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2023 ENERGY CONFERENCE

SEPTEMBER 20TH
8:00 AM - 4:00 PM

FROST TOWER
PALMWOOD EVENT & CONFERENCE
640 Taylor Street
Fort Worth, TX 76102

KEYNOTE SPEAKER
ROBERT ALLEN
CEO at Fort Worth Economic Development Partnership

***8 HOURS OF CPE & 1 HOUR CLE**
pending approval

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Federal Tax Tax Update

WE ARE AN INDEPENDENT MEMBER OF
THE GLOBAL ADVISORY
AND ACCOUNTING NETWORK

Disclaimer

- This presentation and related materials are designed only to provide general information regarding the subject matter discussed during this presentation. The statutes, authorities, and other laws cited in this presentation are subject to change.
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IRS Enforcement One Year Later

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- Appropriates approximately $80 billion to the IRS to add auditors, improve customer service, and modernize technology
- Full-time staff to nearly 90,000
  - Increase from around 79,000 in 2022
- Mostly in customer service area
- Areas of concern
  - Timely refunds
  - Identity theft

Bonus Depreciation

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- **100% Bonus Depreciation**
  - Property placed in service before 01/01/2023 is eligible for 100% bonus depreciation

- **Phase out of 100% bonus depreciation**
  - 80% for assets placed in service 01/01/2023
  - 60% for assets placed in service 01/01/2024
  - 40% for assets placed in service 01/01/2025
  - 20% for assets placed in service 01/01/2026
  - Completely phased out beginning 01/01/2027

199A – Qualified Business Income Deduction

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- **2023**
  - Deduction of potentially 20% of passthrough income allowed
  - Qualified vs Specified Service distinction and total deduction cannot exceed 20% of taxpayer's taxable income
  - Qualified – unlimited deduction but tests that must be met if income exceeds $364,200 for MFJ and $182,100 for single
  - Specified Service – deduction completely phased out for income levels above $464,200 for MFJ
  - Phased out completely beginning 01/01/2026
  - Planning opportunities for wages

Excess Business Losses

- **Current Law**
  - For tax years beginning after December 31, 2020 excess business losses are not allowed
  - Disallowed loss treated as NOL and carried to future years
  - For 2021, excess business loss is a loss more than $578,000 MFJ and $289,000 Single
  - Limitation is applied at taxpayer level and not passthrough
  - Now effective through 2028

Meals Deduction

- **2021 & 2022**
  - Meals are 100% deductible if certain conditions are met
    - Amounts paid must be for food and beverages provided by a restaurant
    - Designed to help restaurants due to Covid
    - Restaurant means a business that prepares and sells food or beverages to retail customers for immediate consumption, regardless of whether the food or beverages are consumed on the business premises.
    - Does not apply to grocery stores, specialty food store, beer, wine or liquor store, drug store, convenience store, newsstand or a vending machine.
- **2023**
  - Meals are 50% deductible

Corporate Tax Rates

- Current Law
  - Corporate tax rate = 21%
  - Flat rate structure
  - Not eligible for 20% qualified business income deduction
  - Capital gains taxed at flat rate of 21%

Individual Marginal Tax Rates

- **Tax Year 2023**
  - 37% for incomes over $578,125 ($693,750 for married couples filing jointly);
  - 35% for incomes over $231,250 ($462,500 for married couples filing jointly);
  - 32% for incomes over $182,100 ($364,200 for married couples filing jointly);
  - 24% for incomes over $95,375 ($190,750 for married couples filing jointly);
  - 22% for incomes over $44,725 ($89,450 for married couples filing jointly);
  - 12% for incomes over $11,000 ($22,000 for married couples filing jointly).

Other Tax Year 2023 Adjustments

- **Standard Deduction**
  - Increase to $27,700 compared to $25,900 in prior year for MFJ
  - Increase to $13,850 compared to $12,950 in prior year for single
- **Estate Exclusion Amount**
  - $12,920,000 compared to $12,060,000 in 2022
- **Gifts Per Person**
  - $17,000 compared to $16,000 in 2022
- **Items Unaffected**
  - Elimination of personal exemption
  - No limitation on itemized deductions
  - Property taxes remain capped at $10,000

Green Energy Credits

- Clean Energy Credits
  - New production and investment credits for electricity-generating facilities with carbon emissions at or below zero or energy storage technologies
  - Credit available after 2024 and phased out when emission targets achieved or in 2032, whichever is later
- Production Tax Credit
  - Modify and extend through 2024 credit for facilities that produce electricity from renewable energy
- Advanced Manufacturing Production Credit
  - New credit for domestic production and sale of qualifying solar and wind components and inverters
  - Credit available after 2022 and phased out after 2029, phaseout wouldn't apply to production of critical minerals

Green Energy Credits

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- Residential Energy Efficiency Property Credit
  - Modify and extend through 2032 credit for qualified energy efficiency home improvements
  - Increase to as much as $1,200 annually, from $500 lifetime cap for certain expenditures
- New Clean Vehicle
  - Credit for purchases of new “clean vehicles” such as electric and fuel cell vehicles with final assembly in US
  - Equal as much as $7,500 for meeting certain requirements
  - Phase out at income of $300,000 for MFJ and $150,000 for single filers
  - Credit limitations if battery inputs are sourced from China, Russia, Iran or North Korea

State Tax Update

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State Income/Franchise Tax Trends

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- Pass-through Entity Tax Elections
  - 36 states including: Colorado, Kansas, Louisiana, Montana, Nebraska, New Mexico, Oklahoma
  - Provides a “work-around” the $10K limit on state tax deduction in effect through 2025
  - Colorado provides ability to retroactively elect back to 2018 (must amend prior year return(s) between Sept 1, 2023 and July 1, 2024.)
  - Louisiana 2023 legislature updated statute to provide income exclusion to estates, trusts and partnerships (previously was available only to individuals)
  - Montana, Nebraska and New Mexico elections are all new beginning with 2023
  - Nebraska also provides for retroactive election and amending returns back to 2018
  - Key Considerations:
    - Timing and method of election
    - Estimated payment requirements
    - Method of claiming the benefit if a non-individual
    - Whether refundable or not

State Income/Franchise Tax Trends (Continued)

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- Lowering Rates (Corporate and Individual Rates)
  - Large state surpluses due in part to Federal COVID relief
  - Texas surplus of nearly $33B – resulted in property tax relief we saw passed during a special legislative session this summer
  - Colorado, Louisiana, Montana and Oklahoma have cut rates (individual and/or corporate) in the past three years
  - However, total state tax revenues dropped 9.4% for June 2023 compared to June 2022, so have we reached the end of the rate cutting frenzy?
- Franchise Tax Repeal
  - Oklahoma – Franchise Tax repeal beginning with the 2024 report year
  - Louisiana – passed the legislature overwhelmingly, but was vetoed by the governor
  - Mississippi – phasing out franchise tax, franchise tax is completely eliminated after 2027

Texas Tax Update

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- Property Tax Relief (pending November vote) would be applied to tax bills due in Jan, 2024
  - Rate Compression
  - “Circuit breaker” limits
  - Increase the homestead exemption
- Texas Franchise Tax Apportionment – Citgo Petroleum
  - In April, the Texas Supreme Court, reversed its prior denial of the Citgo case dealing with whether Citgo is allowed to include gross proceeds of the sale of its futures contracts in the apportionment factor ($2M tax impact)
- Revised Texas Sales Tax regulations potentially forthcoming
  - Replaces taxable/non-taxable well-site services with real property new construction vs. repair/remodel distinction
  - Manufacturing exemption – pumps/compressors and chemicals not eligible for the manufacturing exemption for use after the oil/gas is “pipeline quality”

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U.S. UPSTREAM FUNDAMENTALS

Whitley Penn Energy Conference – September 20, 2023

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Quite the Summer

ERCOT
@ERCOT_ISO

(1/2) TXANS Update—August 27, 2023: ERCOT has issued a Conservation Appeal for today, Aug. 27, from 4 – 9 p.m. CT. Operating reserves are expected to be low in the afternoon and evening due to low wind and potential low solar generation and high demand.

10:39 AM · Aug 27, 2023 · **236K** Views

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Source: The Electric Reliability Council of Texas ("ERCOT") [@ERCOT_ISO]. "(1/2) TXANS Update" X, 27 August 2023, https://twitter.com/ERCOT_ISO/status/1695823452878622946.

U.S. Upstream: Strong Fundamentals and Vital to Meet Energy Demand

Access to affordable and reliable energy is essential to increase quality of life
Increasing quality of life requires increased global energy consumption

Global energy demand has consistently grown on an absolute basis
Driven by worldwide population growth and increased energy consumption per capita (along with GDP per capita)

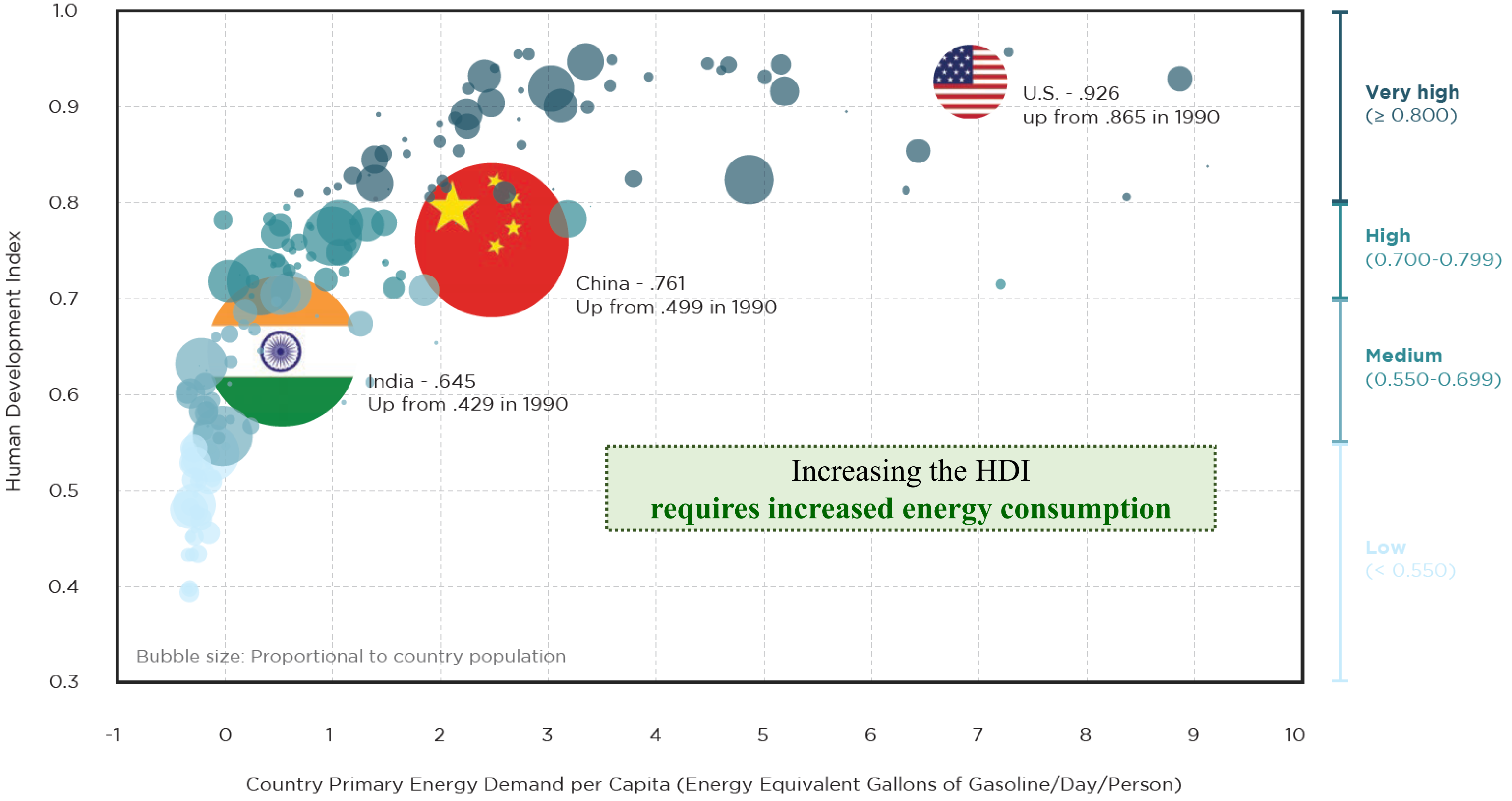
Fossil fuels remain vital to meet energy demand
Energy transition government policy mandates cannot induce sufficient capital investment on renewable energy supply growth to keep up with demand growth

United States shale provides globally cost-advantaged energy
While also comparing favorably on emissions intensity

We have observed years of under investment in supply
Upstream capital discipline remains firmly in place

Access to Affordable Energy is Essential for HDI Improvement

The United Nations Human Development Index (HDI) combines life expectancy at birth, years of education received and per capita gross national product



