Any positive market-derived required return on investment percent compared to a 0 percent property actual internal rate of return would indicate a substantial amount of property economic obsolescence.

Under the provisions of ASC topic 360-10, an asset impairment is not allowed until the property's actual

internal rate of return is negative (not less than the property's required rate of return—but actually negative).

Let's consider the following fundamental conceptual differences between (1) an economic obsolescence measurement and (2) the GAAP asset impairment test.

The economic obsolescence benchmark is (1) a market-required rate of return compared to (2) the incomplete (pre-economic obsolescence) cost approach metric. In contrast, the asset impairment benchmark is (1) the undiscounted cash flow generated by the asset compared to (2) the NBV of the asset.

Accountants appreciate that the ASC topic 360-10 asset impairment test is intended to be extremely difficult to “fail.” This GAAP asset impairment test is intended to be difficult to “fail” for the following reasons:

- An asset impairment is permanent.
- An asset impairment (or “write-down”) cannot be reversed.
- An impaired asset value cannot be “written up” when the subject property economic conditions improve.

In contrast to the GAAP asset impairment test, a unit-level value will increase in the future when the subject unit's economic conditions improve (and the subject unit's economic obsolescence decreases).

It is important for the appraiser and the taxpayer property owner to understand that there is absolutely no relationship between (1) the ASC topic 360-10 asset impairment accounting and (2) the recognition of economic obsolescence in a cost approach property approval.

It is also noteworthy that there is also no provision in ASC topic 360-10 for the asset owner to explain any of the reasons for—or any of the causes of—an asset impairment.

## ECONOMIC OBSOLESCENCE MEASUREMENT OBJECTION 13: THE PROPERTY OWNER SHOULD MAKE A PUBLIC DISCLOSURE OF ECONOMIC OBSOLESCENCE

### Assessor Objection

If the subject unit really experienced economic obsolescence, then the taxpayer property owner would have to publicly disclose that obsolescence.

## Best Practices Response

There is no Financial Accounting Standard Board U.S. GAAP requirement to disclose economic obsolescence.

There is no International Accounting Standards Board international (or IFRS) GAAP requirement to disclose economic obsolescence.

There is no Securities and Exchange Commission requirement to disclose economic obsolescence.

There is no New York Stock Exchange requirement to disclose economic obsolescence.

There is no Nasdaq requirement to disclose economic obsolescence.

There is no Internal Revenue Service requirement to disclose economic obsolescence.

There is simply no requirement for a taxpayer property owner to disclose the existence of unit-level economic obsolescence to anyone.

## ECONOMIC OBSOLESCENCE MEASUREMENT OBJECTION 14: THE APPRAISER CANNOT “SUBTRACT” ECONOMIC OBSOLESCENCE FROM HCLD

### Assessor Objection

It is not appropriate for an appraiser to “subtract” economic obsolescence in a historical cost less depreciation (“HCLD”) method cost approach analysis.

## Best Practices Response

First, economic obsolescence is not a “subtraction” from any cost measurement. Like all other types of appraisal depreciation, economic obsolescence is an adjustment from a preliminary cost approach metric indication that is applied in order to conclude a value indication.

Second, the cost approach HCLD appraisal method is not the same as accounting net book value. It is a correct statement that a GAAP accounting net book value figure does not recognize the existence of unit-level economic obsolescence. Rather, accounting NBV only considers accounting depreciation.

In contrast to accounting NBV, the HCLD property appraisal method is based on (1) the unit-level historical cost (or original cost, if available) less (2) all forms of appraisal depreciation.

In any cost approach analysis, appraisal depreciation includes the following three components:

- Physical deterioration
- Functional obsolescence
- External obsolescence (including economic obsolescence)

Typically, total appraisal depreciation does not equal total accounting depreciation. This is because accounting depreciation is intended to systematically allocate the cost of a property investment over the expected useful economic life of the property. Typically, accounting depreciation is not intended to indicate or even approximate a current market value for a property.

Some regulated industry entities have to apply regulatory accounting principles (including what are often called regulatory depreciation principles) for certain compliance purposes.

