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ECONOMIC OBSOLESCENCE IS AN ESSENTIAL PROCEDURE OF A COST APPROACH VALUATION OF INDUSTRIAL OR COMMERCIAL PROPERTIES

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The cost approach is often used in the property tax valuation of special purpose properties, fully integrated manufacturing/processing facilities, and centrally assessed (e.g., public utility) unitary taxpayers. The identification and quantification of economic obsolescence is an important procedure in any cost approach valuation analysis. Nonetheless, some property tax assessors resist recognizing economic obsolescence as a generally accepted cost approach allowance. Some assessors assert that a cost less physical depreciation calculation encompasses all forms of obsolescence. Other assessors propose alternative objections to the recognition of economic obsolescence. This discussion addresses many common assessor objections to the recognition of economic obsolescence. And this discussion introduces several methods that may be used to analyze economic obsolescence in property tax valuations.

INTRODUCTION

First, this discussion presents summary descriptions of the various forms of obsolescence considered in a cost approach valuation.

Second, this discussion recommends procedures to help the taxpayer and the taxing authority assessor to recognize the existence of obsolescence.

Third, this discussion lists numerous objections that property tax assessors often present to explain why they will not recognize the obsolescence associated with the taxpayer's property.

Fourth, and in response, this discussion describes responses that taxpayers can present to assessors in order to convince them to appropriately recognize the obsolescence that exists in the subject property.

Fifth and finally, this discussion suggests procedures for distinguishing between the various types/influences of obsolescence, from both a classification and a quantification perspective.

The identification and quantification of external obsolescence is a fundamental cost approach procedure. However, this procedure is often the cause of conflict and controversy in the property tax valuation of industrial and commercial properties.

This issue is particularly relevant with regard to the property tax valuation of:

1. special purpose properties and
2. large scale, integrated manufacturing/processing facilities.

This is because it is often difficult for valuation analysts to apply the income approach or the sales comparison approach to the valuation of such properties.

This issue is also particularly relevant with regard to centrally assessed taxpayers (such as public utility, transportation, communications, or pipeline companies). This is because these taxpayers are often assessed based on the unit (versus summation) valuation concept.

This is because taxing authorities often conclude their cost approach analyses at the cost less physical depreciation level. That is, property tax assessors often fail to properly conclude the analysis by considering both functional and external obsolescence.

THE USE OF THE COST APPROACH IN PROPERTY TAX VALUATIONS

Special purpose properties, integrated facilities, and centrally assessed/unit valuation properties are typically owner occupied. Such facilities are rarely leased between an independent owner/lessor and an independent operator/lessee. Therefore, it is difficult to extract indications

of either property rental income or income capitalization rates from the market.

While these properties are often income producing, the income that is produced is business enterprise income—not property rental income. In other words, the income that is generated at the subject property is produced by the real estate, tangible personal property, and an assemblage of intangible assets functioning together as an integrated business enterprise.

It is often very difficult to segregate this business enterprise income into that particular component that represents rental income on the taxable real estate and tangible personal property.

Special purpose, fully integrated, and unitary properties typically do not sell regularly in the secondary market. In other words, it is difficult to identify and analyze comparable sale transactions. This conclusion is true for three reasons.

First, these types of properties simply do not sell that often. Second, when they do sell, they are sold from an owner/operator to an owner/operator (and not from investor/owner to an investor/owner). Therefore, the sale transactions may not always represent market value transactions. Third, when the properties do sell, they often sell as part of the sale of a going-concern business enterprise. In such transactions, the stand-alone price of the real estate/personal property is typically not disclosed to the marketplace.

For all of these reasons, analysts often assign considerable weight to the cost approach value indication in the property tax valuation of special purpose, fully integrated, and unitary properties. The identification and quantification of all forms of obsolescence is a fundamental procedure in a cost approach appraisal of any industrial and commercial property.

The Controversy Related to Obsolescence

While the requirement for this procedure is rarely disputed, the quantification of obsolescence is often the source of controversy in property tax appraisals for the following reasons:

- First, other than the physical deterioration component, it is often difficult for analysts to physically inspect obsolescence. In other words, it is sometimes difficult for analysts to visually identify the effects of functional obsolescence and/or external obsolescence.
- Second, with regard to external obsolescence, the causes of the obsolescence are, by definition, physically external to the subject property.
- Third, the data needed to quantify some forms of obsolescence are often property-owner-specific. That is, these data have to be supplied to the valuation analyst

by the property owner, and these data typically cannot be verified or compared in the marketplace.

- Fourth, the analyses of some forms of obsolescence are often comparative in nature. And, that analysis sometimes compares a property that does exist to a property that doesn't exist.

For example, an obsolescence analysis may compare (1) the current property "with" excess operating costs to (2) a replacement property "without" excess operating costs. Since the replacement property doesn't actually exist, there is uncertainty about the hypothetical operating costs of the hypothetical replacement property.

- And, fifth, the property owner may not measure—or even realize—the existence of obsolescence. For example, other than original cost depreciation, there is no provision on the property owner financial statements for the recognition of obsolescence.

The property owner may be aware that competitive facilities are more productive, efficient, or cost effective than the subject facility. However, the property owner may not associate those indicia of obsolescence with the subject taxable property.

Summary Description of the Three Forms of Obsolescence

Obsolescence is any cause for a decrease in the value of a property. All of the components of obsolescence are typically categorized in the following three forms:

1. physical deterioration
2. functional obsolescence
3. external obsolescence

There are two common components to physical deterioration: (1) decrease in property value due to age and (2) decrease in property value due to physical wear and tear. Often, both of these physical deterioration components are measured collectively.

There are several methods that analysts commonly use to quantify physical deterioration. The most common depreciation estimation methods are:

1. the age/life method and
2. the observed depreciation method.

Functional obsolescence results in a decrease in value due to the subject property's inability to perform the function for which it was originally designed or intended. There are two common components to functional obsolescence:

1. the functional component and
2. the technological component.

In the functional component, the intended function remains the same but the subject property no longer performs that function as well as it did when the property was new. In the technological component, the subject property may work as well as when it was new. However, the intended function itself has become obsolete.

Common examples of functional obsolescence include:

1. excess operating/maintenance costs
2. excess capacity/excess capital costs
3. structural/capacity deficiency

Typically, functional obsolescence is quantified by (1) capitalizing excess operating costs, (2) reducing value by the capital cost of the excess capacity, or (3) estimating the capital costs to cure the deficiency.

External obsolescence relates to a decrease in the value of property due to influences that are external to (or outside of) the subject property. There are two common components of external obsolescence:

1. locational obsolescence and
2. economic obsolescence.

Locational obsolescence occurs when the location of the subject property results in a decrease in property income or an increase in operating costs. Economic obsolescence occurs when the property owner can no longer earn a fair rate of return on the ownership/operation of the subject property.

The two most common methods for quantifying external obsolescence are:

1. the capitalization of income shortfall method and
2. paired sales comparison method.

In property tax valuations, analysts sometimes distinguish between curable obsolescence and incurable obsolescence. When there is curable obsolescence, the cost to cure the cause of the obsolescence is less than the decrease in value resulting from obsolescence. When there is incurable obsolescence, the cost to cure the cause of the obsolescence is greater than the decrease in value resulting from the obsolescence.

