Appraisal / Valuation of Power Plants Case Study

2013 IPT Property Tax Symposium
Indian Wells, California

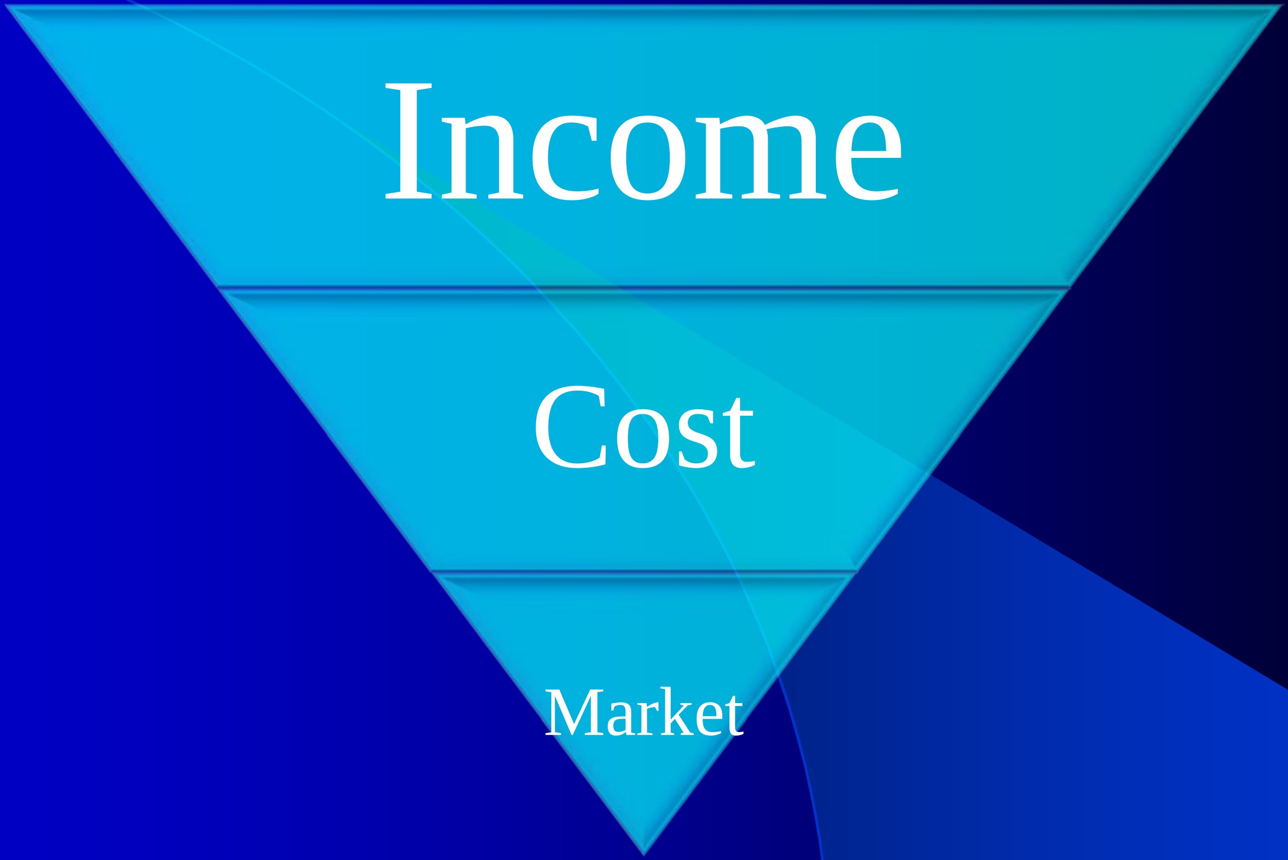
Presented by:

Joseph Kettell, ASA
Appraisal Economics, Inc.
Phone +1 201 265 3333
www.ae-us.com

Court Decisions on Complex Industrial Properties

Dominion Nuclear, v. Town of Waterford, CT	Nuclear Power Plant	Income Approach Credibility
Wheelabrator Bridgeport v. City of Bridgeport, CT	Municipal Waste to Power Plant	Income Approach Credibility
Sky River v. County of Kern, CA	Wind Turbine Farm	Tax Conversion from post-tax to pre-tax
TES Filer City Station v. Filer Township, MI	Coal / Wood Power Plant	Value Influencers and Intangible Assets
Elk Hill Power v. Board of Equalization	Gas Cogen Power Plant	Direct and Indirect Intangible Assets

Complex Industrial Properties Weighting By Taxpayer Expert



True or False?