These regulated industry entities can elect to apply regulatory accounting principles as their GAAP accounting principles under the provisions of Financial Accounting Standards Board ASC topic 980, *Regulated Operations*. In such instances, the regulatory accounting depreciation becomes the financial accounting depreciation for those regulated entities.

The HCLD method of the cost approach to property appraisal is summarized as follows:

Historical cost  
 – Appraisal (including regulatory) depreciation  
 = Value indication

That is, the HCLD method of the cost approach to property appraisal is NOT summarized as follows:

Historical cost  
 – Financial accounting depreciation  
 = Value indication

There is no generally accepted valuation professional organization appraisal literature, appraisal standard, appraisal credentialing course, or other professional appraisal guidance that states that economic obsolescence should not be considered in the application of the HCLD property appraisal method.

## ECONOMIC OBSOLESCENCE MEASUREMENT OBJECTION 15: THERE CAN BE NO ECONOMIC OBSOLESCENCE IF THE MARKET VALUE/BOOK VALUE RATIO EXCEEDS ONE

### Assessor Objection

The only appropriate test for economic obsolescence is the so-called market value/book value ratio. If that ratio exceeds 1, then there is no unit-level economic obsolescence.

### Best Practices Response

Some assessors calculate a market value to book value ratio based on the taxpayer's stockholders' equity only. Some assessors calculate a market value to book value ratio based on the taxpayer's total invested capital (i.e., long-term debt plus stockholders' equity). In either case, the data that these assessors use to calculate the market value/book value ratio are selected guideline publicly traded companies.

This market value/book value ratio comparison assumes that all market value—and any market value price premium over book value—relates entirely to the tangible property recorded on the public company's GAAP balance sheet. However, there are numerous reasons why a public company's market value of equity (or of total invested capital) can be greater than the company's book value of tangible property.

In addition to the value of real estate and tangible personal property, a public company's market value of equity (or of total invested capital) encompasses the value of the following:

- Working capital accounts
- Identifiable intangible assets
- Intangible value in the nature of goodwill
- Present value of growth opportunities
- Intangible investment (public security) attributes

The meaningless (from a property appraisal perspective) nature of the market value/book value ratio comparison is illustrated by the simplified example presented in Exhibit 7.

This simplified example considers an illustrative public company taxpayer. This example assumes that both the book value and the market value of the company's long-term debt is \$500.

This example assumes that the book value of the company's stockholders' equity is \$700 and that the market value of the company's stockholders' equity (based on the public stock price) is \$1,100. This hypothetical public company's market value to book value ratio is analyzed in the following calculations.

The market value/book value ratio indicated from the previous example is calculated below:



**Exhibit 7**  
**Taxpayer Company**  
**Comparison of Book Value Balance Sheet to Market Value Balance Sheet**

**Taxpayer Company**  
**Book Value Balance Sheet**  
**As of the Valuation Date**

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>
<b>Total</b>	<b>\$1,400</b>	<b>Total</b>	<b>\$1,400</b>

**Taxpayer Company**  
**Market Value Balance Sheet**  
**As of the Valuation Date**

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

- Market value/book value ratio based on TIC (i.e., the LTD & the SE) = 1.3x
  - $(\$1,600 \div \$1,200) = 1.3x$
- Market value/book value ratio based on stockholders' equity only = 1.7x
  - $(\$1,100 \div \$700) = 1.7x$

Let's assume that an appraiser conducted a fair market value valuation of all of the taxpayer company's tangible assets and intangible assets in order to allocate the market value of invested capital. This fair market value appraisal is the basis for the Exhibit 7 market value balance sheet for Taxpayer Company.

In contrast to the incorrect conclusion implied by the above market value/book value ratio calculations, the actual unit-level economic obsolescence implied by the Exhibit 7 data set example is presented below:

Book value of the plant, property, equipment (only)	\$1,000
– Market value of the plant, property, equipment	<u>800</u>
= Market value decrement (below book value) in plant, property, and equipment	\$200
= Implied economic obsolescence percentage (i.e., $\$200 \div \$1,000$ )	20%

The above simplified example illustrates that the taxpayer company (or taxpayer industry) market value/book value ratio is a meaningless measure of unit-level economic obsolescence. This ratio is meaningless because the market value/book value ratio ignores all of the other influences on the market value of a public company's securities—other than the value of the company's tangible property.