In the case of curable obsolescence, the rational owner/buyer of the subject property will (1) incur the capital cost to cure the obsolescence and (2) eliminate the cause and effect of future obsolescence. Therefore, for curable forms

of obsolescence, the “cost to cure” often sets an upward limit on the quantification of obsolescence.

Some valuation analysts and property tax assessors become quite concerned about the correct classification of obsolescence. In other words, should a particular value decrement be classified as functional obsolescence or external obsolescence?

From the perspective of concluding the correct property value, the correct classification of obsolescence is not as important as the correct quantification of obsolescence. As long as the cause and effect of the value decrement are correctly identified, the classification of a particular value decrement among the three forms of obsolescence should not affect the final property value conclusion.

PROCEDURES TO RECOGNIZE THE EXISTENCE OF OBSOLESCENCE

Some forms of obsolescence are easier to identify than others. For example, physical deterioration is often recognized through physical inspection. Physical inspection of the subject property should allow the analyst to identify the effects of (1) wear and tear and (2) exposure to the elements. Physical inspection of the property owner’s accounting records should allow the analyst to identify the subject property (1) actual age and (2) date originally placed in service.

Physical inspection may also allow the analyst to identify some types of functional obsolescence. For example, the analyst may be able to identify excess capacity related to unused facility space and unused equipment.

Physical inspection may also allow the valuation analyst to identify an inefficient (1) facility design and/or layout or (2) equipment production/process line. And, physical inspection may also allow the analyst to identify (1) real estate structural deficiencies and (2) personal property material flow/process flow deficiencies.

As mentioned above, many causes of functional and external obsolescence are quantified on a comparative basis. The comparative basis may be:

1. the subject property actual operating results with the obsolescence effect and
2. the subject property hypothetical (e.g., historical or projected) operating results without the obsolescence effect.

Alternatively, the comparative basis may be: (1) the subject property actual operating results with the obsolescence effect and (2) one or more comparable properties operating results without the obsolescence effect. Given

the comparative (with versus without) nature of these types of obsolescence, physical inspection alone may not be adequate to allow the valuation analyst to identify these causes of obsolescence.

Data and Documents Considered

Accordingly, the valuation analyst may have to review financial documents or operational reports in order to identify many types of functional and external obsolescence. These types of documents often include:

1. financial statements or financial results of operations;
2. financial budgets, plans, projections, or forecasts;
3. production statements, production cost analyses, or operating cost variance analyses;
4. material, labor, and overhead cost of goods sold analyses;
5. fixed versus variable expense operating statements;
6. cost/volume/profit analyses; and
7. unit/dollar sales analyses or average selling price analyses.

The analyst typically considers the above-listed data and documents on various comparative bases, including:

1. actual results of operations versus historical results of operations,
2. actual results of operations versus budgeted results of operations,
3. actual results of operations versus specific comparative property results of operations,
4. actual results of operations versus specific competitor results of operations,
5. actual results of operations versus industry average/benchmark results of operations, and/or
6. actual results of operations versus subject property practical/normal production capacity of operations.

Physical Inspection

If the analyst is familiar with competitive or comparative properties, then physical inspection may reveal some types of obsolescence. However, the analyst will also perform these physical inspections from a comparative basis.

For example, the analyst may note that the subject property production/process line requires four employee operators while a comparative property production/process line only requires two employee operators. Or, the analyst may note that the subject property production/process line produces four product units per operation while a com-

parable property production/process line produces eight product units per operation.

Similarly, the analyst may note that the subject production/process line produces considerably more scrap/waste material than a comparative property product/process line produces.

The valuation analyst may be able to identify the causes of certain types of obsolescence through physical inspection. However, the analyst will typically rely on comparative financial and/or operational data in order to quantify the observed obsolescence.

With regard to locational obsolescence, the analyst may be able to identify some causes of obsolescence through physical inspection of the subject property neighborhood. For example, the analyst could observe new construction between an apartment or office tower and a scenic view, such as a lake front or ocean. Likewise, the analyst could observe that the neighborhood around a shopping mall or resort property is deteriorating.

More likely, though, the analyst will identify locational obsolescence by performing a comparative analysis of market rents; this analysis is particularly relevant for an income-producing property. This comparative analysis could contrast (1) subject property current rental rates with subject property historical rental rates or (2) subject property current rental rates with comparable (but different location) property rental rates.

Comparative Analysis

With regard to economic obsolescence, the analyst will most likely analyze property-specific financial data in order to identify the causes of obsolescence. Particularly with regard to owner-occupied special purpose, fully integrated, or unitary properties, the analyst may analyze:

1. business enterprise profit margins,
2. business enterprise returns on investment,
3. industrial/commercial product unit selling price,
4. industrial/commercial product unit cost of goods sold, and/or
5. industrial/commercial product unit sales volume.

Each of these analyses would typically be performed on a comparative basis, such as:

1. current results of operations versus historical results of operations,
2. current results of operations versus planned or budgeted results of operations,
3. current results of operations versus specific comparative properties of operations, and/or

4. current results of operations versus industry average results of operations.

In each particular valuation, the valuation analyst would look for some external factor affecting the subject property that would cause the property owner/operator to not earn a fair rate of return on the property investment.

Exhibit 1 presents an abbreviated list of some of the factors that analysts often consider as indications of economic obsolescence in a particular industry. Exhibit 2 summarizes several of the alternative analytical methods that analysts use to quantify economic obsolescence in a cost approach valuation analysis.

RESPONDING TO ASSESSOR OBJECTIONS

First, the property owner (or the analyst) should identify the causes and types of obsolescence affecting the subject property value. Second, the property owner (or the analyst) should quantify the effects of the obsolescence. In this process, the property owner (or the analyst) will typically categorize the indicated obsolescence allowances as either physical, functional, or external.

However, in order to recognize a reduction in the subject property assessment, the property owner (or the owner's representative) has to perform one more important procedure. The owner (or the representative) has to convince the taxing authority to include the appropriate obsolescence adjustments in the cost approach analysis value indication.

This process of convincing the taxing authority often involves explaining and justifying the proposed obsolescence adjustments. And, this process often involves responding to the assessor's objections with regard to the recognition of the proposed obsolescence adjustment.

This discussion presents ten objections commonly raised by taxing authority assessors when presented with a taxpayer claim for obsolescence allowances. These objections are often made in response to taxpayer claims for:

1. extraordinary functional obsolescence or
2. external obsolescence.

These objections typically relate to special purpose, fully integrated, or unitary properties. Corresponding to each common assessor objection, this discussion also presents a reasonable taxpayer response or explanation.

It is noteworthy that these common assessor objections and recommended taxpayer responses are not presented in any order of importance or priority. And, due to the nature

of this discussion, the taxpayer responses are deliberately general in nature.

With regard to any particular property, the assessor will likely have very specific questions and data requests. And, the taxpayer (or the taxpayer representative) should respond with property-specific data and documents.

Nonetheless, the following "top ten list" is intended to:

1. illustrate common assessor objections to typical obsolescence analyses and
2. suggest reasonable (but general) taxpayer responses to these common assessor concerns.

Assessor Objection #1

The effects of the property obsolescence, particularly economic obsolescence, are only temporary. That is, the causes of the subject property obsolescence will correct themselves over time.