- Do ***potential buyers*** **use only the income approach (ie: earnings) to determine the prices that they are willing to pay for complex industrial properties?**

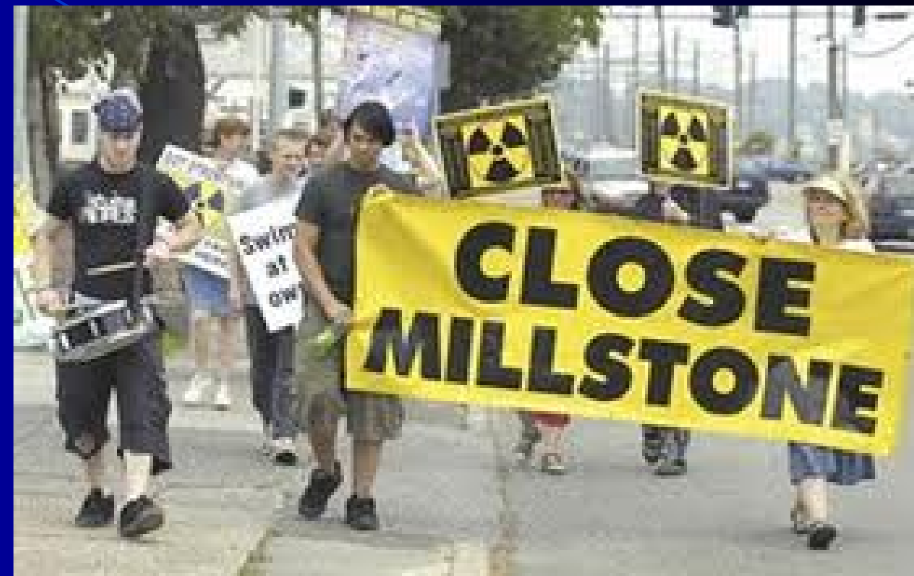
True or False? (continued)

- **Although potential buyers do analyze financial data and projections, they also:**
  - **know the replacement cost of the subject property and obsolescence issues so that a “buy vs. build” analysis can be preformed**
  - **research transactions of similar properties and analyze the stock prices of industry participants for valuation indicators - price/earnings & price/book**

Income Approach Provides a Business Enterprise Value (BEV)

- **BEV - total value of all tangible assets including property, plant, equipment, and working capital, and intangible assets of an operating business**
  - **It is very difficult to perform an income approach on only the tangible property**