Source: LBRT ESG Report issued August 2022

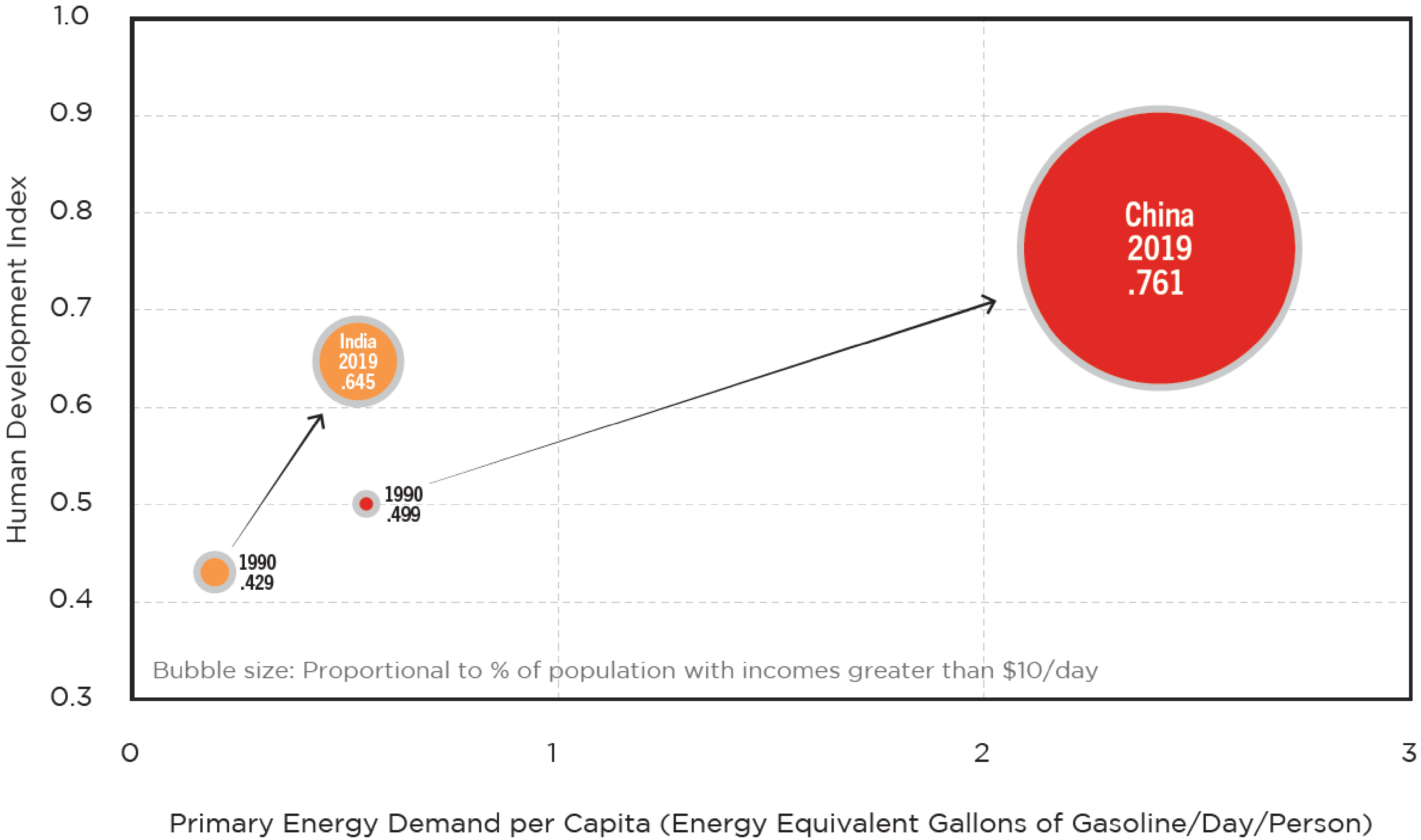
China and India: Increasing Energy Consumption and Quality of Life

India

- Mean education increased 2.2x
- Life expectancy increased 11.8 years
- **Energy per capita increased 174%**

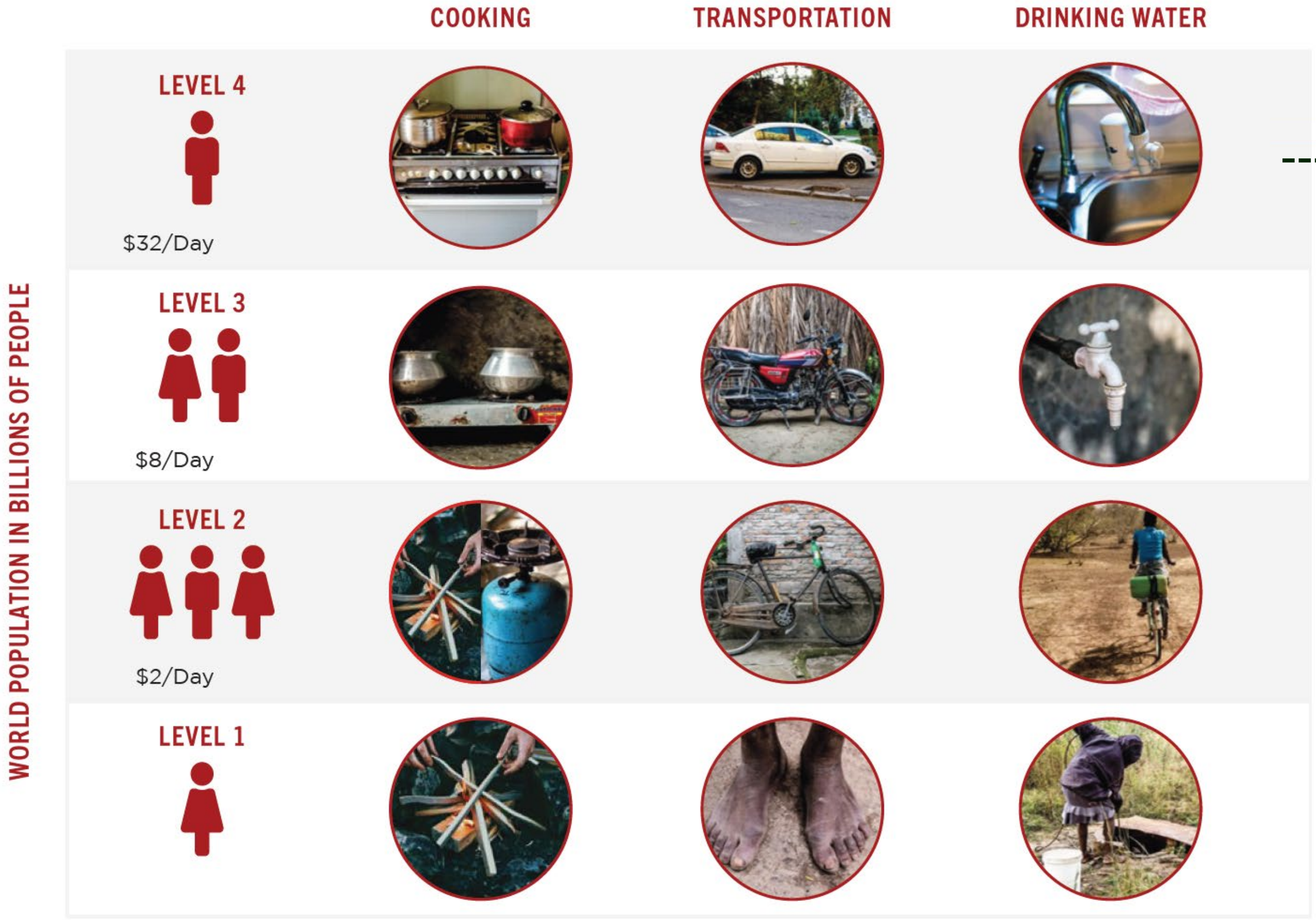
China

- Mean education increased 1.7x
- Life expectancy increased 7.8 years
- **Energy per capita increased 339%**



Source: LBRT ESG Report issued August 2022

Joining the Modern World Requires an Enormous Increase in Personal Energy Consumption



Media tends to focus on the minority

- Only about one seventh of the world's population lives in conditions like the United States
- 3 billion people live with less energy per capital than the average American refrigerator
- The modern world was enabled by reliable and affordable energy
- Energy costs impact the speed at which energy-rich living conditions can be brought to more people

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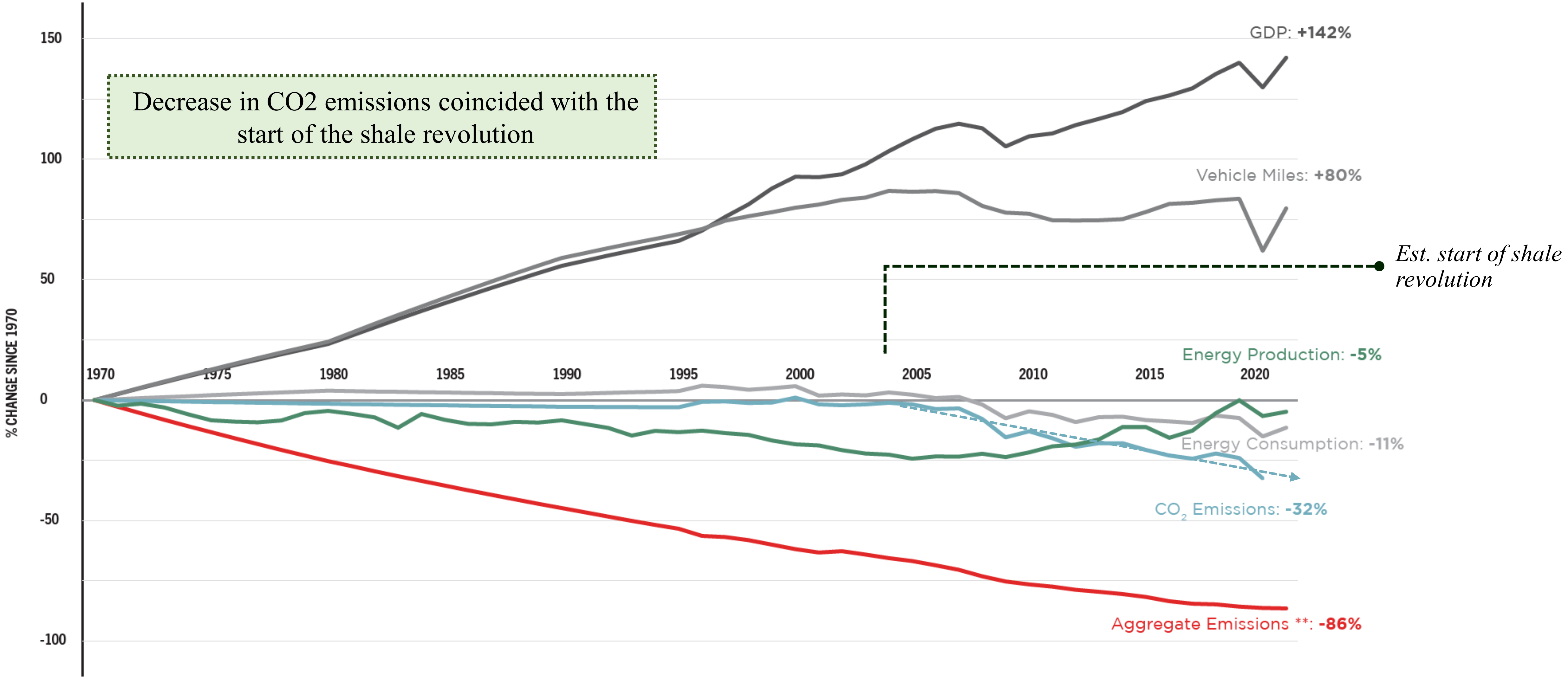
Source: LBRT ESG Report issued August 2022

GHG Emissions Have Reached a 50-Year Low

US Per Capita Growth and Emissions 1970-2020



** 6 named criteria pollutants from The Clean Air Act: Ground-level Ozone, Particulate Matter, Carbon Monoxide, Lead, Sulphur Dioxide, Nitrogen Oxides