**ECONOMIC  
 OBsolescence  
 MEASUREMENT  
 OBJECTION 16:  
 THE APPRAISER  
 DOUBLE-COUNTED  
 FUNCTIONAL  
 OBsolescence  
 AND ECONOMIC  
 OBsolescence**

**Assessor Objection**

The unit-level economic obsolescence measurement is already captured in the appraiser's functional obsolescence adjustment.

**Best Practices Response**

Functional obsolescence and economic obsolescence are two different types of cost approach adjustments. However, both types of obsolescence adjustments may be influenced by these two property conditions:

1. The property is earning less income than its benchmark level of profit or return
2. The property has too much investment compared to its benchmark level.

Functional obsolescence is caused by factors internal to the subject unit property, including inadequacy and superadequacy.

Functional obsolescence is caused by factors directly associated with the unit's tangible property, including the following:

- Changes in technology (e.g., a new property is more efficient)
- Changes in construction or component material (e.g., a new property would be made from different material)
- Changes in size (e.g., too much or too little)
- Changes in location (e.g., too close or too far away)

Functional obsolescence is often measured by reference to:

1. capitalized excess operating expenses (compared to a benchmark property) and
2. excess capital costs (compared to a benchmark property).

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, and 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.

Economic obsolescence is caused by factors that are external to the subject unit's tangible property, including the following:

- 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 (1) value decrements caused by functional obsolescence (internal factors) and (2) value decrements caused by economic obsolescence (external factors).

For example, let's assume that an electric generation plant is experiencing excess fuel costs (compared to a benchmark level). The appraiser should consider the following:

- Are the excess fuel costs caused by excess fuel consumption due to an inefficient heat rate

(i.e., fuel consumed per kilowatt of electricity produced) compared to a modern plant—that is, due to functional obsolescence?

- Or, are the excess fuel costs caused by increased natural gas prices that are due to general industry conditions or an unfavorable supply contract—that is, due to 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.

## ECONOMIC OBSOLESCENCE MEASUREMENT OBJECTION 17: INDUSTRY-WIDE ECONOMIC OBSOLESCENCE SHOULD NOT RESULT IN A TAXPAYER-SPECIFIC VALUE ADJUSTMENT

### Assessor Objection

If there is industry-wide economic obsolescence, then 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:

1. the subject property inadequate return on investment and
2. the subject industry inadequate return on investment.

The subject industry's (and the subject property's) required return on investment is measured without (or before) the adjustment for economic obsolescence.

If there is industry-wide economic obsolescence, then 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, then all residential property values typically decrease.

Assessors cannot disregard this general residential property value decrease simply because it is affecting all residential real estate.

## ECONOMIC OBSOLESCENCE MEASUREMENT OBJECTION 18: ECONOMIC OBSOLESCENCE IS TEMPORARY—OR CYCLICAL

### Assessor 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.

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 it 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 during 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.

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.

## ECONOMIC OBSOLESCENCE MEASUREMENT OBJECTION 19: INVESTORS EXPECT ECONOMIC OBSOLESCENCE IN CERTAIN INDUSTRIES SO THE APPRAISAL SHOULD NOT ADJUST FOR THAT FACTOR

### Assessor 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 considered in the measurement may relate to guideline public companies, trade association and other industry sources, the subject unit's historical results of operations, the subject unit's cost of capital, and other market participant sources.

The point is the benchmarks applied in economic obsolescence measurements are metrics that investors actually expect. This is 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 (1) invest in the benchmark investments—and earn the opportunity rate of return—or (2) invest in the subject unit—at a price that will allow them to still earn the opportunity rate of return.

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 (i.e., a price that yields the opportunity return) and the unit's cost metric is called economic obsolescence.

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.

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, then the market participants will reduce the bid price (i.e., the value) of the subject unit until the unit price yields that benchmark (or opportunity) return on investment.