Dominion Nuclear v. Town of Waterford

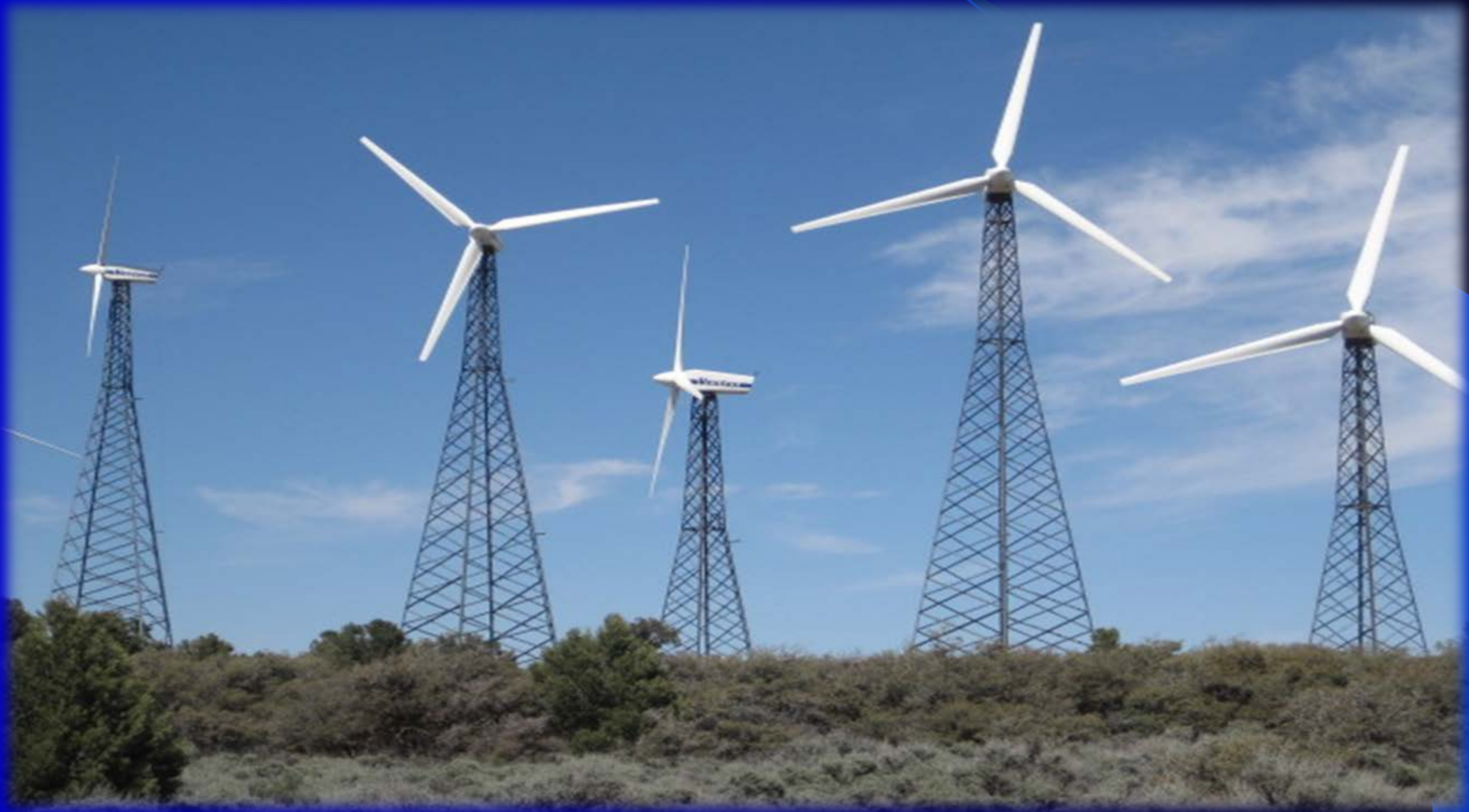


Dominion Nuclear v. Town of Waterford

- Both experts relied on the income approach as their primary approach to value
- The Town's Expert concluded a value of $1.3 billion while the taxpayer's expert concluded $1.0 billion, as of the same date.
- What did the court do? The Court rejected the income approach, saying that it was problematic in separating the tangible and intangible assets and performed its own appraisal

Wheelabrator Bridgeport, LP v. City of Bridgeport, CT

Sky River LLC v. Kern County Court of Appeals of California



After-Tax or Before-Tax Income Approach

- As with California, many states favor *before-tax* instead of an *after-tax* income approach
- This can be problematic when appraising complex industrial properties because it is the after-tax discount rate data that is provided in published sources such as the Ibbotson.