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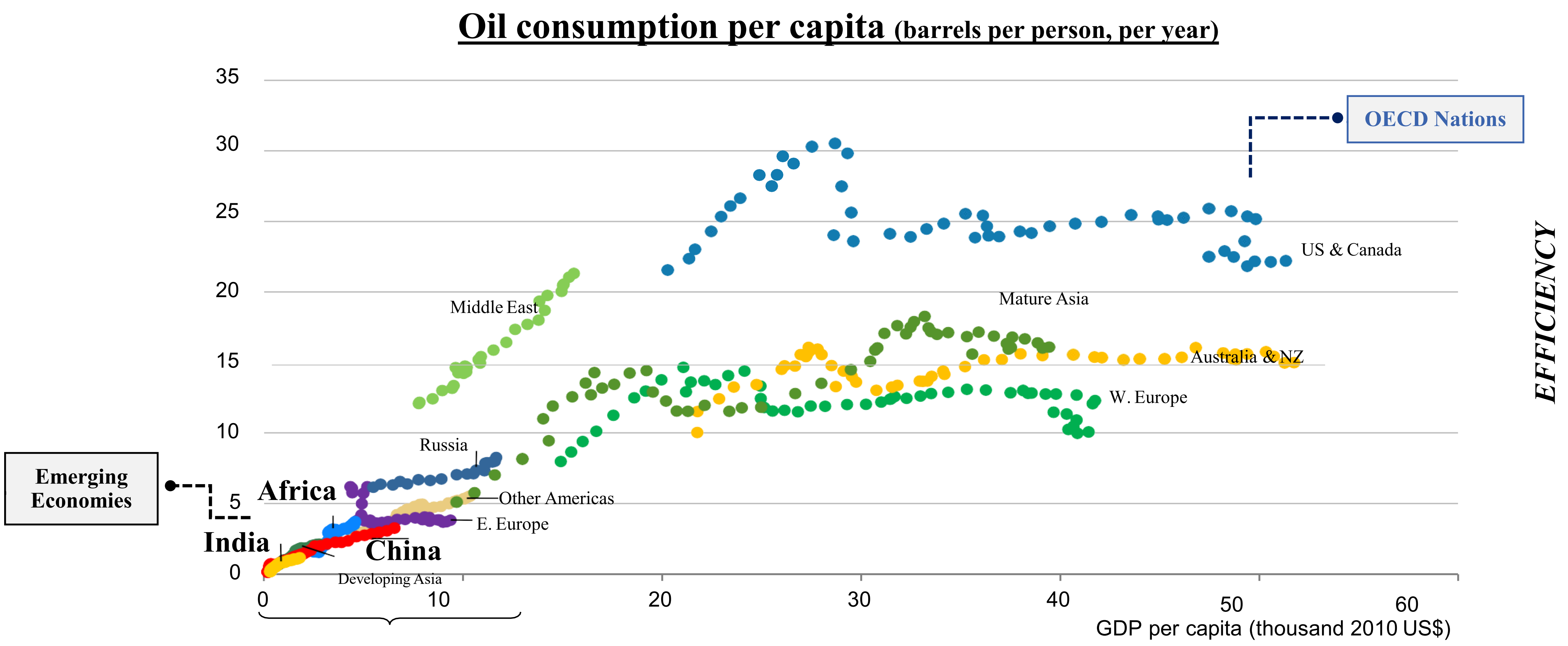
Source: LBRT ESG Report issued August 2022

Demand Growth's Long Runway Ahead



Emerging Economy oil consumption per capita can increase ~200-400% before matching that of OECD Nations

According to The Brookings Institution:

- In 2024, for the first time in the history of the Asian continent, the consumer class will outnumber the "vulnerable and poor"
- The size of the Asian middle class is expected to reach nearly 3.5 billion people by 2030, a ~75% increase from 2.0 billion in 2020… 88% of the next 1 billion people to enter the middle class globally will be Asians

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Source: MS – Energy Teach – In, Morgan Stanley Research 2019

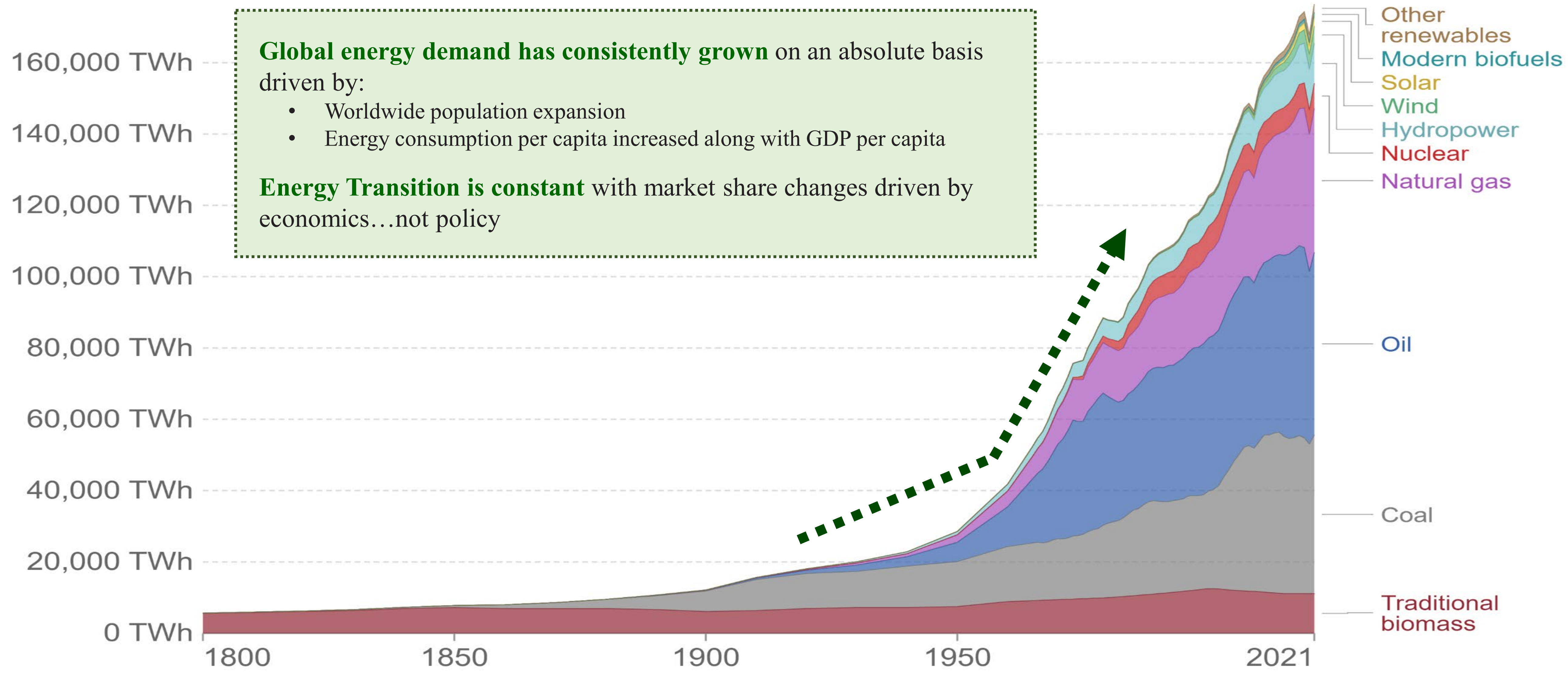
Energy Transition = Market Share Change

Global Primary Energy Consumption Growth by Source

Global energy demand has consistently grown on an absolute basis driven by:

- Worldwide population expansion
- Energy consumption per capita increased along with GDP per capita

Energy Transition is constant with market share changes driven by economics…not policy



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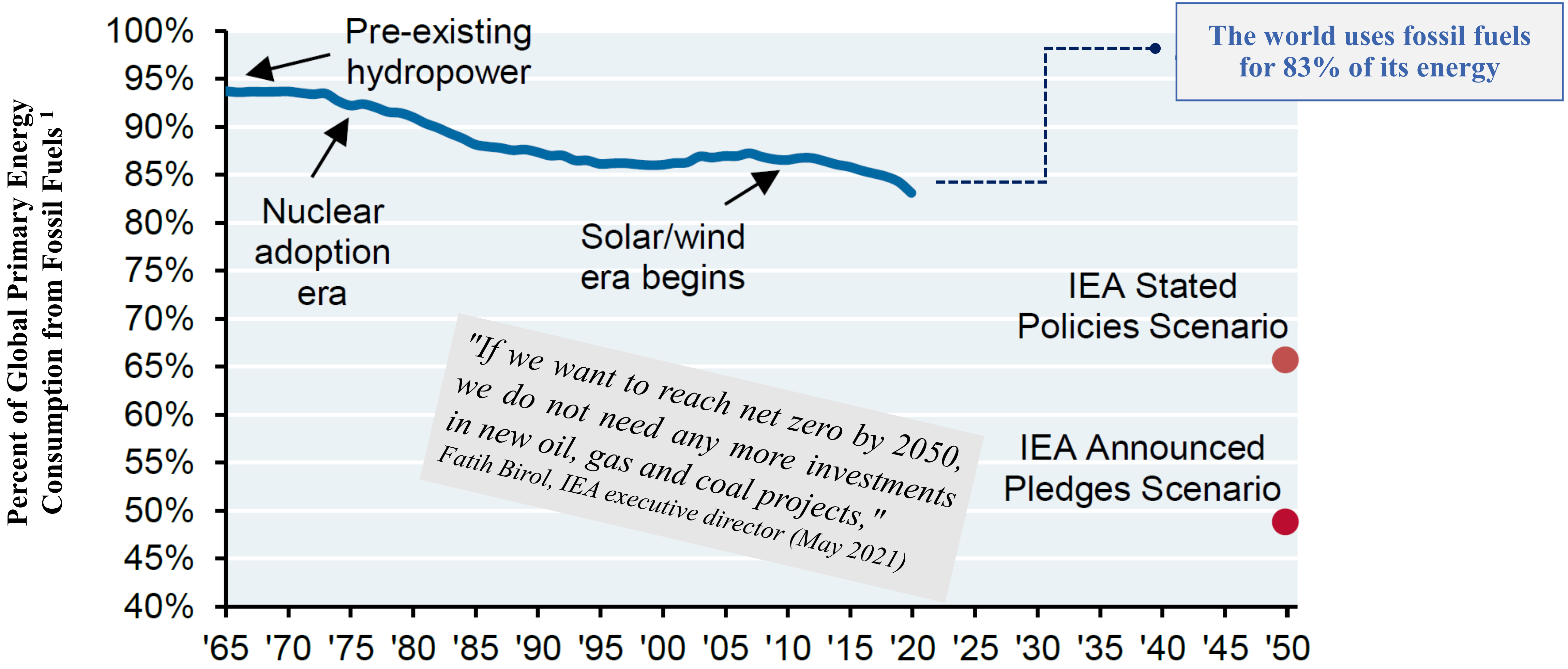
Source: https://ourworldindata.org/energy-key-charts; Our World in Data based on Vaclav Smil (2017) and BP Statistical Review of World Energy; Primary energy is calculated based on the ‘substitution method’ which takes account of the inefficiencies in fossil fuel production by converting non-fossil energy inputs required if they had the same conversion losses as fossil fuels

Fossil Fuels Remain Essential to Meeting Energy Demand



Energy transition government policy mandates cannot induce sufficient capital investment on renewable energy supply growth to keep up with demand growth, much less forced demand switching on accelerated, policy-mandated timelines

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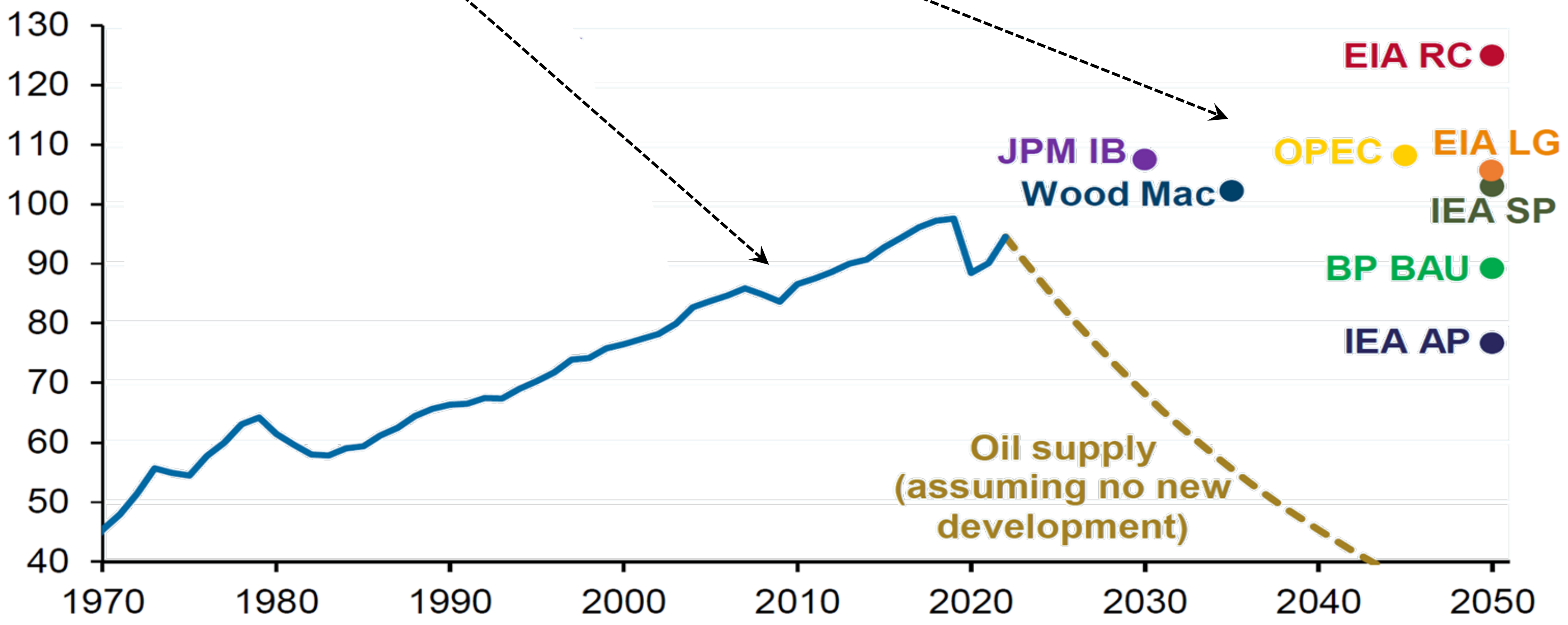
Source: BP Statistical Review of World Energy, IEA, JPMAM. 2021; JPM 2022 Annual Energy Paper

