ENERGY ECONOMICS AND ASSET VALUATION PERSPECTIVES FROM A CHIEF ECONOMIST

2022 ASA ENERGY VALUATION CONFERENCE
HOUSTON, TEXAS

HORACE HOBBS
BILLIONS OF DOLLARS WORTH* OF REFINERIES PERMANENTLY CLOSED OVER LAST TWO YEARS

Shell Convent, LA 240,000 Bbl/day
Phillips 66 Bellechase, LA 255,000 Bbl/day
Marathon Martinez, CA 162,000 Bbl/day

What changed?
ENERGY ASSET VALUATION HAS ALWAYS BEEN COMPLICATED

Numerous Asset Segments and Classes
Volatile Commodity Markets
Uncertain Regulatory Environment

It Is Now Considerably More Difficult:
A View of the Future Is Required

Today’s Agenda

- General State of U.S. Energy Industry
- Global Decarbonatization
  - A New Obsolescence Factor
- New Considerations on Asset Valuation
  - Curating Comparable Sales
  - Diverging Segment Trajectories
  - Increasingly Complex DCF Requirements
TRADITIONAL (CARBON) ENERGY IS MATURE INDUSTRY

U.S. Annual Demand

- U.S. Crude Oil and Petroleum Product Demand (Billion Barrels)
- U.S. Total Fossil Fuel Consumption for Electricity Demand (Million MMBtu)
TRAJECTORY VARIES BY SEGMENT

Demand - Motor Gasoline vs. Petrochemical Feedstock Demand

U.S. Product Supplied of Finished Motor Gasoline (Million Barrels)

U.S. Product Supplied of Petrochemical Feedstocks (Millions of Barrels)
The World Wants to Decarbonize

Countries’ Net Zero Emissions Pledges and Share of Global GHG Emissions

Countries’ Net Zero Progress¹

- **Parties of Paris Agreement**: 191 geographies
- **With net-zero targets**: 134 (73% GHG emissions)
- **With long-term plans**: 32 (14% GHG emissions)
- **With goals in law**: 16 (10% GHG emissions)

1) Current status as of June 2021
2) Source: IHS Markit
LESS CO₂ MEANS LESS OIL CONSUMPTION

Regulation and technology will drive demand

IEA Total Liquids Demand (MMBD)

1) Source: IEA: International Energy Agency
IEA FORECAST DILEMMA

*The long-term Base Case changes every year*

- 70% of emissions pledged away in the last 18 months
- IEA STEPS is based upon codified regulation and only 10% of pledges in law
- IEA STEPS projection adjusted annually to account for changes in economic and efficiency outlooks.
- More recently, changes in future oil demand are overwhelmingly dictated by CO$_2$ related government regulation and technology advancement.
APRIL 2021 BIDEN CLIMATE PLEDGE

50% reduction of GHG by 2030, net zero by 2050

Annual U.S. Greenhouse Gas Emissions

Potential Path to Achieve Pledge

1) Transportation:
   - Fleet electrification at 6 million/year in 2030 (maximum per BloombergNEF)

2) Residential/Commercial:
   - 90% GHG reduction from electricity generation by adding renewables and carbon capture
   - 10% building GHG reductions via less heating

3) Methane & Other
   - Reductions from Oil & Gas, Agriculture, bio sequestration

4) Industrial:
   - Carbon capture and rationalization (~$120/ton minimum carbon price required)
Transactions Have Become Rare In Most Downstream Segments and Those That Are Public May Not Translate

Buyers currently lack access to capital markets
Starting Point Has Changed In Mature Energy Segments

- **Traditional definition of Fair Market Value:**
  - "The price at which property would change hands between a willing buyer and a willing seller, neither being under any compulsion to buy or to sell and both having reasonable knowledge of relevant facts."
  - Kit, location, contracts, regulation and costs are “facts;” market prices and margins are “expectations”

- **A transaction occurs when the buyer’s view (expectations) of the asset economics relative to its cost exceeds the seller’s view relative to its costs**
  - The relevant operating costs are small and mostly stable relative to the capital investment and margin available
  - The Participant’s view of asset economics vary widely

*Comparable Sales Analysis Will Often Overvalue Assets*
The Futures Market Is Not A Reliable Predictor Of Longer Term Crude Price
Consensus View Suggests Decline In Asset Values
The Value Generated From Transporting Petroleum Has Substantially Diminished – Tariffs Will Follow
CONCLUSIONS

- The Fair Market Value of most all existing Energy Assets today is substantially less than just a few years ago

- Valuations will most often be driven by near-term cash flow accounting for decline, obsolescence, and carbon capital
  - A cost approach to valuing assets in a declining segment may be totally meaningless
  - Comparable sales analysis in a declining segment is increasingly difficult to translate or employ

- An decarbonization consistent economic basis or view of the future is the starting point for an asset valuation
  - Needs to include a view of both the global and local pace of Decarbonization
  - Requires a rationale for the subject asset’s place in that future