Taxpayer Response #1

This assertion may be absolutely correct. Of course, the effects of physical deterioration do not cure themselves over time. Some types of functional obsolescence may cure themselves (or, at least, the magnitude of their effects may vary) over time. It is true that many causes of the economic component of external obsolescence are cyclical.

Consumer demand for the subject property's product/service may increase or decrease over time. Both demand changes and competitive factors can cause product/service prices to fluctuate over time. The cost of essential raw material components may vary significantly over time. And, interest rates and investor expectations are generally cyclical; therefore, the property owner's required rate of return on investment will change over time.

However, the legal objective of the property tax assessment is to value the subject property as of a specific point in time. This specific point in time is usually the defined assessment "as of" date. It is not the responsibility of the assessor (or the property owner or the valuation analyst) to speculate as to what the property value may be a year from now—or five years from now.

The property tax valuation is performed as of a very specific date. And, the property tax valuation should consider all of (and only) the obsolescence in effect as of that date. The property tax valuation should not consider at all whether the amount of obsolescence at the subject property will increase or decrease in the future. The property tax valuation should only consider the actual obsolescence in effect on the "as of" date.

The assessor should realize that, if the subject property obsolescence is temporary, then the subject property value (and the assessment) will be greater on the next assessment date. At that future time, the assessor may tax the increased value (that is, the value increment due to decreased obsolescence).

Likewise, the assessor should realize that the subject property obsolescence may increase over time, due to cyclical (and temporary) factors. In that case, the subject property value (and the assessment) will be less on the next assessment date. In that event, the assessor will tax the decrease value (that is, the value decrement due to increased obsolescence) appropriate to that future date.

As a related objection, some assessors assert that a subject property cannot experience economic obsolescence during a period when the property operating income (e.g., net operating income, or NOI) is increasing. Exhibit 3 presents a simplified illustrative example that disproves this economic obsolescence misconception.

Assessor Objection #2

The effects of obsolescence, particularly economic obsolescence, are simply the result of incompetent property owner management. That is, the subject property obsolescence is not due to any inherent property deficiencies.

Taxpayer Response #2

The property owner should admit that, from time to time, taxpayer company managements do make suboptimal decisions. With the best of intentions, taxpayer managements sometimes “misread” the marketplace. In that case, a corporate property owner can construct a special purpose, fully integrated, or unitary property designed to provide a single product/service for which demand is shrinking.

First, the assessor should recognize that changes in product/service unit demand, unit selling price, and costs of production usually change slowly over time. When the taxpayer bought or built the subject property, taxpayer management believed it was making a good investment decision. No management consciously or deliberately implements a bad capital investment decision. However, over time, what originally looked like a good property investment decision can be affected by obsolescence-causing factors.

Second, property owners always try to optimize the returns generated by even the worst investment decisions. Let’s say that Taxpayer Corporation built a new special purpose widget manufacturing plant. Just as the plant comes on line, the technology in the subject industry advances.

Due to this technology improvement, gizmos have replaced widgets in the marketplace. All of Taxpayer Corporation competitors are now producing gizmos. Demand for widgets is considerably reduced. Even in this

situation, Taxpayer Corporation management will do whatever it can to maximize its return on the widget manufacturing plant investment.

Taxpayer Corporation may reduce widget unit selling prices, attempt to develop new markets for widgets, or retool the special purpose facility in order to produce other products (such as gizmos). Due to obvious external obsolescence factors, Taxpayer Corporation may never earn its expected rate of return on the widget manufacturing plant.

However, Taxpayer Corporation management will do whatever it can to earn the highest return on investment possible. And, Taxpayer Corporation management will thereby maximize the value of a special purpose property otherwise that is suffering from external obsolescence.

Third, inefficient taxpayer managements are quickly replaced. Whether the taxpayer is a privately owned business or a publicly traded corporation, stockholders will not tolerate ineffective management for long. Corporate management will replace inefficient division or subsidiary (i.e., property-specific) management. Boards of directors will replace inefficient corporate management. And, stockholders will replace ineffective directors.

So, if the subject property experiences obsolescence year after year, it is probably not due to incompetent taxpayer management. That obsolescence is probably due to external factors that taxpayer management is doing everything it can to minimize.

Assessor Objection #3

Even if the taxpayer management is competent, the subject property obsolescence is the result of the property owner’s conscious decision—for example, to move production from the subject property to a new production facility in another taxing jurisdiction. Therefore, the taxpayer’s specific actions created the obsolescence affecting the subject property value.

Taxpayer Response #3

Certainly, taxpayer corporate management is responsible for maximizing the value of the entire taxpayer company—and not just the value of the subject property in the individual assessor’s taxing jurisdiction.

Even with that consideration in mind, the assessor should realize that no property owner (even the corporate management of the largest multinational company) will deliberately diminish the value of its property. Such deliberate property value diminishment does not maximize the stockholders’ return on investment. Rather, it decreases the stockholders’ return on investment.

Property owners will do everything they can to most efficiently utilize all of their property holdings. If a corpo-

rate taxpayer shifts production from one facility to another, it is the perfect example of the impact of obsolescence. The multi-property taxpayer will:

1. maximize production in the facility with the least obsolescence (e.g., the plant with the lowest cost of goods sold) and
2. minimize production in the facility with the greatest obsolescence (e.g., the plant with the highest cost of goods sold).

The fact that the taxpayer made a conscious decision that would reduce utilization of the subject property in any way is an obvious indicia of some form of obsolescence. The taxpayer decision (whatever it is) is intended to minimize the economic impact of the subject property obsolescence—and not to create obsolescence at the subject property.

Assessor Objection #4

The effects of the subject property obsolescence (whatever it is) are an industrywide phenomenon. Therefore, the obsolescence is not unique to the subject property.

Taxpayer Response #4

There are two possible taxpayer responses to this common assessor objection.

First, there are many forms of obsolescence that affect an entire category (e.g., an industry group) of taxpayers. For example, all taxpayer properties suffer from physical deterioration. That is, all 20-year old properties in any given industry will experience physical deterioration. In that case, the assessor cannot reject the subject taxpayer's claim for a physical deterioration obsolescence allowance—just because every other taxpayer in that industry will claim a physical deterioration obsolescence allowance for their 20-year old property.

Second, it is true that many types of external obsolescence are the result of industrywide factors. In that case, every taxpayer property in that industry may suffer from external obsolescence to a greater or lesser extent.

In both appraisal theory and appraisal practice, there is no rule that obsolescence should be recognized only if it affects one property only. If the cause of the subject obsolescence is industry wide, then all taxpayers that own special purpose, fully integrated, or unitary property in the affected industry may experience some amount of obsolescence.

Assessor Objection #5

The comparative benchmarks the taxpayer used to quantify obsolescence are inappropriate or unreasonable. That is,

the comparative benchmarks are too hypothetical or are not sufficiently comparable to the subject property.

Taxpayer Response #5

There are typically three components to the taxpayer response to this assessor objection. First, the taxpayer should ask the assessor to specify (1) exactly which benchmark is unreasonable and (2) exactly why that benchmark is inappropriate. Then, the taxpayer (or the taxpayer's representative) can:

1. respond to the specific complaints and
2. provide specific explanations or justifications.