Don’t Forget About Depletion

Supply from Existing Fields and Demand Projections[1]
(MMb/d)



Lack of capital investment in the oil & gas sector could create a serious supply issue in the coming years

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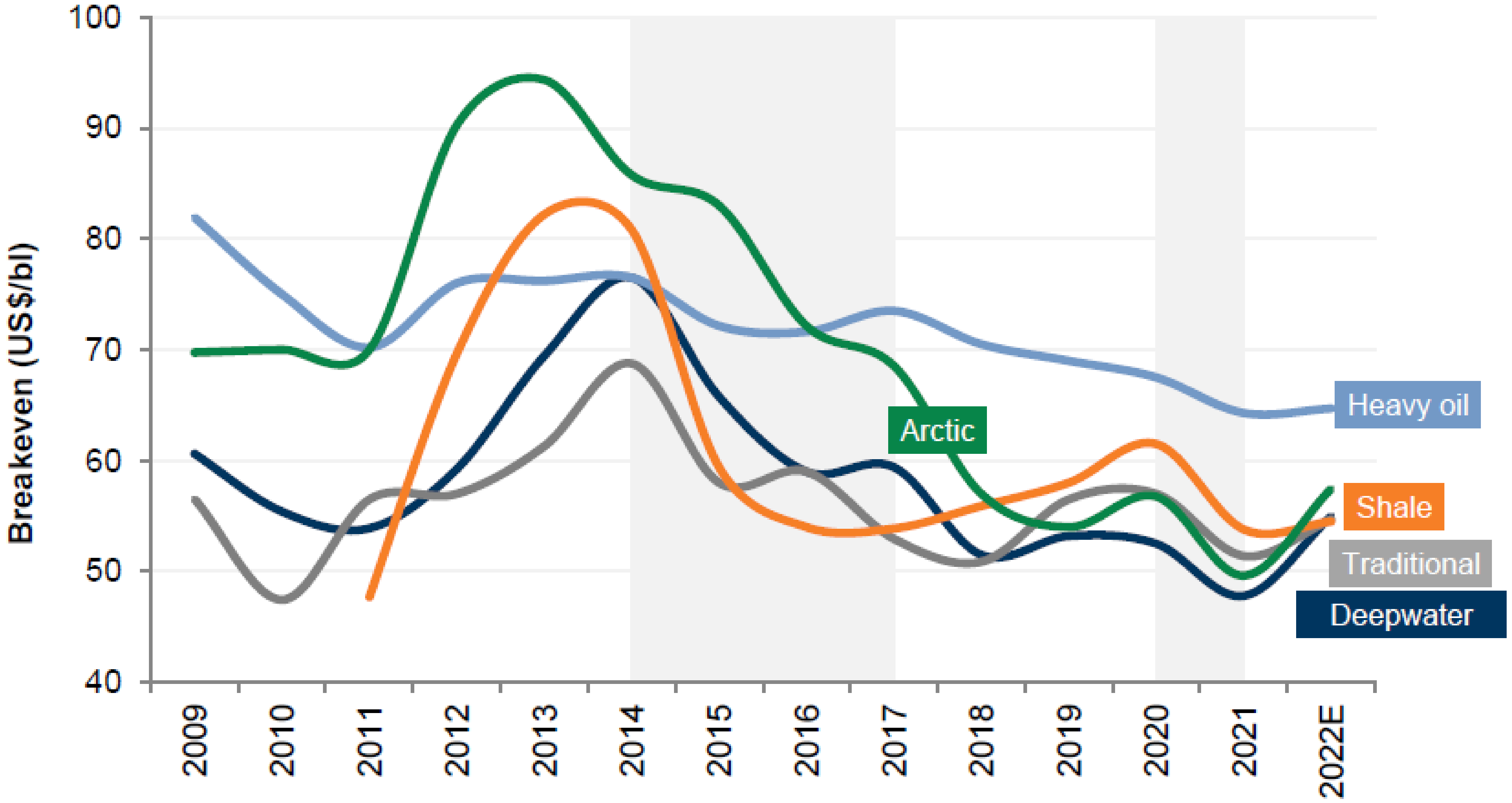
Source: BP, EIA, IEA, OPEC, Wood Mackenzie,JP Morgan Investment Bank, JPMAM. 2021; JPM 2022 Annual Energy Paper; JPM IB=JPM IB Investment Bank, Wood Mac=Wood Mackenzie, EIA RC=EIA RC Reference Case, EIA LG=EIA LG Low GDP Growth, IEA SP=IEA SP Stated Policies, BP BAU=BP BAU Business as Usual, IEA AP=IEA AP Announced Pledges

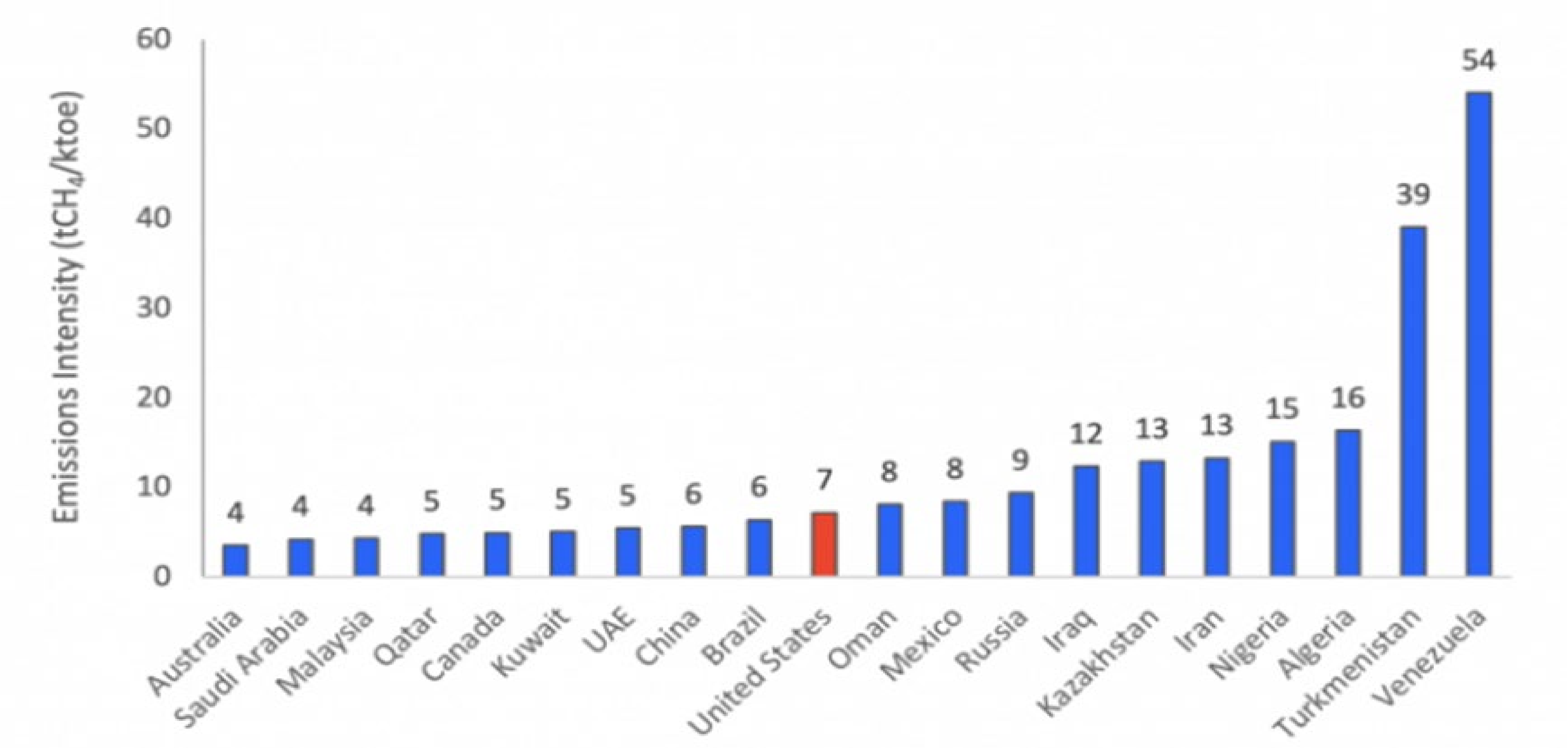
U.S. Resource = Globally Cost Advantaged



Source: Goldman Sachs Global Investment Research, April 2022

…and Greener

Methane Emissions Intensity of Oil and Gas Production



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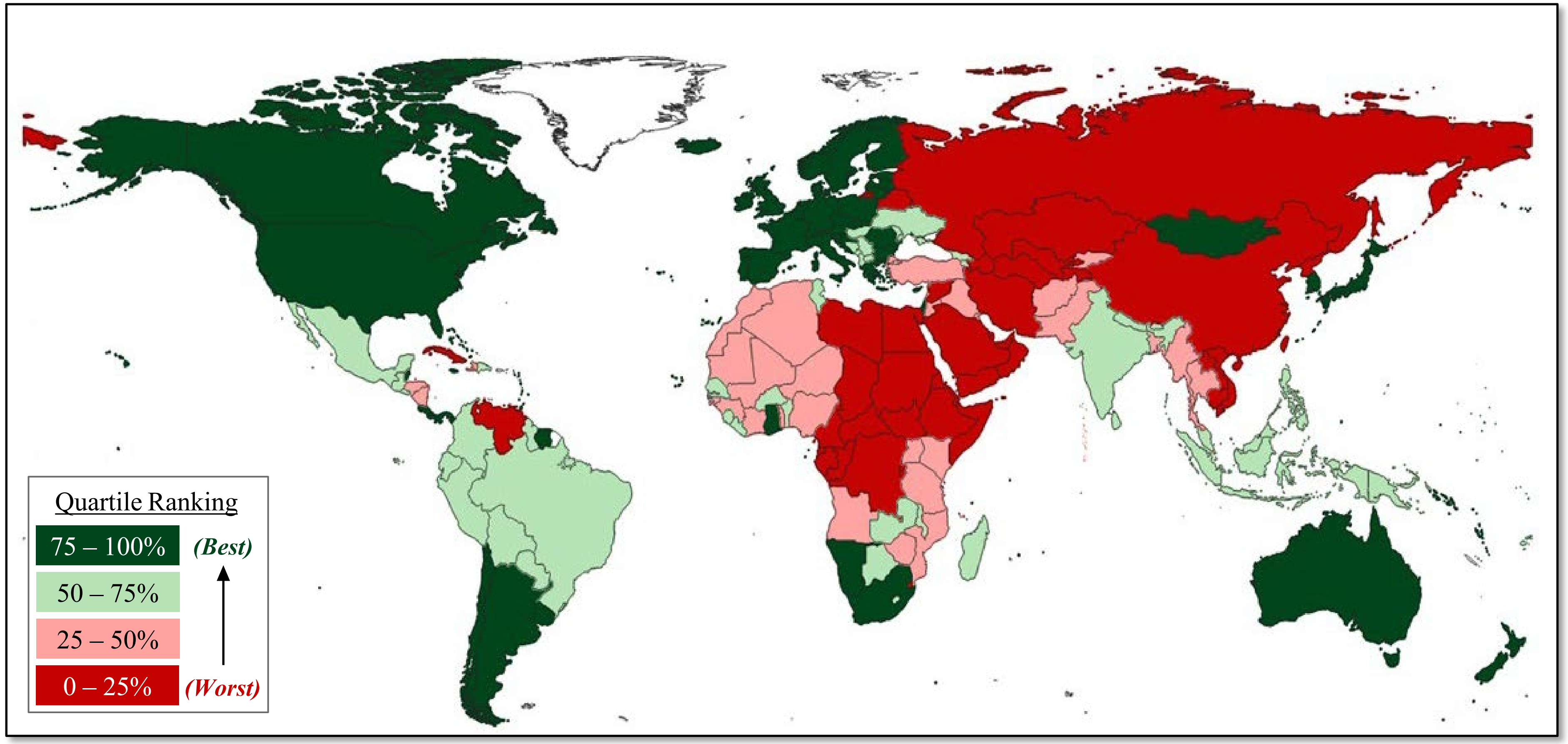
Source: International Energy Agency Methane Tracker, Greater U.S. Energy Production Is Needed to Reduce Reliance on Authoritarian Regime, Dan Byers, April 5, 2022