## ECONOMIC OBSOLESCENCE MEASUREMENT OBJECTION 20: INVESTORS EXPECT THE SUBJECT UNIT TO UNDERPERFORM, SO THE APPRAISAL SHOULD NOT ADJUST FOR ECONOMIC OBSOLESCENCE

### Assessor 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.

These facts do not indicate that there is no economic obsolescence associated with the subject unit. Instead, these facts actually 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, market participants also expect to earn those market-derived opportunity returns at the subject unit.

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. 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

Both taxpayer property owners and property appraisers should be aware of certain economic obsolescence considerations that are sometimes expressed by assessment authorities. Some of these assessor considerations regarding economic obsolescence measurements are listed in Exhibit 8.

Taxpayer property owners and property appraisers should be aware of these possible assessor considerations when they are presenting their economic obsolescence “case” to the assessment authority.

## SUMMARY AND CONCLUSION

A unit principle property appraisal is different from a summation principle property appraisal. A unit principle property appraisal is different from a business appraisal.

Cost (however measured) does not equal property value. Rather, cost (however measured) minus all types of appraisal depreciation indicates property value.

## Exhibit 8

### Typical Assessment Authority Considerations regarding Economic Obsolescence Measurements

1. If the assessor cannot “see” the economic obsolescence, then it is easy to reject the very concept of economic obsolescence.
2. Assessors often enjoy a statutory presumption of correctness, so taxpayers have to overcome this presumption in their proof of economic obsolescence measurements.
3. Assessors may apply a higher burden of proof on taxpayers regarding the measurement of economic obsolescence—compared to the measurement of physical depreciation or of functional obsolescence.
4. Assessors may believe that any (and every) economic obsolescence analysis is an income shortfall method—a method that effectively converts the cost approach into the income approach.
5. Assessors may believe if they “give” an economic obsolescence adjustment to one taxpayer, then all taxpayers will claim that they deserve an economic obsolescence adjustment.
6. Assessors may not understand why any taxpayer would continue to make capital expenditures (or to consummate an acquisition) if the subject unit is experiencing economic obsolescence.
7. Assessors may not understand why any investor would invest in a taxpayer company—or in a taxpayer industry—that is experiencing economic obsolescence.
8. Assessor may believe that any unit that is growing or expanding in any way cannot be experiencing economic obsolescence.
9. Assessors may believe that any unit that is experiencing any positive profits or any positive return on investment cannot be experiencing economic obsolescence.
10. Assessors may believe that any unit (or any taxpayer industry) that has a business value greater than its tangible property book value cannot be experiencing economic obsolescence.

Economic obsolescence is not a “subtraction” from the cost approach value indication. Rather, economic obsolescence is an “adjustment” that is necessary in order to get to the cost approach value indication.

The measurement of economic obsolescence typically does consider some income-related metrics. However, that consideration does not convert the cost approach into the income approach. It is noteworthy that the market approach also considers income-related metrics.

Economic obsolescence is typically measured on a comparative basis. Unit-level economic obsolescence measurements typically compare the unit level economic condition of “what you have” to the unit-level economic condition of “what you want.”

The unit-level economic condition you “want” does not mean the economic condition that the taxpayer property owner desires or would like to have. Rather, the unit-level economic condition you “want” means the economic returns that market participants “require” to induce them to invest in the subject unit.

The benchmarks for economic obsolescence measurements are market-derived empirical returns that are actually earned by guideline companies, other industry participants, and the subject unit (historically).

The benchmark returns considered in the economic obsolescence measurement are the opportunity returns

actually available to investors or market participants in the subject industry.

The CILM is one generally accepted economic obsolescence measurement method. The CILM is not the income shortfall method. And, the CILM is not the income approach.

There is typically not one industry-wide measure of economic obsolescence. And, there is typically not one company or taxpayer measure of economic obsolescence. Rather, economic obsolescence is applied within the context of each individual unit-level cost approach analysis.

That is, the economic obsolescence measurement is specific to the subject appraisal cost metric. For example, 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.

In other words, the greater the cost metric, the lower the cost-based unit-level return on investment—and the greater the unit-level economic obsolescence adjustment.

Appraisers and taxpayer property owners should be aware that 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

Appraisers and taxpayer property owners may reference the following professional appraisal literature sources for more information regarding the identification and the measurement of economic obsolescence within the context of a unit principle property appraisal.

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