This assessor objection is somewhat analogous to the objection “your comparable sale number 1 is not comparable to the subject property.” In order to respond to that complaint, the valuation analyst (or the taxpayer) needs to know exactly what the assessor believes is wrong with comparable sale number 1.

Second, it is often appropriate for the taxpayer (or the taxpayer's representative) to ask what comparative benchmark the assessor believes is more appropriate to use for purposes of comparison to the subject property. In response, the assessor may suggest as an alternative benchmark, such as:

1. a different time period,
2. different individual comparable properties, or
3. a different industry segment.

The taxpayer can then discuss the relative strengths and weaknesses of the suggested alternative benchmarks with the assessor.

Presumably, through compromise or persuasion, the taxpayer and the assessor can agree on the best set of benchmarks. If the assessor cannot suggest alternative benchmarks, then the taxpayer should explain that the taxpayer's benchmarks must be the most appropriate to the subject property. After all, the assessor cannot come up with any better benchmarks to consider.

Third, the taxpayer (or the analyst) may have to explain that the comparative benchmarks are purposefully intended to be different from the subject property. The comparative benchmarks are supposed to represent the subject property “but for” the existence of the obsolescence. Therefore, it is appropriate to consider a benchmark that is:

1. the subject property before the onset of obsolescence,

2. a brand new property that does not experience obsolescence, or
3. a hypothetical replacement property that has obsolescence designed out.

Accordingly, the benchmark measures (however defined) should not be directly comparable to the subject property. Rather, the benchmark measures should be comparative to the subject property—except that the benchmarks should not experience the subject obsolescence.

Assessor Objection #6

A subject property that suffers from obsolescence cannot also have intangible assets. Nonetheless, the taxpayer is also claiming that the subject property sales comparison approach and income approach value indications include the values of several business-enterprise-related intangible assets.

Taxpayer Response #6

The business enterprise that operates at the taxpayer industrial or commercial property may encompass discrete intangible assets, such as: customer contracts or relationships, favorable supplier contracts, patents, copyrights, trademarks, trade secrets, computer software, assembled workforce, and so forth.

If the business enterprise level of income is used in either the subject property income approach or the sales comparison approach analyses, then the value indications concluded by those analyses will estimate the value of the business enterprise operating at the subject property.

Those business enterprise value indications will encompass all of the following categories of taxpayer assets:

1. real estate,
2. tangible personal property,
3. discrete intangible assets, and
4. intangible value in the nature of goodwill.

If the business enterprise income generated at the subject property does not provide for the property owner's fair rate of return on investment, then the subject property likely experiences economic obsolescence. If the subject property experiences economic obsolescence, then certain intangible assets may have little or no value. For example, if the intangible assets (1) are inseparable from the subject property and (2) are valued using a capitalized excess earnings methodology, then these intangible assets probably have little or no value.

However, at the subject facility, there may be intangible assets that are not totally integrated with the subject property or that are valued using a methodology not related to income (e.g., a cost approach valuation method). In that case, even if the subject property experiences economic obsolescence, such intangible assets:

1. can have an independent value and
2. can be encompassed in income approach and/or sales comparison approach value indications.

Assessor Objection #7

The taxpayer did not recognize an asset impairment “write-off” on its accounting statements for financial reporting purposes. Yet, the taxpayer is claiming an obsolescence adjustment for property tax assessment purposes. That is, if the subject property is really obsolete, then the taxpayer should also “write down” the book value of the subject property on its books and records.

Taxpayer Response #7

There are four principal differences between (1) the recognition of obsolescence for any property valuation purpose and (2) the recognition of an asset impairment adjustment for financial accounting purposes. These four principal differences relate to:

1. the starting point from which to make the adjustment,
2. the appropriate standard of value,
3. the specific tests for recognizing an asset impairment for financial accounting purposes, and
4. the organization level at which the adjustment is recognized.

It is noteworthy that there are two generally accepted accounting principles (GAAP) provisions related to the accounting recognition of asset impairment. Financial Accounting Standards Board (FASB) Statement of Financial Accounting Standards (SFAS) No. 142 is entitled *Goodwill and Other Intangible Assets*. SFAS No. 144 is entitled *Accounting for the Impairment or Disposal of Long-Lived Assets*.

Therefore, SFAS No. 142 presents GAAP requirements for the impairment recognition “write down” of intangible assets, and SFAS No. 144 presents the GAAP requirements for the impairment recognition “write down” of tangible assets.

First, in a cost approach valuation analysis of an industrial or commercial property, obsolescence is often measured as an adjustment to either (1) replacement cost

new less depreciation or (2) reproduction cost new less depreciation. In the financial accounting recognition of an asset impairment, the adjustment is always measured against accounting net book value. Net book value is original cost less accounting depreciation. Typically, neither replacement cost new nor reproduction cost new is equal to original cost. And, typically, physical depreciation is not equal to accounting depreciation.

Second, both SFAS Nos. 142 and 144 require the fair value standard of value. Most state and local property tax statutes require the fair market value (or a conceptually equivalent) standard of value. In many ways, the definitions of fair value and fair market value are very similar. However, these two standards of value are not exactly the same. And, the subtle differences in these two standards of value can result in two different value indications.

As an example, fair market value typically indicates value to the “market”—that is, what a hypothetical willing buyer would pay to a hypothetical willing seller. Under that standard of value, buyer-specific synergies are not included in the subject property valuation analysis. However, under the fair value standard of value used for GAAP financial reporting purposes, buyer-specific synergies are included in the subject property valuation analysis.

Third, both SFAS No. 142 and No. 144 provide very specific rules and tests for the recognition of an asset impairment. For example, for tangible assets, the SFAS No. 144 test allows for an asset impairment adjustment only if:

1. the sum of all future cash flow expected to be generated by the asset is less than
2. the asset’s accounting net book value.

It is noteworthy that the asset impairment test is not based on the present value of all future cash flow expected to be generated by the asset. Rather, the asset impairment test is based on the sum of all future cash flow expected to be generated by the asset.

There is no present value procedure in the SFAS No. 144 asset impairment test. Accordingly, it is extremely difficult for an asset to “fail” the SFAS No. 144 asset impairment test and to be subject to an asset impairment write down. In contrast, it is much more likely for an asset to fail the present value of future cash flow test that is commonly used in a property tax economic obsolescence analysis.

Fourth, for property tax valuation purposes, obsolescence analyses are typically performed on a property-by-property basis. In other words, the valuation analyst would quantify obsolescence (if any) at the individual plant, facility, or unit level.

For purposes of SFAS Nos. 142 and 144, asset impairment testing is only performed at the “reporting unit” level. A “reporting unit” can include several separate facilities if

they are all used in the same line of business. While the “reporting unit” level can vary by taxpayer company, it is generally analogous to a corporation division or subsidiary.

In other words, a company’s “reporting unit” could be a division that includes many different facilities in many different taxing jurisdictions, for example. While these many different facilities all produce the same product, some facilities may experience functional or external obsolescence—and some other facilities may not.

Accordingly, the corporate taxpayer may report obsolescence at one particular facility to the local assessor. However, the total (or consolidated) “reporting unit” may not experience overall asset impairment for GAAP financial reporting purposes.

