



Property Tax Valuation Concepts

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Discussion Points

- The concept of “Perception” as a value limitation factor.
- ESG as it impacts property tax valuation.
- The impact the ever-greening movement around the world has on property tax valuation.

Presentation Focus

By the nature of the presentation, there will be references to many types of energy and facilities. There is no intention to show a preference of any energy source.

The focus of the presentation is the impact the changing energy landscape has on property tax valuations across the US.

The Approaches to Value

The appraisal approach describes the process of estimating an asset's value.

Appraisers rely on three approaches of establishing asset values:

- Sales Comparison Approach
- Cost Approach
- Income Approach

Obsolescence

Definition – “The process of becoming obsolete or outdated and no longer used.”

Appraisers typically rely on three approaches of considering obsolescence:

- Functional
- Economic
- Physical

In the current world of ESG & Industrial Greening, There is a fourth form of obsolescence to consider.

Perception

“There are things known and there are things unknown, and in between are the doors of perception.”

Aldous Huxley

“Perception is reality.”

Lee Atwater

Perception Impacts Value Every Day

While not a new concept generally, “Perception” is impacting market values in many sectors at a growing rate.

Any appraiser knows that value is impacted by the buyer’s desire for the asset and their “Perception” of the value. The discussion today focuses on a larger market impact.

Perception Defined – A way of regarding, understanding, or interpreting something; a mental impression.

Perception Impacts Discussed

A few questions are raised immediately;

- What is a clear example of this impact?
- What is causing the growth rate?
- How is the impact quantified and estimated for valuation?
- What is an example of Perception impacting the value of an asset class or group of assets?

Perception as Related to Value

The clearest example with verifiable impact identified while researching, are the Frac Fleets operating in the US.

What is a Frac Fleet?

Frac Fleet means all equipment, vehicles, labor and materials used to perform hydraulic fracturing services as part of the exploration and production of oil, natural gas and related products.

What is a Frac Fleet?

High-Pressure, High-Volume Fracking Pumps



Images used with the permission of Orteq Energy Technologies

What is a Frac Fleet?

Blenders for Fracking Fluids



Images used with the permission of Orteq Energy Technologies

What is a Frac Fleet?

Storage Tanks for Water, Sand, Chemicals, & Wastewater



Images used with the permission of TSS Sand Solutions

Hydraulic Fracturing

All hydraulic fracturing operations — regardless of technology — use pumps to inject a mix of water, chemicals and sand into the well at high pressures, opening cracks in the hard shale rock and releasing the oil and gas contained in pockets throughout the shale. Each pad may use from 12 to 20 fracking pumps to accomplish this, depending on the pressure and flow requirements of the formation.

Powering the Fracturing Equipment

How the Frac Fleets are powered has much to do with their current value.

- Traditional Diesel Engines
- Dual Fuel (diesel/natural gas) Engines
- Electric Engines

Hydraulic Fracturing Equipment

Traditional Diesel Fleets

Traditional diesel fleets utilize diesel fuel to operate 100% of the function on the site.

Dual Fuel Fleets

Dual fuel systems allows operators to power the fracturing fleet with 70% field gas and only 30% diesel. These engines can switch seamlessly between diesel-only and dual fuel operations.

Electric Fleets

The Electric fleets use natural gas to operate turbine type generators that produce the required electricity, which burns cleaner than diesel fuel.

Impact of Perception on Value for Example

In multiple recent sales, Merit has tracked the price of the Traditional Diesel Frac Fleets. The fleets averaged 6 years in age, most in full working order, some completely overhauled, many working on jobs while sold.

The sales prices of these fleets, were between \$40,000 and \$70,000 per frac pump.

The average purchase price new for the same equipment 6 years ago was identified to Merit as approximately \$1,000,000 per frac pump.

The same type of pumps, with dual fuel, cost about \$1,500,000 in 2022.

A Property Tax Calculation

Assume a 12 years depreciable life, 6 years old, and an original cost of \$1,000,000.

Typical Property Tax Model

Cost	Age	Depreciation	Property Tax Value
1,000,000	6	51%	510,000

Remember - The actual recent purchase price was \$40,000 to \$70,000. The delta in value must be recognized in the assessed value of the assets to be reasonable.

- How well do you think that change in value for existing assets will be received by the taxing jurisdictions?
- What is driving this reduction in value?...ESG

What is ESG and How is it Impacting the World?

ESG stands for **Environmental, Social, and Governance**. Investors are increasingly applying these non-financial factors as part of their analysis process to identify material risks and growth opportunities.

ESG investing is a form of sustainable investing that considers environmental, social and governance factors to judge an investment's financial returns and its overall impact. The ESG score measures the sustainability of an investment in those specific categories.

Why is ESG so Impactful?

- World sentiment on fossil fuels usage has shifted.
- ESG requirements and expectations are rapidly evolving.
- A focus on natural gas as the principal source of fuel for field equipment.
- Manufacturers and service companies working to align themselves with investors and the world community.

Dual Fuel Fleets Help Satisfy the Environmental Portion of ESG Goals



Source - <https://nexttierofs.com/wp-content/uploads/NEX-WorldOil-2021-01-Greener-Frac-Operations.pdf>

E Frac Fleet Further Reduce Emissions and Help Satisfy the Environmental Portion of ESG Goals



Source - <https://nexttierofs.com/wp-content/uploads/NEX-WorldOil-2021-01-Greener-Frac-Operations.pdf>

Why is ESG a Factor in Asset Valuation?

- Environmental, social, and governance (ESG) criteria are an increasingly popular way for investors to evaluate companies in which they might want to invest.
- Many mutual funds, brokerage firms, and advisors now offer products that employ ESG criteria.
- ESG criteria can also help investors avoid companies that might pose a greater financial risk due to their environmental or other practices.
- Going back to our Frac Fleet example, natural gas and electricity are cleaner, so they are ESG preferred.

Estimating Value Impact

How do we as valuation or property tax professionals begin to estimate the potential impact that the ever-changing landscape will have on value?

- Typically, our answer would be; “The market will dictate the value.”
- Tracking the trends may become a full-time job itself.
- Many times, our task is to project liability or value into the future.
- We already know all estimates are wrong, the question is and will be: “by how much.”

How Will the Greening of the Energy Industry Impact Property Tax Valuations?

- The current pace of change, innovation, scrutiny, and world opinion is very quick.
- Equipment that is the “in thing” today may well be considered undesirable tomorrow.
- The key for those of us in the valuation business is to understand and attempt to measure the impact that “Perception” has on the actual market value of assets.
- The concern particularly impacts assets that are still fully capable of the function they were designed and are current technology.

Perception Exercise

Your position on of each item will most likely be driven by your view of the energy business and the world.

Let's have a little fun and see what the images conjure in our minds.



Cow



Bio-Fuel from the Cow



Offshore Platform



Offshore Platform



Natural Gas Field



Lithium Field



Coal Mine



Lithium Mine



Mustang GT



Mustang GT

Perception Impact Globally

The concept of perception impacting value is valid across industries. What are some other instances of Perception driving value?

- Current Oil & Gas Pricing – Perception of Scarcity
- Current Housing Market – Perception of Scarcity, Future Cost of Money

In Summary

Our job as valuation professionals is to work to understand the impact that all forms of obsolescence have on assets.

In the current market, what we have uncovered today is that the fourth form of obsolescence, “Perception” is almost impossible to predict and difficult to quantify.

Is the number 5%, 50%, or 99%? That is up to us to determine and explain.



Questions?