Meeting Energy Demands Responsibly: Human Rights

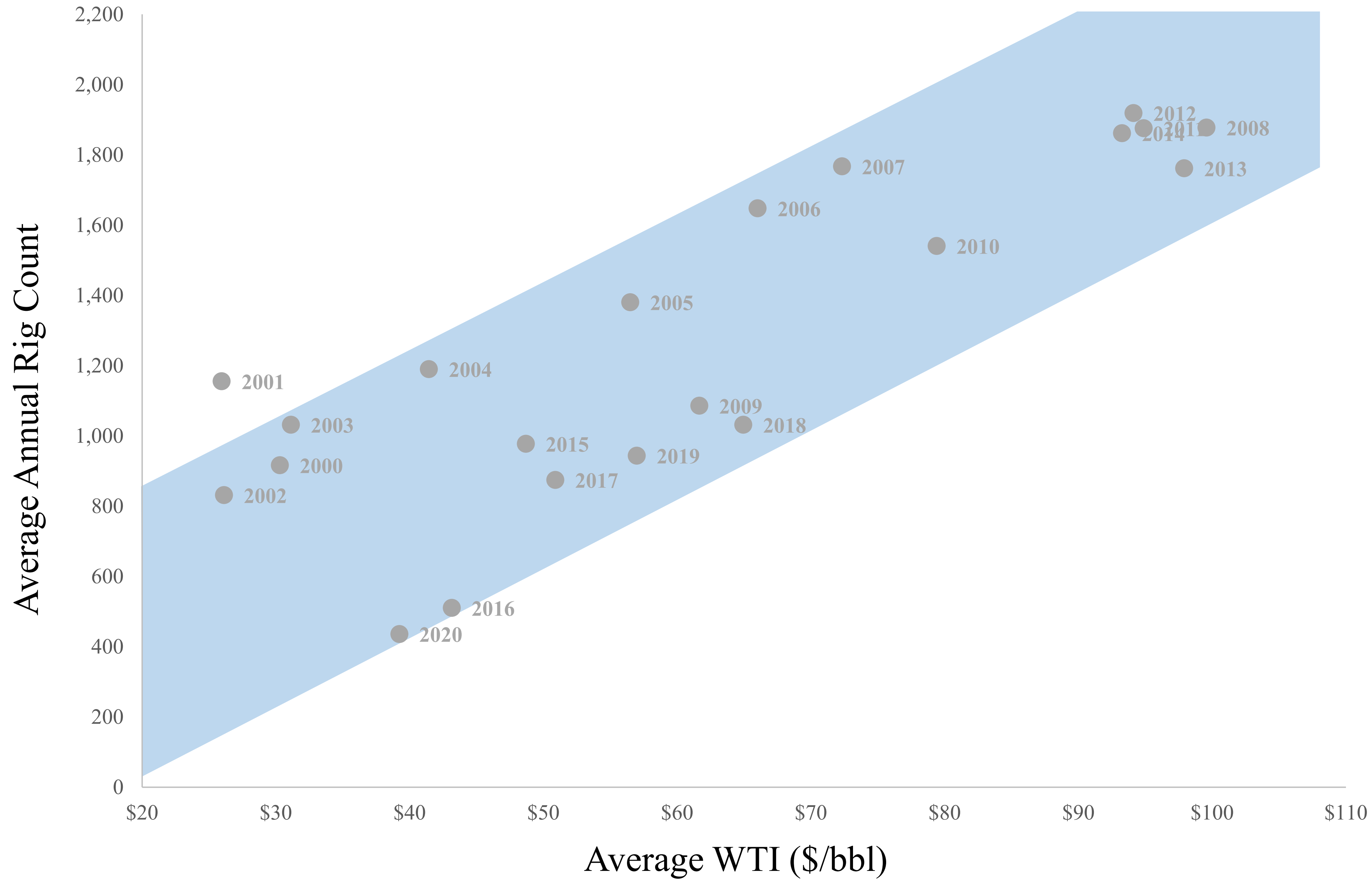
Freedom House's Global Freedom Score



- The U.S. offers a liberal democracy that supports human rights and civil liberties
- Underinvesting in the U.S. could force global consumers to buy from large producers in other countries such as Russia, Saudi Arabia, Iran and China that violate basic human rights

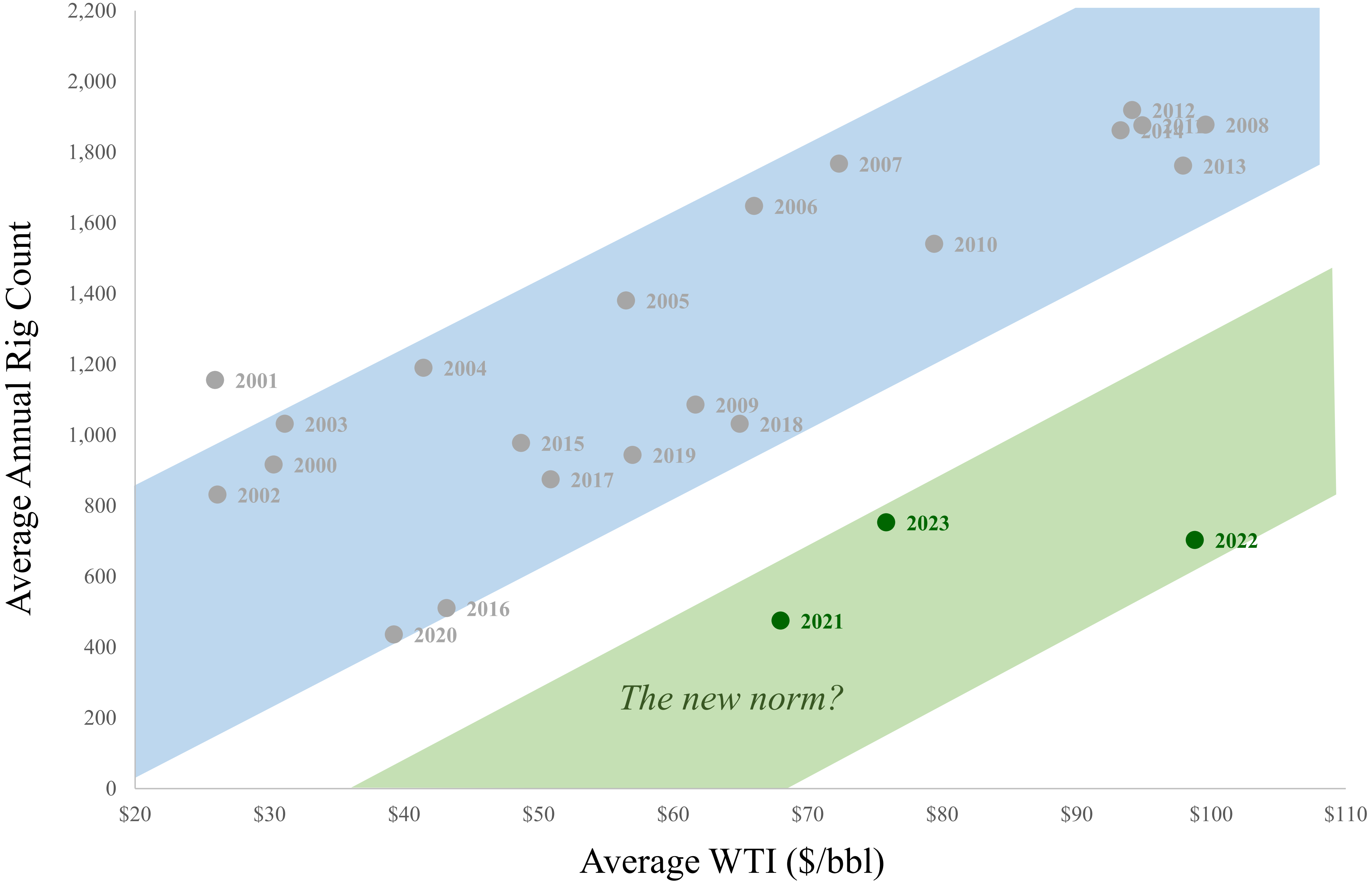
Source: Freedom House 2021 Freedom in the World Report; Sourced in October 2021

Rig Count Correlated to Oil Prices: 2000 – 2020



Source: Rig Count sourced from Baker Hughes International Rig Count; WTI commodity price sourced from the EIA
Note: 2023 averages through 5/31/2023

From OVER-invest to UNDER-invest



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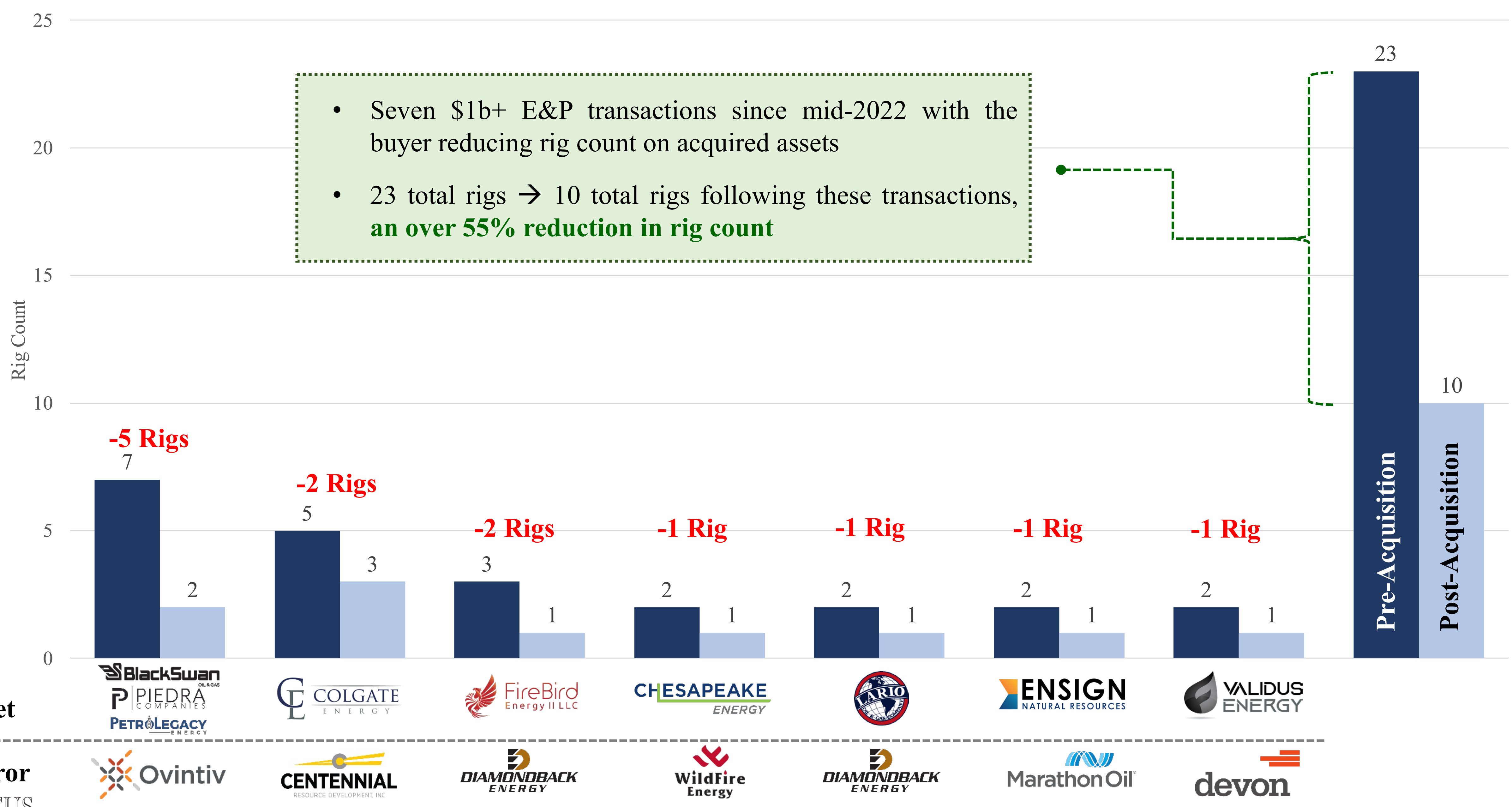
Source: Rig Count sourced from Baker Hughes International Rig Count; WTI commodity price sourced from the EIA
Note: 2023 averages through 5/31/2023

Consolidation Driving Reduction in Rig Count, Further Limiting Supply



We Need All Solutions…And All Are Right Here at Home

- In 2021, Texas produced more energy than any other state, accounting for almost 12% of total U.S. net energy generation[1]
- Texas is the #1 producer of oil (43%), natural gas (25%) and wind-powered electricity (26%) in the nation…16 years running for #1 in renewables[1]
  - Wind power surpassed the state's nuclear generation for the first time in 2014 and exceeded coal-fired generation for the first time in 2019[1]
  - In 2020, average U.S. state electricity costs were ~34% higher than costs in Texas[2]

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1. Source: Institute for Environmental Studies, Department of Environmental Sciences, TCU Neeley School (EIA)
2. Source: 2020 EIA State Electricity Profiles

Vortus' Place in the Market

A Focus on Converting Resources to Cash Flow

Asset-focused Approach to Generate Sustainable Cash Flow Across Cycles

Consistent Investment Strategy Since 2013 Formation

Assets in Place

Path to Value Creation

- Proactive approach to sourcing privately negotiated, off-market transactions
- Drill-ready assets in place at initial investment with value creation plan agreed in collaboration with management

Manage Risk

Disciplined Capital Allocation for Development

- Low operational and finding costs protect attractive unit economics through cycle
- Economic alignment with management teams experienced in basin to mitigate risk

Sustainable Returns

Compounding Free Cash Flow

Cash flow generation through asset development is designed to enable a balanced approach to:

- Distributions
- Re-investment into development growth
- Opportunistic divestitures

Lower Mid-Market

Equity commitments of approximately $25 million - $100 million

Minimizes Capital Competition

Enhances Funnel of Potential Exit Opportunities

VORTUS Investments

There can be no assurance that Vortus will be able to implement its investment strategy or achieve its investment objectives for a Fund or any investment.