For illustrative purposes only, Exhibit 4 presents a summary overview of the SFAS No. 142 test for goodwill/intangible asset impairment.

Likewise for illustrative purposes, Exhibit 5 presents a summary overview of the SFAS No. 144 test for tangible asset impairment.

Exhibit 6 presents a simplified illustrative example of (1) an SFAS No. 144 asset impairment test compared to (2) a simplified economic obsolescence analysis.

Assessor Objection #8

Any recognition of economic obsolescence in the cost approach is just another application of the income approach. Therefore, by considering economic obsolescence, the taxpayer has converted the cost approach into a clone of the income approach.

Whatever the replacement cost/reproduction/original cost starting point is for the subject property cost approach analysis, the cost approach value indication turns out to be exactly the same as the income approach value indication.

Taxpayer Response #8

The above statement may be absolutely true (and the assessor objection will be absolutely correct) if the analyst has not correctly performed the economic obsolescence analysis. A cost approach economic obsolescence analysis should be totally independent of the income approach analysis.

Both the cost approach and the income approach may rely on common valuation variables—for example, a property-specific discount rate or direct capitalization rate. However, the economic obsolescence analysis should not be influenced by (and should not be manipulated to equal) the result of the income approach analysis.

Some analysts inappropriately quantify economic obsolescence as a “plug number” or residual. That is:

- First, the analyst quantifies replacement/reproduction/original cost less physical depreciation less functional obsolescence (RCNLDFO).
- Second, the analyst quantifies the income approach value indication (IAV).
- Third, the analyst subtracts the IAV from the RCNLDFO in order to measure the subject property economic obsolescence (EO).
- Fourth, the analyst subtracts EO from RCNLDFO in order to arrive at the cost approach value indication (CAV).

Using this inappropriate procedure, the IAV will always be exactly equal to the CAV. Using this inappropriate procedure, the cost approach is not independent of the income approach. In fact, the conclusion of the cost approach is 100 percent influenced by (and is forced to equal) the conclusion of the income approach. Accordingly, this “plug” procedure for quantifying economic obsolescence is fundamentally flawed.

Economic obsolescence is almost always calculated on a comparative basis. Common economic obsolescence analysis comparisons include:

1. actual versus historical margins, returns, units, or prices,
2. actual versus budgeted margins, returns, units, or prices,
3. actual returns versus required returns (i.e., costs of capital), and
4. actual results versus benchmark (comparable property or industry average) results.

These comparative economic obsolescence analyses may involve some of the same valuation variable data points used in the income approach analysis (e.g., unit volume, average selling price, NOI margin). However, the results of these comparative economic obsolescence analyses should be totally independent of the results of the income approach.

And, the one comparative economic obsolescence analysis that is absolutely not appropriate is:

1. the income approach value indication versus
2. the cost approach value indication before the recognition of economic obsolescence.

A correctly prepared economic obsolescence analysis can and should stand independently on its own analytical merits. It should be (and can be) independent of the income approach analysis. With an economic obsolescence analysis

based on comparative financial or operational variables, the cost approach can and should provide a totally independent value indication from the income approach.

Assessor Objection #9

The effects of functional and (particularly) economic obsolescence are implicitly recognized in both the sales comparison approach and the income approach. If the taxpayer also explicitly recognizes functional and (particularly) economic obsolescence in the cost approach, then that subject property valuation double counts (or exaggerates) the impact of any obsolescence.

Taxpayer Response #9

Consistent with generally accepted appraisal practices, a cost approach analysis should recognize all forms of obsolescence. This includes physical depreciation, functional obsolescence, and external obsolescence. All of these forms of obsolescence are implicitly recognized in both the income approach and the sales comparison approach.

All of these forms of obsolescence should be explicitly recognized in the cost approach. Unless all three valuation approaches include (implicitly or explicitly) all forms of obsolescence, the value indications of the three approaches will not reconcile in the overall property valuation synthesis and conclusion.

Therefore, it is not inappropriate to consider the effects of obsolescence in all three property valuation approaches. Rather, it is inappropriate to exclude the effects of obsolescence from any one of the three property valuation approaches.

Exhibit 7 presents excerpts from several authoritative literature sources that refute the position that economic obsolescence can be ignored in the cost approach if it is otherwise considered in the income and sale comparison approaches.

Assessor Objection #10

The effects of functional and external obsolescence are already included in the calculation of subject property depreciation if that depreciation is based on published cost estimation guide depreciation tables from, for example, Marshall Valuation Service. Therefore, the valuation analyst will double count (or exaggerate) the impact of subject property obsolescence by considering both:

1. a discrete functional/external obsolescence analysis and

2. a physical depreciation allowance that is extracted from a published cost estimation guide depreciation table.

Taxpayer Response #10

The premise of this common assessor objection is factually incorrect. Standard published depreciation tables, such as those published by the Marshall Valuation Service and used by many assessment authorities, are designed to include two depreciation components only:

1. normal physical deterioration and
2. normal functional obsolescence due to changes in construction materials and techniques.

So, it is true that some influences of functional obsolescence are included in the standard published depreciation tables. These ordinary, age-related functional obsolescence influences would relate to the structural deficiencies of all properties of a certain age. Examples of these functional obsolescence influences include the width of interior/exterior walls in older factories, the size and number of support stanchions in older warehouses, and so on.

However, standard published depreciation tables do not recognize any influences of functional obsolescence that are (1) property-specific and (2) not dependent on the subject property age. Such functional obsolescence factors that are not included in published depreciation tables include inefficient layout or design, technologically obsolete equipment, excess production labor costs or material handling costs, and many others.

And, almost by definition, the standard published depreciation tables do not include consideration of external obsolescence. This is because the influences of external obsolescence are, by definition, external to the physical property.

Accordingly, it is appropriate (and common) for a valuation analyst to extract estimates of physical deterioration and age-related (or ordinary) functional obsolescence from a standard published depreciation table. Then, the analyst completes the cost approach analysis by discretely quantifying any:

1. property-specific (or extraordinary) functional obsolescence and
2. external obsolescence.

DISTINGUISHING THE TYPES OF OBsolescence INFLUENCES

The identification and quantification of all forms of obsolescence is an essential procedure in any cost approach

valuation analysis. However, the classification of the property-specific influences between each form of obsolescence is less important. In other words, the taxpayer and the property tax assessor should be concerned that they:

1. recognize all forms of obsolescence at the subject property and
2. don't double count the effect of any obsolescence at the subject property.

However, the labeling of any particular obsolescence influence as either functional obsolescence or economic obsolescence is not important to the final value conclusion.

Nonetheless, there are some procedural guidelines that analysts may consider to help distinguish the various types of obsolescence influences at the subject property.

First, the analyst should be vigilant not to double count the same obsolescence influence. It is possible to double count obsolescence when two related data sources are used to quantify two (allegedly) different obsolescence influences.

For example, the analyst may capitalize higher than planned operating costs and then call that adjustment functional obsolescence. Then, the analyst may capitalize lower than planned operating profit and then call that adjustment economic obsolescence. Those two analyses (both based on related financial data sources) may result in double counting the subject property obsolescence.