Statutory Federal Tax Rates for C-Corporations

First $50,000 of income	15.00%
$50,000 to $75,000	25.00%
$75,000 to $10,000,000 (a)	34.00%
Over $10,000,000 (b)	35.00%

a) An additional 5 percent tax, not exceeding $11,750, is imposed on taxable income between $100,000 and $335,000

b) An additional 3 percent tax, not exceeding $100,000, is imposed on taxable income between $15,000,000 and $18,333,333

Source: Treasury Department; Commerce Clearing House (CCH); Tax Foundation

Rule of Thumb Conversion After-Tax to Before-Tax Conversion

$$k_{(\text{before-tax})} = k_{(\text{after-tax})} \div (1 - \text{tax rate})$$

where k is the discount rate and derived from after-tax industry returns

Brealey and Myers Quote

- You should always estimate cash flows on an after-tax basis. Some firms do not deduct tax payment. They try to offset this mistake by discounting the cash flows before-taxes at a rate higher than the [after-tax] cost of capital. Unfortunately, there is no reliable formula for making such adjustments to the discount rate.

Ibbotson Quote:

- **"This presents a problem when a pre-tax discounted cash flow analysis is required. Although not completely correct, the easiest way to convert an after-tax rate to a pre-tax discount rate is to divide the after-tax rate by (1 minus the tax rate)…Take note that this is a *quick and dirty way* to approximate pre-tax discount rates."**

Tax Conversion for Direct Capitalization Model

$$PV = \frac{CF_{after\text{-}tax} \div (1 - \text{Tax Rate})}{k_{after\text{-}tax} \div (1 - \text{Tax Rate})}$$

Simplifies to:

$$PV = \frac{CF_{before\text{-}tax}}{k_{before\text{-}tax}}$$

Tax Conversion for Multi-Period Model – a 2-Step Process

$$PV = \left(\frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \cdots + \frac{CF_i}{(1+k)^i} \right) \frac{\div (1 - \text{Tax Rate})}{\div (1 - \text{Tax Rate})}$$

- **Multi-Period Income Model does not simplify**
- **Must perform calculation using after-tax cash flow and discount rate to determine PV**
- **Then use the PV and before-tax cash flow to determine before-tax discount rate (goal seek)**

Income Approach Using After-Tax Discount Rate

Discount Rate	12.0%	after-tax			
Tax Rate	40%				
Year	1	2	3	4	5
Income Before-Tax	300,000	300,000	200,000	175,000	150,000
Income Tax	120,000	120,000	80,000	70,000	60,000
Income After-Tax	180,000	180,000	120,000	105,000	90,000
PV Factor	0.8929	0.7972	0.7118	0.6355	0.5674
Present Value	160,714	143,495	85,414	66,729	51,068
Fair Market Value	$507,421				

Income Approach Using Before-Tax Discount Rate

Before-Tax Rate

Discount Rate Formula	$K_{bt} = K_{at} / (1\text{-tax rate})$
After-Tax Discount Rate	**12%**
Tax Rate	**40%**
Before-Tax Discount Rate	**20%**

Year	1	2	3	4	5
Income Before- Tax	300,000	300,000	200,000	175,000	150,000
PV Factor (bef.-tax)	0.8333	0.6944	0.5787	0.4823	0.4019
Present Value	250,000	208,333	115,741	84,394	60,282
Fair Market Value	$718,750				

Best Method for Conversion of After-Tax to Before-Tax Discount Rate

Method 3: Goal Seek the Before-Tax Rate

Discount Rate	12.0%	after-tax
Tax Rate	40%	
Present Value	$507,680	

Year	1	2	3	4	5
Income Before-Tax	300,000	300,000	200,000	175,000	150,000
PV Factor	0.7102	0.5044	0.3583	0.2544	0.1807
Present Value	213,068	151,327	71,651	44,527	27,107
Present Value	$507,680				

Before-Tax Discount Rate 41%

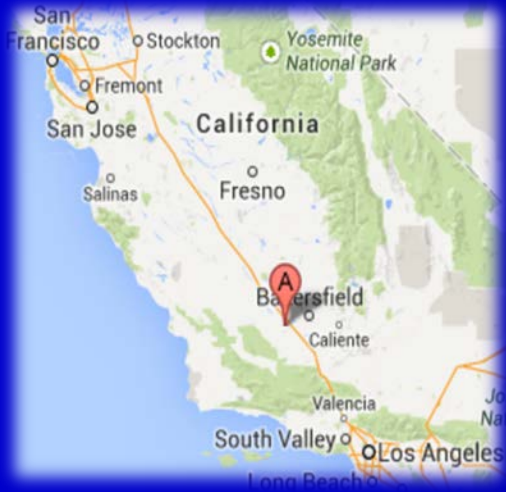
Property Tax vs. Federal Tax & Accounting Appraisals

- **For Federal Tax & Accounting Purposes:**
  - **Business appraisers always use *after-tax* discount rates and *after-tax* net cash flows for complex industrial properties**

Are All Intangible Assets Treated Equally For Property Tax Purposes?