Vortus' Asset-Focused Strategy is enabled by the team's complementary skills and experience from careers focused on energy and finance

Jeffrey W. Miller
Managing Partner
& Co-Founder

Education
- Texas A&M, Petroleum Engineering
- Columbia, MBA

MERCURIA
Moncrief Oil International
UBS
Dillon Read & Co.
ExxonMobil

30+ Years
Relevant Experience

Brian C. Crumley
Managing Partner
& Co-Founder

Education
- Princeton, Political Economics
- Stanford, MBA

LKCM Luther King Capital Management
Sirios Capital Management
NGP

25+ Years
Relevant Experience

Brian E. Hansen
Partner

Education
- Texas A&M, Petroleum Engineering
- SMU, MBA

PIONEER NATURAL RESOURCES

20+ Years
Relevant Experience

Frank D. Lamsens
Partner & COO

Education
- TCU, Finance & Accounting
- Notre Dame, MS Accountancy

TPG
KPMG

~19 Years
Relevant Experience

Ross Cunningham
Director of Finance

Education
- Texas Tech, MS in Accounting
- Texas Tech, BA in Accounting

15+ Years Relevant Experience
- TPG (formerly Texas Pacific Group)
  Senior Manager – Business Unit Finance
  - Oversaw all accounting and finance aspects of the Biotechnology funds
  - Facilitated investment activity for the flagship TPG Capital funds
- AudridgeGriffin
  Senior Associate – Audit
  - Responsible for audit engagements across numerous industries including manufacturing, oil & gas and city governments
- KPMG
  Senior Associate – Audit
  - Responsible for audit engagements with exposure to numerous industries including oil & gas

W. Bryce Orser
Portfolio Manager

Education
- Texas Christian University, BBA in Accounting and Finance

12+ Years Relevant Experience
- MorningStar Partners
  Manager – Finance
  - Critically involved in the design and implementation of the Corporate Finance, Treasury and Accounting systems and processes
  - Oversaw the formation and development of three distinct operating companies deploying $4+ billion of capital over 10+ years
- Stephens, Inc.
  Corporate Finance Analyst
  - Utilized sophisticated financial modeling to help maximize value for the firm's clients

  E&P Equity Research
  - Participated in the group's formation and initial launch of coverage of ~10 public companies
  - Focus on building company specific models, presentations and initiation reports as well as general industry research

Jonathan G. Dick
Senior Associate

Education
- Texas Christian University, BBA in Finance & Minor in Accounting

4+ Years Relevant Experience
- Jefferies Financial Group
  Investment Banking Analyst
  - Constructed operating and financial models to assess company performance and specific buyside and sell side mergers, acquisitions and divestiture opportunities
  - Developed comprehensive presentations for management teams and board of directors to aid in execution of transactions
- Luther King Capital Management
  Equity Research Analyst
  - Evaluated public and private corporations through primary research and formalized investment theses
  - Developed investment recommendations

Mason M. Sneed
Senior Associate

Education
- Texas A&M, Petroleum Engineering
- Rice, MBA

8+ Years Relevant Experience
- Alvarez & Marsal
  Associate
  - Advised clients across various industries including energy
  - Focused on financial forecasting, business plan development, strategic analysis and corporate transformation initiatives
- Guidon Energy
  Senior Reservoir Engineer
  - Generated development plans for the company's Permian Basin assets
  - Responsibilities included annual budgets and strategic A&D
- Apache Corporation
  Various Engineering Roles
  - Focus on operations and asset development

Characteristics Targeted in a Vortus Investment

Seeking to Create Value through Active Partnership

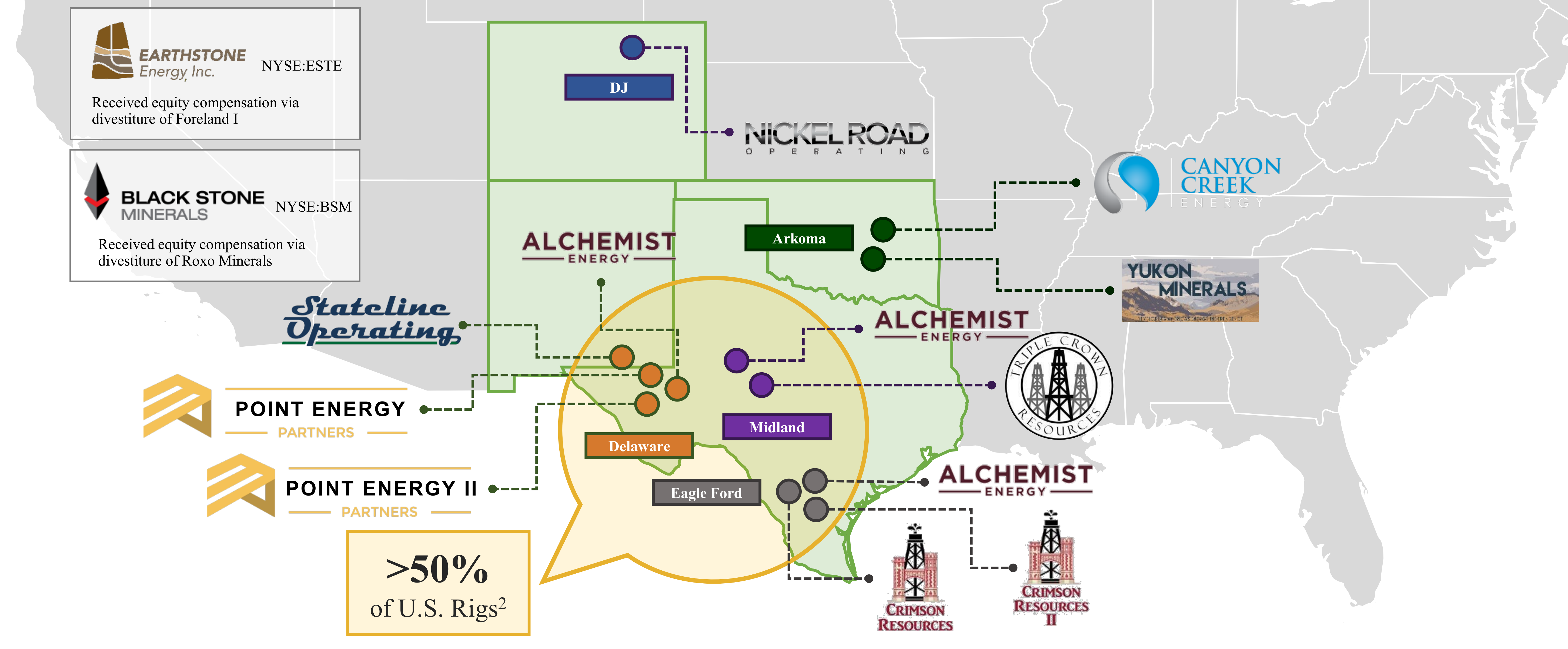
Limited Competition	Exploit market inefficiencies in lower-middle market by partnering with management teams that have identified assets in place with development upside	**Aligned Partnership**	Management teams commit meaningful investment alongside Vortus equity
Cost Competitive Assets	Low development and operating costs, constructive regulatory environment, underwriting does not rely on commodity price increases	**Experienced Management Teams**	Basin expertise with established track records of operational success
Growth Capital For Development	Accretive production growth generally enables organic growth while bolt-on M&A provides additional development potential	**Control**	Enable flexibility of structure, control over cash flow, manage downside risk and create multiple exit strategies alongside management

VORTUS Investments

Included for illustrative purposes only. There can be no assurance that each Vortus deal will reflect characteristics included herein.

Focus on Low-Cost, Potential for High-Return Areas of Operation[1]

Investing in basins with active development and demonstrated success



VORTUS Investments

1. Does not contain investments that were exited or written off prior to September 2023.
2. Enverus horizontal rig counts as of September 2023.

Recent Vortus Portfolio Highlights

Continued Focus on Development

Industry investment remains constrained, potentially enhancing the opportunity for Vortus' development-focused strategy; in 2022, the Vortus portfolio ran as many rigs as many of the largest public operators[1]

POINT ENERGY II PARTNERS

Efficiently Converted Locations to Cash Flow

Increased Point II LTM EBITDA ~200% from 4Q21 to 4Q22 primarily through accelerated development while reducing leverage ratio despite no additional equity needs

---

CRIMSON RESOURCES

Accelerated Development into Exit

Vortus secured additional financing to accelerate Crimson's development and attract 65% higher offer for full exit within 6 months of prior marketing process despite 23% lower oil prices; Cumulative distributions of over 210% equity invested

---

NICKEL ROAD OPERATING

Significant Distribution from Small Asset Sale

Distributed ~90% of equity invested in Nickel Road from asset sale of just 20% of production and 43% of locations

---

Stateline Operating

Project-Focused Strategy Drives Quick Return of Capital

Utilized free cash flow and asset sales to generate distributions in 2023 totaling 200% of invested equity within 30 months of initial investment through project-focused strategy for Stateline Operating, with expected capacity for additional distributions and continued upside potential

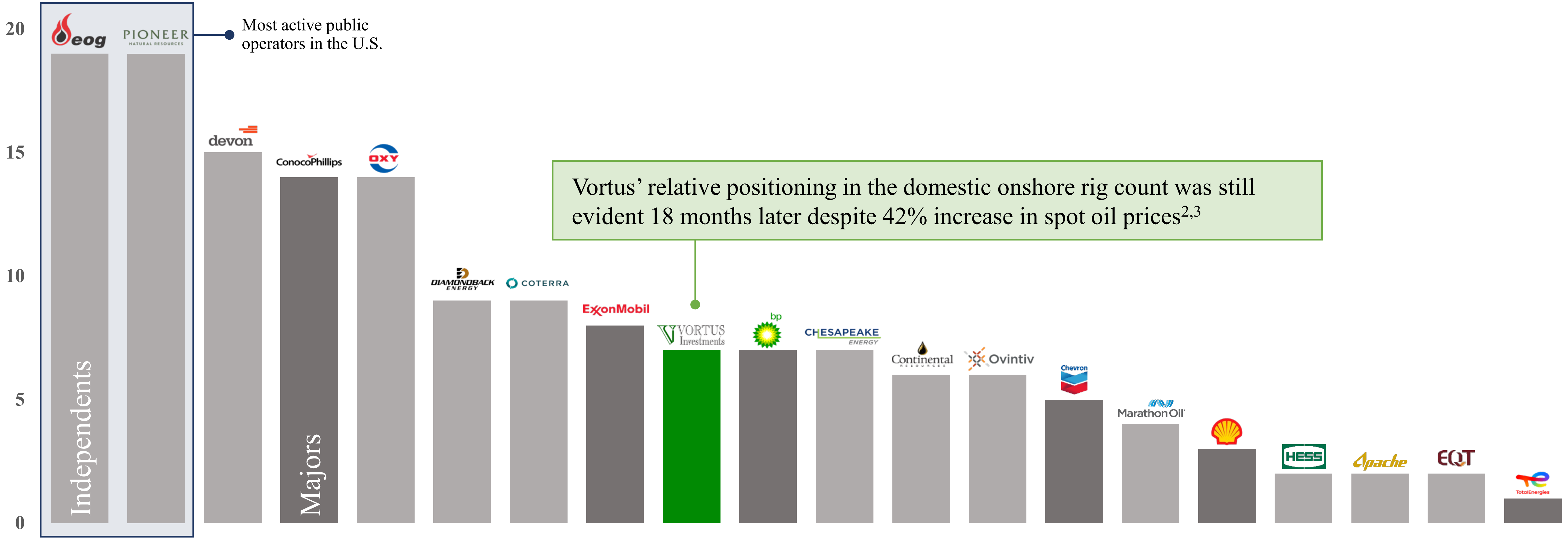
VORTUS Investments

1. Source: Rig data per Enverus as of 11/18/2022 of top 19 public operators by market cap as of 9/30/2022; Vortus count includes rigs running at any time in 3Q22 (TCR, CCE x 2 , Crimson, Point II x 2, NRO, Alchemist)

Expanded Opportunity for Vortus' Development-Focused Strategy

Vortus believes its focus on low-cost assets and proactive investment activity in 2020 ("drilling in the board room") allowed it to quickly re-accelerate development ("drilling in the field"), running as many rigs as some of the largest public operators in early 2021

Early 2021 U.S. Rig Count by Operator[1]



Capital discipline limits public operator development activity, despite still attractive economic returns, while continuing to create opportunity for Vortus' value creation strategy of converting resource to cash flow

VORTUS Investments

1. Source: Rig data per Enverus as of 5/11/2021 of top 19 public operators by market cap as of 9/30/2022; Vortus count includes rigs running at any time in 2Q21 (TCR, CCE, Crimson, Point II, NRO, SLO, Alchemist)
2. Source: From 2Q21 to 3Q22; Data per FactSet as of 9/30/2022
3. Source: Rig data per Enverus as of 11/18/2022 of top 19 public operators by market cap as of 9/30/2022; Vortus count includes rigs running at any time in 3Q22 (TCR, CCE x 2 , Crimson, Point II x 2, NRO, Alchemist)

Why Vortus?