Related to this objection, some property tax assessors maintain that a complete cost approach analysis can be performed by subtracting physical deterioration from the cost measure (whether replacement, reproduction, or original cost). In other words, these assessors maintain that:

1. that RCNLD provides a reasonable conclusion of value in the cost approach and
2. consideration of obsolescence (and particularly economic obsolescence) is not a necessary procedure in a cost approach analysis.

Exhibit 8 presents excerpts from numerous authoritative literature sources that completely refute assessor position (i.e., that economic obsolescence need not be considered in a cost approach analysis).

Second, when categorizing the various obsolescence influences, the analyst should recall the basic descriptions of the three forms of obsolescence. These basic descriptions were presented earlier in this discussion. Going back to the basics in terms of descriptions should help the analyst to properly distinguish between the various obsolescence influences.

Third, it is often helpful for the valuation analyst to identify and quantify obsolescence influences in the order or sequence in which they are discussed in most appraisal textbooks:

1. first, physical deterioration,
2. second, functional obsolescence, and
3. last, external obsolescence.

This sequence allows the analyst to investigate and distinguish between the various obsolescence influences in an organized manner.

Fourth, to the extent practical, the analyst should separately explain and quantify each obsolescence influence. Separate explanations help the assessor (and other parties relying on the subject property appraisal) to better understand and distinguish between the various obsolescence influences.

This separate quantification of each obsolescence influence also helps the appraisal reader to better understand the different obsolescence influences. It may also help the analyst to identify—and therefore avoid—the use of the same data in multiple obsolescence analyses.

Fifth, obsolescence influences can be quantified as either:

1. a percent value adjustment or
2. an absolute dollar value adjustment.

Depending on how the various obsolescence influences are quantified, the order (or sequence) of the application of obsolescence influences can be important. The application sequence is not important if all forms of obsolescence are expressed as a percentage adjustment.

For example, let's assume that the subject property RCNLD is \$10,000,000. Let's assume the obsolescence influence A adjustment is 10 percent and the obsolescence influence adjustment B is 20 percent.

In this case, the sequence (or order) of applying the obsolescence adjustments does not affect the final value indication. In this example, the cost approach value indication is \$7,200,000, regardless of which obsolescence adjustment is applied first.

Likewise, the application sequence is not important if all forms of obsolescence are expressed as an absolute dollar amount. For example, let's assume the subject property RCNLD is \$10,000,000. Let's assume the obsolescence influence A adjustment is \$1,000,000 and the obsolescence B adjustment is \$2,000,000.

In this case, the sequence (or order) of applying the obsolescence adjustments does not affect the final value indication. In this example, the cost approach value indication is \$7,000,000, regardless of which obsolescence adjustment is applied first.

However, the application sequence is important if some obsolescence influences are expressed as a percentage adjustment and other obsolescence influences are expressed as an absolute dollar adjustment. For example, let's assume that the subject property RCNLD is again \$10,000,000. Let's assume that (1) the obsolescence influence A adjustment is the dollar amount of \$1,000,000 and (2) the obsolescence influence B adjustment is 20 percent.

As illustrated in Table 1, the application sequence of these two obsolescence adjustments does influence the final value indication.

As indicated above, when the different obsolescence influences are expressed as both (1) percentage adjustments or (2) absolute dollar adjustments, then the application sequence of the adjustments does affect the cost approach value indication. In this situation, the valuation analyst should:

1. deliberately decide the most appropriate application sequence of the various obsolescence adjustments and
2. explain the rationale for that application sequence selection in the property tax valuation report.

SUMMARY AND CONCLUSION

This discussion presented summary descriptions of (1) the three generally accepted property valuation approaches and (2) the three generally accepted forms (or categories) of property obsolescence. This discussion also explained procedures that both taxpayers and assessors can use to identify the existence of any obsolescence at the subject property.

This discussion presented a nonexhaustive “top ten list” of objections that assessors commonly offer when reviewing taxpayer requests to recognize subject property obsolescence allowances. And, this discussion also offered suggestions for taxpayer (or taxpayer representative) responses to these common assessor objections.

Finally, this discussion presented several procedures for distinguishing between the different types of obsolescence influences.

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Table 1
The Importance of Sequence when Applying Dollar-Measured and Percent-Measured Obsolescence Adjustments

Applying Obsolescence Influence A— and then Obsolescence Influence B		Applying Obsolescence Influence B— and then Obsolescence Influence A	
Subject property RCNLD	\$10,000,000	Subject property RCNLD	\$10,000,000
less: Obsolescence influence A (based on an analysis that concludes a \$1,000,000 dollar estimate of obsolescence)	<u>1,000,000</u>	less: Obsolescence influence B (based on an analysis that concludes a 20% percentage estimate of obsolescence)	<u>2,000,000</u>
Subtotal	9,000,000	Subtotal	8,000,000
less: Obsolescence influence B (based on an analysis that concludes a 20% percentage estimate of obsolescence)	<u>1,800,000</u>	less: Obsolescence influence A (based on an analysis that concludes a \$1,000,000 dollar estimate of obsolescence)	<u>1,000,000</u>
equals: Subject property value indication	<u>\$7,200,000</u>	equals: Subject property value indication	<u>\$7,000,000</u>

Exhibit 1
**Factors That May Indicate the Existence of Economic Obsolescence
in a Cost Approach Property Valuation**

1. The subject industry is highly regulated.
2. The taxpayer and/or the subject industry actual rate of return on assets is less than the taxpayer and/or the industry cost of capital.
3. The actual taxpayer and/or subject industry rates of return are decreasing.
4. The taxpayer property and/or the subject industry has over-capacity (i.e., the taxpayer and/or subject industry assets are underutilized).
5. The subject industry competition is increasing.
6. The subject industry demand is decreasing.
7. The taxpayer and/or the subject industry supplier costs (e.g., raw materials, utility expense, freight expense, etc.) are increasing.
8. The taxpayer and/or subject industry labor costs are increasing.
9. The subject industry is experiencing technological change and improvement (e.g., cell phone usage reduces the demand for land lines in the telephone industry).
10. There is legislation that requires additional taxpayer property and/or subject industry capital expenditures (e.g., installation of pollution control devices).

Exhibit 2 Alternative Analytical Methods Commonly Used to Quantify Economic Obsolescence

- The common analytical methods used to quantify economic obsolescence are typically comparative in nature
- These analytical methods compare the subject taxpayer property "with" obsolescence to a benchmark property "without" obsolescence
- The common units of comparison considered in a comparative economic obsolescence analysis include:
 - ◆ Return on investment (i.e., income divided by assets)
 - numerator based on cash flow, net operating income, pre/post tax net income
 - denominator based on cost measure less depreciation of the subject property
 - ◆ Profit margin (i.e., income divided by revenue)
 - based on gross or net margin
 - based on cash flow, net operating income, or net income
 - ◆ Cost of raw material/operating expense inputs (where obsolescence is based on increased costs)
 - for subject property
 - for subject industry or selected guideline companies
 - ◆ Price/quantity of units produced (where obsolescence is based on decreased revenue)
 - for subject property
 - for subject industry or selected guideline companies
- The common comparative benchmarks for economic obsolescence analysis include subject property current results of operations versus:
 - ◆ subject property historical results
 - ◆ subject property budgeted results
 - ◆ subject property capacity results
 - ◆ benchmark property current results
 - ◆ industry average/guideline companies current results
 - ◆ market expectations for the subject property (e.g., cost of capital)
- A common "income shortfall" economic obsolescence method compares the subject property actual return on investment to a market-required cost of capital (that is used as the comparative benchmark return on investment)