- **Not according to the Revenue and Taxation Code of California**
- **In CA, there are two types of intangible assets: *direct* intangibles which are tax exempt and *indirect* intangibles which are taxable**
- **Difference between definition of direct and indirect intangible assets is fuzzy and should be cause for future litigation**

Elk Hill Power v. Board of Equalization (Aug, 2013) Supreme Court of California



Emission Reduction Credits (ERC)

- When a plant shuts down or reduces air pollution (emissions), ERCs are created
- These ERCs can be sold to new plants that need them to meet government standards
- Permits to construct new plants are granted only after ERCs are procured by owner
- ERCs provide a perpetual right to emit a specific amount of pollutants each year, can be resold, and are considered an *intangible asset.*

Court Findings on ERCs in Elk Hill Power Case

- The Supreme Court of California ultimately decided that the $10 MM cost should not be included in the FMV conclusion by the cost approach, but…
- The court stated that: "The BOE properly valued the ERCs [in the income approach] by "assuming their presence" *in order to tax the property as a fully functioning power plant."*

Elk Hill Power v. BOE

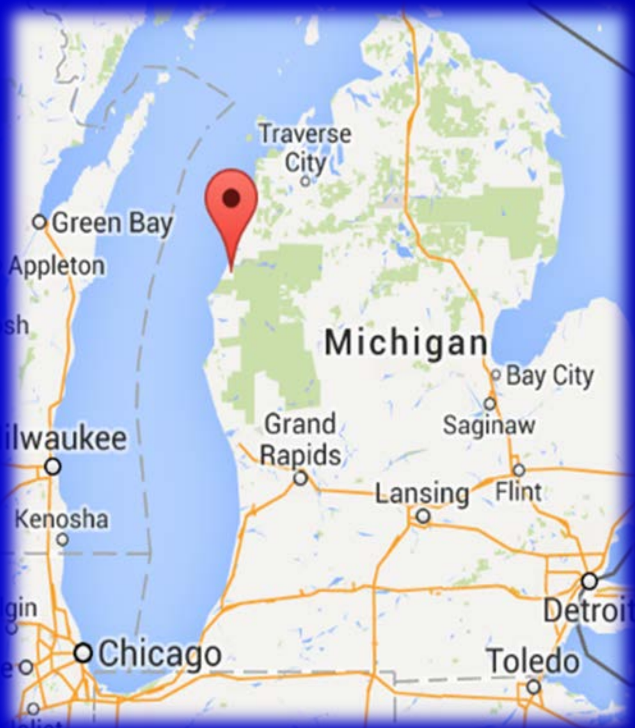
- When an intangible asset increases earnings *over and above* the normal return on tangible assets, intangible asset value can be deducted in the *income approach*

- If there is an insufficient return on taxable property, in other words - economic obsolescence exists, then there is little or no intangible asset value that can be deducted in the *income approach*

Elk Hill Power v. BOE

- Taxable property with significant intangible assets, will best be appraised by the cost approach
- Properties that have a high level of economic obsolescence may best be appraised using the income approach
- Material intangible assets do not exist when economic obsolescence exists

TES Filer City Station v. Filer Township Michigan Tax Tribunal



TES Filer City Station Courts Opinion

- It is *unreasonable* to perform an income appraisal by ignoring the contract for its product and instead assume a hypothetical market price which would result in the subject never having been built or, if built, possessing a value at less than one-third its construction costs.

QUESTIONS?

Contact Information

Joseph Kettell, Managing Director

Appraisal Economics Inc.

+1 201 265 3333

JKettell@ae-us.com

www.ae-us.com