Asset-Focused Investment Strategy

Drill-ready assets in place at initial investment with value creation plan agreed in collaboration with management

Team Capabilities

Technical, operational and financial energy industry experience

Established Network

Relationships built over careers in the energy sector

Limited Competition

Lower mid-market positioning and asset-focused strategy helps minimize capital competition and maximize exit opportunities

Repeatable Execution

Capital invested across multiple stages of the commodity price cycle

Track Record

Consistent investment strategy since inception spans multiple cycles with historically successful investment playbook

Contact Information

Vortus Investments

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Frank D. Lamsens
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Risk Factors Summary

An investment in the fund ("Fund") will entail substantial risks, including, but not limited to, those listed below, and a prospective investor should carefully consider the following summary of certain risk factors below and carefully consider the section of the Fund's **Confidential Private Offering Memorandum** entitled "Certain Risk Factors and Potential Conflicts of Interest," in determining whether an investment in the Fund is suitable:

Illiquidity of Interests. An investment in the Fund is suitable only for certain sophisticated investors who have no need for immediate liquidity in their investment. Interests in the Fund represent highly illiquid investments and should only be acquired by investors able to commit their funds for an indefinite period of time. Interests in the Fund are not freely transferable. There are no secondary markets for the interests in the Fund and none are expected to develop.

Speculative Investment and High Degree of Risk. The Fund's investment program is speculative and entails substantial risks. Since market risks are inherent in all securities investments to varying degrees, there can be no assurance that the investment objective of the Fund will be achieved. In fact, certain investment practices described herein can, in some circumstances, potentially increase the adverse impact on the Fund's investment portfolio. The Fund's activities could result in substantial losses under certain circumstances.

Oil and Natural Gas Exploration and Development Risks. The Fund reserves the right to invest in businesses that engage in oil and natural gas exploration and development, a speculative business involving a high degree of risk. Oil and natural gas drilling may involve unprofitable efforts, not only from dry holes, but also from wells that are productive but do not produce sufficient net revenues to return a profit after drilling, operating and other costs. Acquiring, developing and exploring for oil and natural gas involves many risks. These risks include encountering unexpected formations or pressures, premature declines of reservoirs, blow outs, equipment failures and other accidents in completing wells and otherwise, cratering, sour gas releases, uncontrollable flows of oil, natural gas or well fluids, adverse weather conditions, pollution, fires, spills and other environmental risks. In addition, in making these investments, the Fund must rely on estimates of oil and gas reserves. The process of estimating oil and gas reserves is complex, requiring significant decisions and assumptions in the evaluation of available geological, geophysical, engineering and economic data for each reservoir. As a result, these estimates are inherently imprecise.

Only Qualified Persons May Invest in the Fund. An investment in the Fund is not suitable or desirable for all investors. Investors that are U.S. persons must qualify as "accredited investors" and "qualified purchasers". Other suitability/eligibility criteria may apply.

Relevance of Past Performance. There can be no assurance that the Fund will realize returns comparable to those achieved by Vortus, or the principals of the Vortus, in the past.

No Review or Approval by Regulators. Neither the Fund's offering documents, nor the offering of interests, have been reviewed or approved by any regulators. The Fund is not subject to the same regulatory requirements as mutual funds.

Limited Operating History. The Fund has a limited operating history. As a result, investors will only be able to examine the limited performance history of the Fund.

Advisory Fees May Be Substantial. The advisory compensation due to Vortus may be substantial regardless of whether the Fund has a positive return.

Dependence on Key Personnel. The success of the Fund will be dependent on certain key personnel. The loss of certain key individuals may have a material adverse effect on the performance of the Fund.

Projections. The Fund reserves the right to rely on projections and forecasts developed by Vortus. Such projections are based on assumptions with respect to future events. The actual future events may differ from the assumptions.

Complexity of Legal and Financial Analysis. The financial and legal framework for the Fund's investments is extremely complex. There is no certainty that the Fund will correctly judge the nature and magnitude of factors that result in successful investments.

Business and Regulatory Risks of Private Investment Fund. Legal, tax and regulatory changes could occur during the term of a Fund that may adversely affect such Fund.

General Economic Conditions. The Fund's investment activity is affected by general economic conditions including the current contraction in global markets. The Fund may be subject to substantial losses in the event of a serious recession in the economies in which the Fund invest.

Concentration of Investments. Since the Fund's investments will be concentrated within the energy industry, an investment in the Fund may be subject to greater market fluctuations than an investment in a portfolio of securities representing a broader range of industries. This concentration risk may be compounded to the extent the Fund concentrates investments in a particular geographic region, industry sector or type of security and such concentration of risk may increase the losses suffered by the Fund.

Vortus Has Sole Discretion Regarding Allocation of the Fund's Assets. Vortus has sole discretion regarding the allocation of the Fund's assets.

Possible Delays in Reporting of Tax Information. The Fund's investment strategy may cause delays in important tax information being sent to investors.

No Requirement to Provide Pricing or Valuation Information. The Fund is not required to provide periodic pricing or valuation information to investors.

Volatility. The Fund's performance may be volatile.

Hedging Transactions. While the Fund and its portfolio companies are permitted to enter into hedging transactions to seek to reduce risk, such transactions may not be fully effective in mitigating the risks in all market environments or against all types of risk (including, without limitation, unidentified or unanticipated risks), thereby incurring losses to the Fund. In addition, such hedging transactions may result in a poorer overall performance for the Fund than if it had not engaged in any such hedging transactions. Moreover, it should be noted that (1) the Fund may not hedge against, or may not anticipate, certain risks and (2) the portfolio will always be exposed to certain risks that cannot be hedged, such as credit risk (relating both to particular securities and counterparties).

Leverage. The Fund reserves the right to use leverage or otherwise obtain financing for its investments. Leveraging or financing a Fund's investments magnifies gains and losses attributable to other investment policies and practices. At times, the Fund may be unable to obtain leverage, or may be unable to obtain leverage at attractive prices or favorable terms.

Competition. Certain markets in which the Fund may invest are extremely competitive for attractive investment opportunities and, as a result, the Funds might not be able to identify or successfully pursue attractive investment opportunities in such environments.

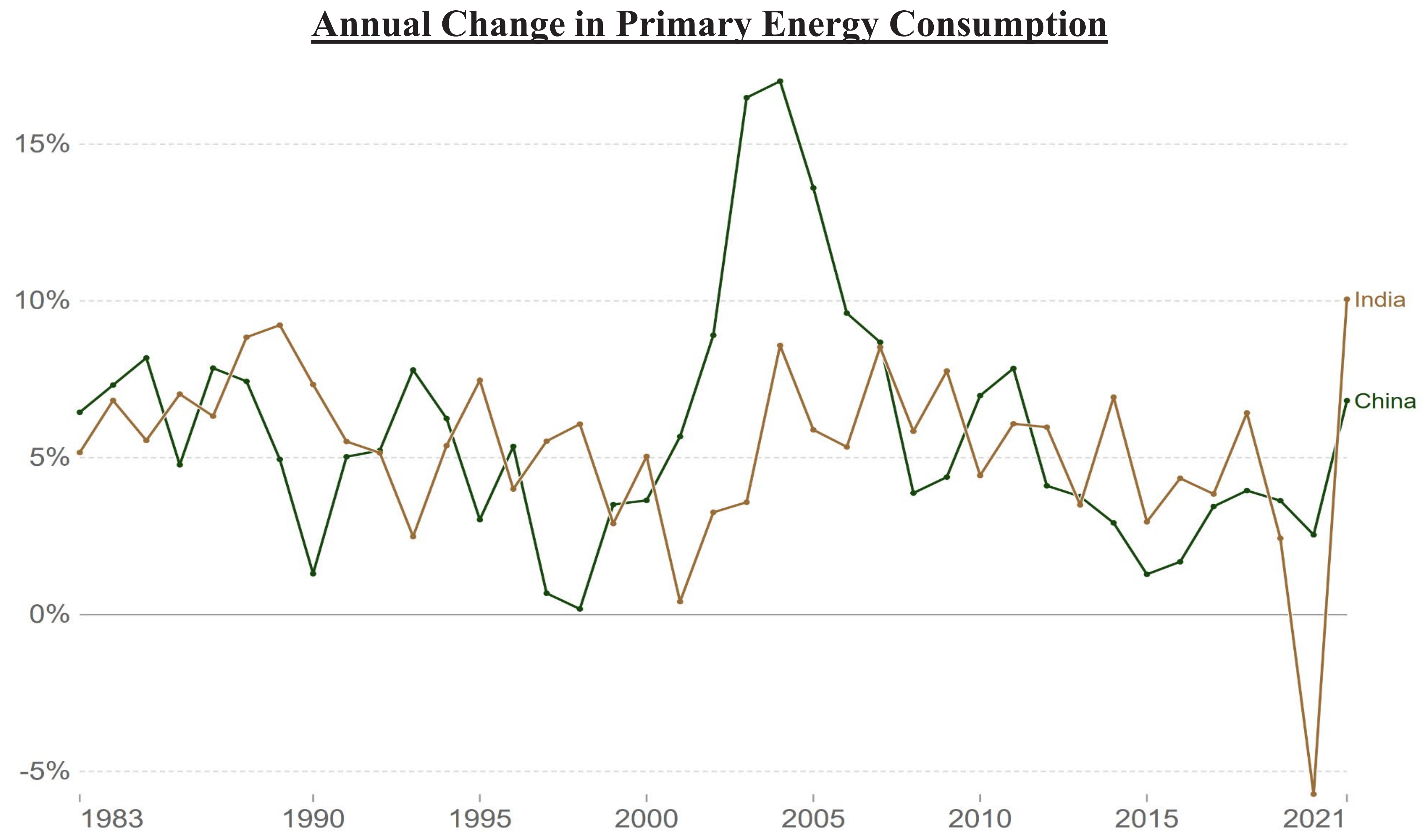
Illiquidity of Investments. The oil and gas investments to be made by the Fund are likely to be illiquid. Dispositions of such investments also may be subject to limitations on transfer or other restrictions that would interfere with the subsequent sale of such investments or adversely affect the terms that could be obtained upon any disposition thereof. In addition, the Fund may invest in securities of privately held companies for which there is no public market. The Fund will generally not be able to sell these securities unless such securities are registered under applicable securities laws or unless an exemption from such registration requirements is available. In some cases, the Fund may be prohibited by contract from selling securities for a period of time. There is also the risk that the Fund will be unable to dispose of such securities at attractive prices or otherwise execute a successful exit strategy.

Potential Conflicts of Interest. Certain potential conflicts of interest exist between Vortus and its affiliates on one hand and the Funds on the other hand. Such conflicts include but are not limited to, the existence of the carried interest to be paid to Vortus or its affiliates, which may potentially or actually cause Vortus to engage in investment transactions that are more speculative than those Vortus might otherwise engage in absent such carried interest. A prospective investor should carefully consider the section of the applicable Fund's Confidential Private Offering Memorandum entitled "Certain Risk Factors and Potential Conflicts of Interest" before investing in such Fund.

THIS GENERAL INVESTMENT FUND RISK DISCLOSURE IS NOT COMPLETE. THE ABOVE SUMMARY IS NOT A COMPLETE LIST OF THE RISKS AND OTHER IMPORTANT DISCLOSURES INVOLVED IN INVESTING IN THE FUNDS AND IS SUBJECT TO THE MORE COMPLETE DISCLOSURES CONTAINED IN EACH FUND'S CONFIDENTIAL PRIVATE PLACEMENT MEMORANDUM, WHICH MUST BE REVIEWED CAREFULLY.