Exhibit 3 Illustrative Example of the Existence of Economic Obsolescence in a Period When the Subject Property NOI Is Increasing

Illustrative Example Valuation Variables

1. The weighted average cost of capital is 15%[a]
2. The taxpayer property NOI is increasing each year
3. The taxpayer property investment is increasing each year

<u>Simplified Economic Obsolescence Analysis</u>	Two Years Ago	Last Year	This Year
	\$	\$	\$
Taxpayer property net operating income (NOI)	100	200	300
Net book value of taxpayer property assets [b]	1,000	3,000	6,000
Actual property return on investment (ROI)	10.0%	6.7%	5.0%
Property required return on investment (ROI) [a]	15.0%	15.0%	15.0%
Actual ROI as a percent of required ROI	66.7%	44.4%	33.3%
Indicated property economic obsolescence percent	33.3%	55.6%	66.7%

Illustrative Example Economic Obsolescence Conclusion

Increasing property net operating income does not imply that there is no property economic obsolescence. In fact, the subject property economic obsolescence can increase at the same time that the subject property NOI increases.

[a] Equals the assumed market-required cost of capital.

[b] For illustrative purposes only, the taxpayer property cost approach value indication is assumed to be equal to historical cost less depreciation (HCLD).

Exhibit 4

Overview of FASB SFAS No. 142

Test for Goodwill Intangible Asset Impairment

Summary of the SFAS No. 142 Annual Test for Goodwill Asset Impairment

- Identify the subject company "reporting units."
- Allocate all subject company assets and liabilities to a "reporting unit" and perform the annual impairment test. Test: assets, liabilities, and goodwill to reporting units.
- Perform a total asset value allocation at the "reporting unit" level, based on the two-step procedure described below.
 - ◆ Perform an interim date impairment test if there is an indication that the reporting unit fair value may be less than its carrying amount (i.e., net book value).
 - ◆ If the subject company goodwill is impaired, record the impairment charge (i.e., asset "write-down" to income from operations).

The SFAS No. 142 Goodwill Asset Impairment Test—A Two-Step Procedure

Step 1: Compare the fair value of the subject company reporting unit with the carrying value (including goodwill) of the subject company reporting unit.

- If the reporting unit fair value is greater than the carrying value, then the goodwill is not impaired and no further asset impairment test is required.
- If the reporting unit fair value is less than the carrying value, then proceed to Step 2.

Step 2: Compare the implied fair value of goodwill to its carrying amount (i.e., net book value).

- Record any excess of carrying value over the implied fair value as an asset impairment loss, and set the carrying amount of goodwill equal to the implied fair value.
- Once it is written down as SFAS No. 142 asset for impairment, the goodwill carrying value cannot be reinstated.
- The "implied fair value" is calculated as if the reporting unit was acquired on the impairment test date, with the fair value of the reporting unit considered the "purchase price." Any excess of this purchase price over the fair value of amounts assigned to the reporting unit assets and liabilities is the implied fair value of the reporting unit goodwill.
 - ◆ The analyst assumes a hypothetical acquisition as of the asset impairment test date.
 - ◆ Assets and liabilities are stated at fair value.
 - ◆ The implied fair value of goodwill is equal to the fair value of the reporting unit less the net assets "acquired."
 - ◆ This process allows the value of any unrecognized intangible assets to be considered.
- Once goodwill is written down as an SFAS No. 142 asset impairment, no future recovery of goodwill value may be recognized.

A Simplified Illustrative Example of the Two-Step Goodwill Asset Impairment Test

Step 1:	Carrying (net book) value of the reporting unit	\$600 million
	Fair value of the reporting unit	\$500 million
	Is the subject goodwill impaired?	Yes
Step 2:	Fair value of the reporting unit	\$500 million
	Less: Allocation of the reporting unit business enterprise value to all assets and liabilities	\$475 million
	Equals: Implied fair value of goodwill	\$25 million
	Less: Carrying value of goodwill	<u>\$100 million</u>
	Equals: Goodwill asset impairment charge	<u>\$75 million</u>

Exhibit 6
SFAS No. 144 Tangible Asset Impairment Test
Simplified Illustrative Example

Tangible Asset Impairment Test Variables

Net book value of the subject reporting unit tangible assets [a] \$10,000
 Remaining useful life of the primary asset (in years) [b] 10
 Weighted average cost of capital/discout rate [c] 15%

SFAS No. 144 Tangible Asset Impairment Test:	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Subject reporting unit projected cash flow	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Undiscounted reporting unit cash flow	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Sum of the total undiscounted reporting unit cash flow	\$10,000									
Net book value of reporting unit tangible assets	\$10,000									

Is the sum of the total undiscounted cash flow less than the net book value of the subject reporting unit intangible assets? No
 Conclusion of the SFAS No. 144 tangible asset impairment test: no tangible asset impairment required

Economic Obsolescence Test:

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Subject reporting unit projected cash flow	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Periods to discount	0.5	1.5	2.5	3.5	4.5	5.5	6.5	7.5	8.5	9.5
Present value discount factor (at 15% discount)	0.9325	0.8109	0.7051	0.6131	0.5332	0.4636	0.4031	0.3506	0.3048	0.2651
Discounted reporting unit cash flow	933	811	705	613	533	464	403	351	305	265
Discounted reporting unit cash flow										
Sum of the total reporting unit discounted cash flow	\$5,383									
Cost less depreciation value indication	\$10,000									

Is the sum of the total subject reporting unit discounted cash flow less than the subject reporting unit cost less depreciation value indication? Yes
 Conclusion of the economic obsolescence test for fair market value property tax valuation purposes: economic obsolescence exists

Conclusion of This Illustrative Example:

The historical cost less depreciation of \$10,000 overstates the fair market value of the assets and an economic obsolescence adjustment is appropriate. Economic obsolescence exists when the subject property actual ROI is less than the required cost of capital. An SFAS No. 144 asset impairment is required only when the subject property actual ROI is less than 0%. The fair market value of the subject assets can be less than the book value of the subject assets, even though no asset impairment is recognized under SFAS No. 144.

There can be economic obsolescence that should be recognized in a cost approach property valuation analysis even if there is no SFAS No. 144 asset impairment "write-down."

[a] Equals historical cost less physical depreciation (HCLD).

[b] Estimate based on the primary asset in the subject reporting unit.

[c] Equal to the market-required return on investment.

Exhibit 7

Authoritative Literature References to Considering Economic Obsolescence in any Cost Approach Valuation Analysis

- "The last step of the cost approach is to estimate economic obsolescence."
—*Appraising Machinery and Equipment*, by Machinery and Equipment Textbook Committee of the American Society of Appraisers, John Alico, editor (New York: McGraw Hill Book Company, 1989), p. 104.
- "As time goes on, external factors such as reduced profitability in an industry, increased competition, foreign imports, a shift in market demand of government regulations lead to economic obsolescence. This then is usually the last element of depreciation to affect an asset. This is the normal sequence of depreciation when using the cost approach. The sequence may vary when the facts dictate. The point, though, is that when using the cost approach an appraiser should strive to segregate the various elements of depreciation and make sure not to double up on depreciation or leave something out."
— *Appraising Machinery and Equipment*, by Machinery and Equipment Textbook Committee of the American Society of Appraisers, John Alico, editor, p. 109.
- "The last step in the implementation of the cost approach is to estimate economic obsolescence."
—*Valuing Machinery and Equipment*, by Machinery and Technical Specialties Committee of the American Society of Appraisers, 2000, p. 99.
- "Assessors will often argue that their depreciation schedules include functional and economic obsolescence. However, this is *not* generally the case, and functional and economic obsolescence should be considered *after* the application of physical depreciation."
—*Property Taxation* (Washington, D.C.: Institute of Property Taxation, 1987), p. 8.52.
- "The identification and quantification of economic obsolescence is an important element in the cost approach to real property and personal property appraisal."
—"The Measurement of Economic Obsolescence," by Robert F. Reilly, *ASA Valuation*, January 1989, p. 47.
- "The specific identification and quantification of economic obsolescence are most closely associated with the cost approach to property valuation. The cost approach requires an estimate of either the replacement cost or the reproduction cost of the subject real property. From this estimate, allowances are subtracted for all forms of accrued depreciation and obsolescence—including economic obsolescence."
—*Valuing a Business: The Analysis and Appraisal of Closely Held Companies*, 4th ed., by Shannon P. Pratt, Robert F. Reilly, and Robert P. Schweihs (New York: McGraw-Hill), p. 761.
- "The identification and quantification of economic obsolescence is a critical element in the cost approach to the valuation of real property and tangible personal property."
—"The Identification and Quantification of Economic Obsolescence," by Robert F. Reilly, *Business Valuation Review*, June 1988, p. 48.
- "A properly applied cost approach would have to consider both the functional and economic obsolescence of the assets."
—*Handbook of Advanced Business Valuation*, by Robert F. Reilly and Robert P. Schweihs (New York: McGraw-Hill 2000), p. 257.
- "The last step in any cost based appraisal is to evaluate economic obsolescence."
- "External factors, economics, must be evaluated in arriving at a final cost approach conclusion."
- "Finally, the economic prospect of the property and the industry in which it is deployed must be evaluated in order to ascertain if economic obsolescence exists in the property. These factors cannot be assumed to have implicitly been addressed in the selection of costing, depreciation-obsolescence, and economic factors; rather the appraiser must explicitly evaluate them and determined [sic] their impact on the property's value."
—"Cost Approach Obsolescence and Depreciation," by Jerome C. Weinert, as presented at the Wichita Program: Appraisal for Ad Valorem Taxation of Communications, Energy and Transportation Properties, August 2003.
- "The cause(s) of ExO [external obsolescence] must be identified to determine if they adversely influence the utility/value of the subject property. Once the cause of ExO is determined, ExO must be calculated, as to the extent the ExO reduces the value of the subject property."
—"External Obsolescence: The Proof Is in the Process," by J. Michael Clarkson, as presented at the Wichita Conference, August 2002, p. 6.
- "Deduction of physical deterioration from replacement cost new will only produce a final value estimate when the subject equipment or plant is totally free of obsolescence—functional and/or economic. However, as this is very rarely the case, obsolescence—based on existing use—must be considered."
—*Property Taxation*, 2nd ed. (Washington, D.C.: Institute of Property Taxation, 1993), p. 421.

Exhibit 8

Authoritative Literature References to Considering Economic Obsolescence in the Cost Approach—As Well as in Other Valuation Approaches

- "Depreciation is the accrued loss in value due to physical wear and tear and functional obsolescence. . . . In mass appraisal, depreciation schedules should reflect typical accrued depreciation and obsolescence. Appraisers should have the ability to override tables and assign additional physical, functional, or economic obsolescence as necessary."
—*Mass Appraisal of Real Property*, by Robert J. Gloude-mans (Kansas City, MO: International Association of Assessing Officers, 1999), p. 153.
- "External (economic) obsolescence: Economic (external) obsolescence is a loss in value from forces outside the property and is almost always considered incurable. Like incurable functional obsolescence, external obsolescence can be measured either by the sales comparison or capitalization of income method."
—*Property Assessment Valuation*, 2nd ed. (Kansas City, MO: International Association of Assessing Officers, 1996), p. 186.
- "Because economic obsolescence is usually a function of outside influences that affect an entire business (i.e., all tangible and intangible assets) rather than individual assets or isolated groups of assets, it is sometimes measured using the income approach or by using the income approach to help identify the existence of economic influences on value. However, the cost approach can be used to measure some forms of economic obsolescence."
—*Valuing Machinery and Equipment*, by Machinery and Technical Specialties Committee of the American Society of Appraisers, 2000, p. 99.
- "ExO [external obsolescence] can be calculated by using any of the three approaches to value, however, the cost approach is most often used in combination with available market and income data."
—"External Obsolescence: The Proof Is in the Process," by J. Michael Clarkson, as presented at the Wichita Program: Appraisal for Ad Valorem Taxation of Communications, Energy and Transportation Properties, August 2002, p. 7.
- "External obsolescence is a key consideration in appraisal work and results from diminished value to improvements. It is also one of the most difficult concepts to understand. It is implicit in all three basic approaches to value but is often specifically addressed in the cost approach. It is separately addressed because it is independent of physical deterioration and functional problems."
—"Categorizing External Obsolescence," by Thomas P. Williams, *Appraisal Journal*, April 1996, pp. 148-154.
- "For tax purposes, a village board of review must, using the cost approach, consider a diminution in property value due to obsolescence, according to the Court of Appeals of Wisconsin."
—"Valuing Commercial Property for Tax Purposes Must Address Loss of Value from Obsolescence via Cost Approach," from the Cases in Brief in *The Appraisal Journal*, January 2, 2001, p. 112.
- "The sales/cost technique is enhanced by the limited number of assumptions it entails; the reliability of this technique is assured if the cost analysis is properly developed."
—"Supply Saturation-Induced External Obsolescence: Two Techniques for Quantifying Value Loss," by MacKenzie S. Bottum and Scott D. Evans. *The Appraisal Journal*, October 1993.
- "External obsolescence usually is classified as incurable, because it is caused by factors external to the property. Market comparisons similar to those used to estimate incurable functional obsolescence can also be used to measure external obsolescence. . . . There are two methods of measuring external obsolescence: (1) capitalizing the income or rent loss attributable to the negative influence; and (2) comparing comparable sales of similar properties, some exposed to the negative influence and others not."
—*Property Assessment Valuation*, 2nd ed., pp. 172-173.
- "The impact of economic obsolescence can be measured by various methods such as a loss of profitability analysis, cost of compliance estimate (as in the case of pollution control compliance where new and more stringent 'clean-up' requirements may render some plants unmarketable), analysis of rental loss due to the external condition, a percentage adjustment based on the appraiser's judgment and expertise, or 'indirectly' through an enterprise valuation."
—"Estimating Economic Obsolescence of Operating Industry Plants," by Tor Skogstad, *Assessment Digest*, November/December 1983, p. 11.