Archive

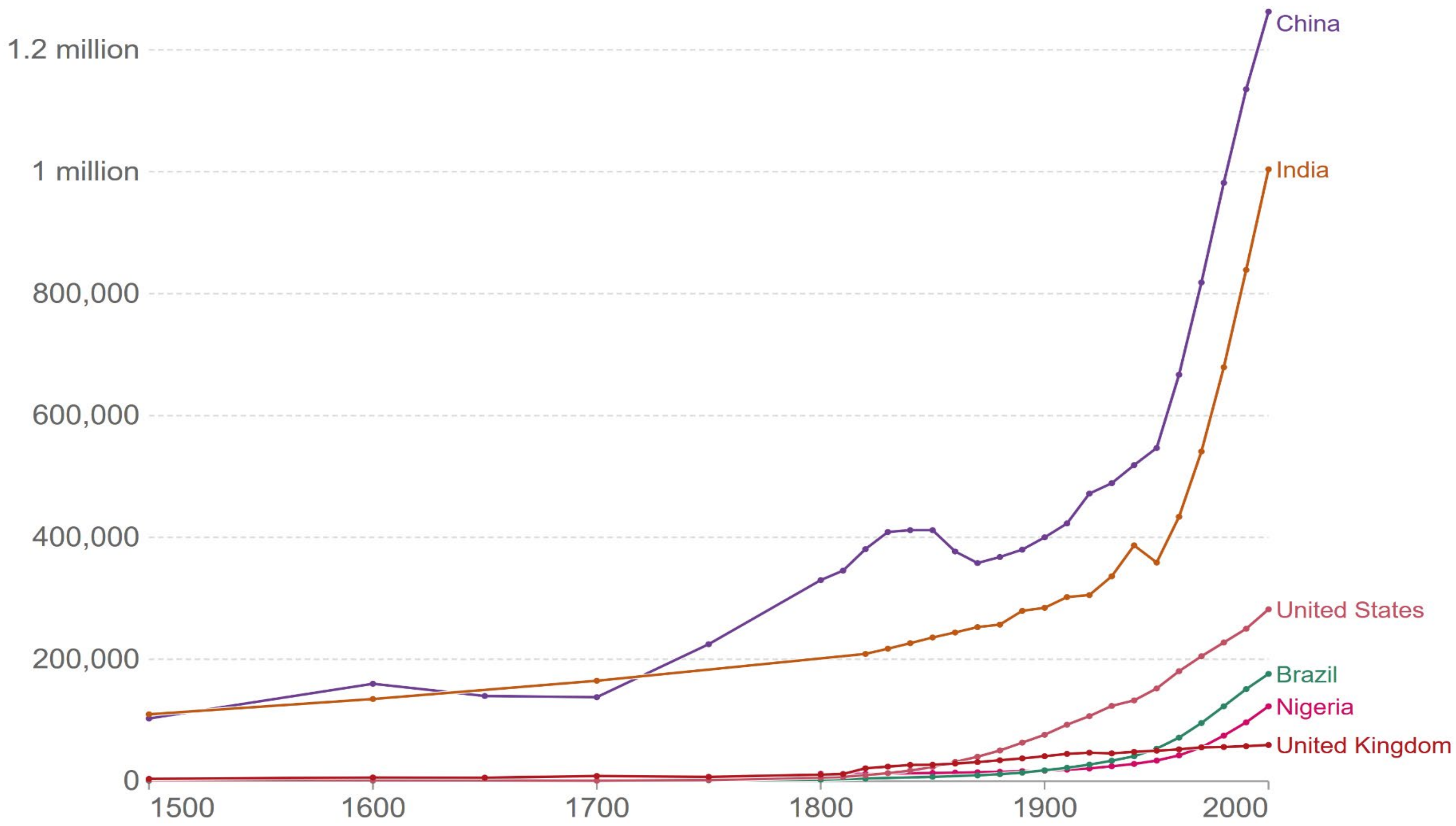
China + India = Resilient Demand Growth



Source: Hannah Ritchie, Max Roser and Pablo Rosado (2020) – "Energy"; Published online at OurWorldInData.org; Retrieved from https://ourworldindata.org/energy (Online Resource)

Population Growth: Power of Compounding

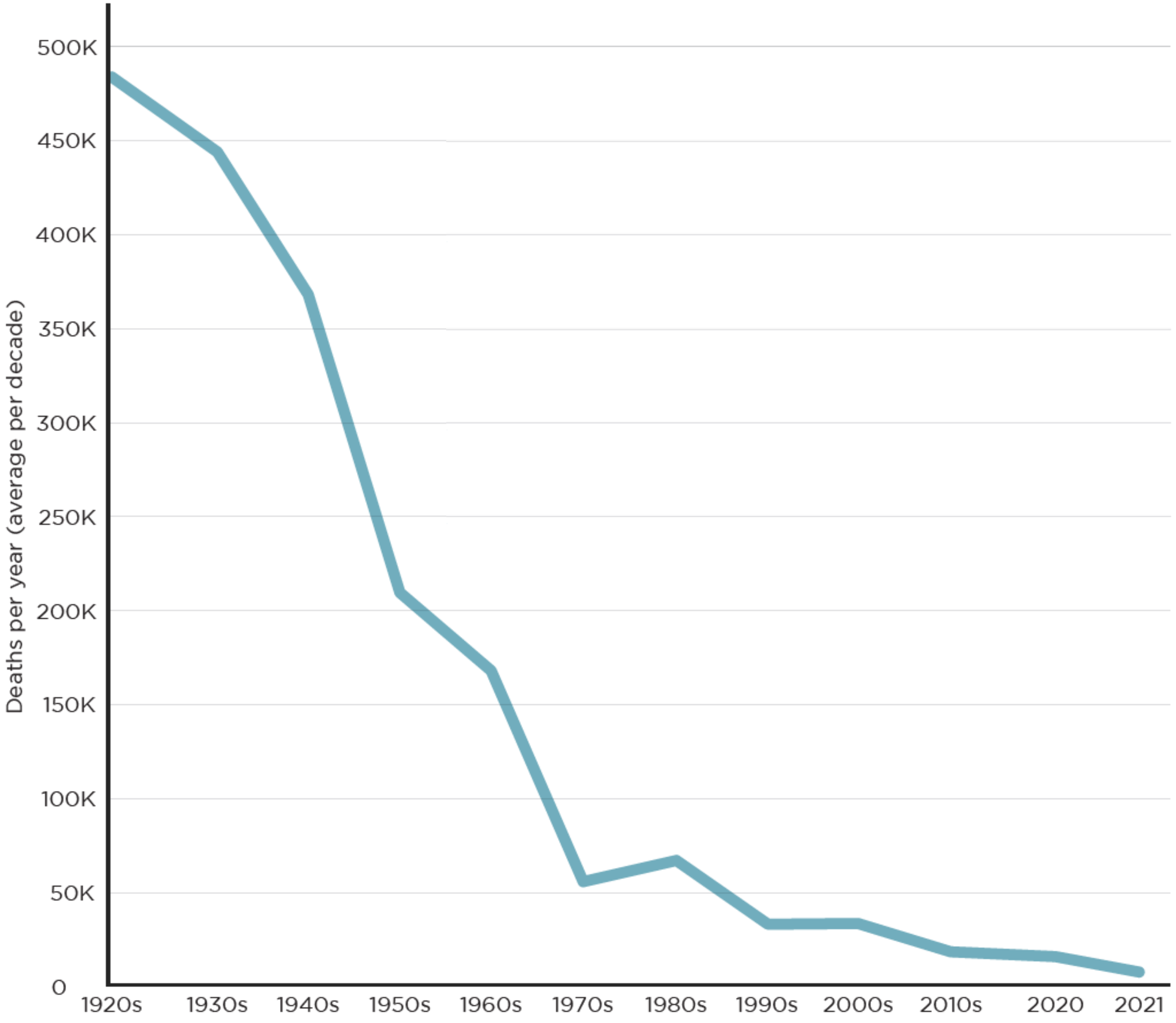
Population growth is accelerating in areas of historically low energy consumption per capita



VORTUS Investments

Source: Clio Infra (2016); OurWorldInData.org/world-population-growth/

Access to Affordable Energy Makes Society Safer



- 90% decline in annual global deaths from extreme weather since 1920s
- 4x increase in global population over same time period
- Majority of remaining deaths from extreme weather are concentrated in poorer nations with high rates of energy poverty

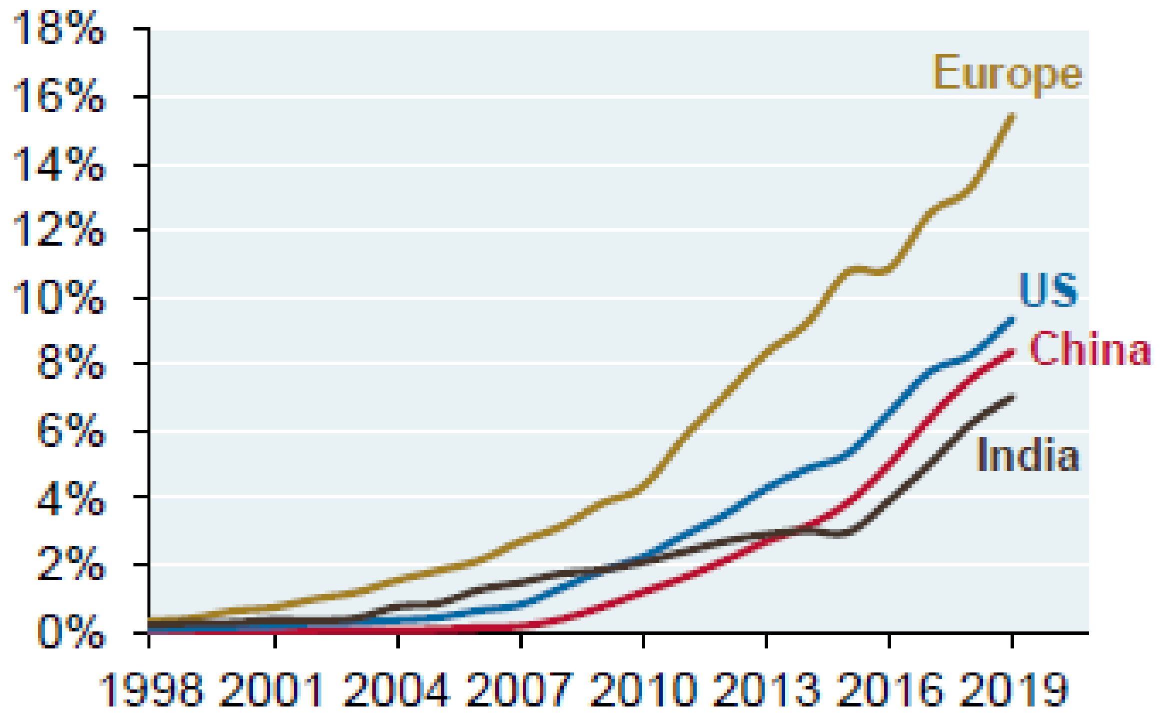
VORTUS Investments

Source: LBRT ESG Report issued August 2022

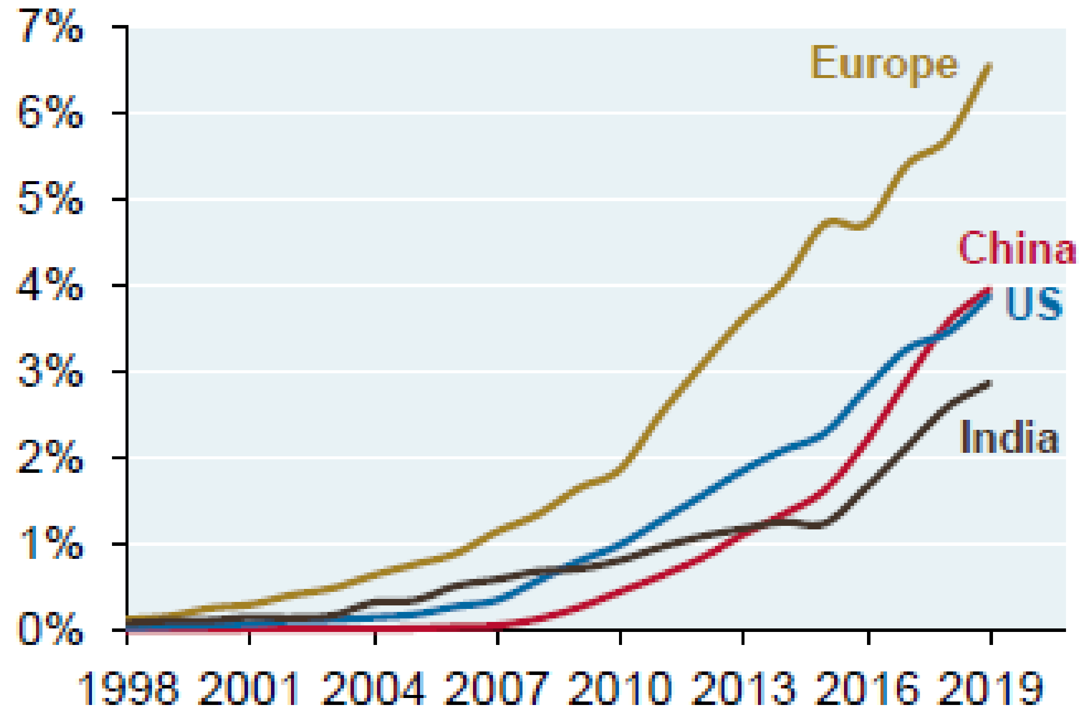
Energy Transition is Happening…

First Mover Disadvantage?

Wind and Solar Share of Total Electricity Generation, %



Wind and Solar Share of Total Primary Energy Consumption, %



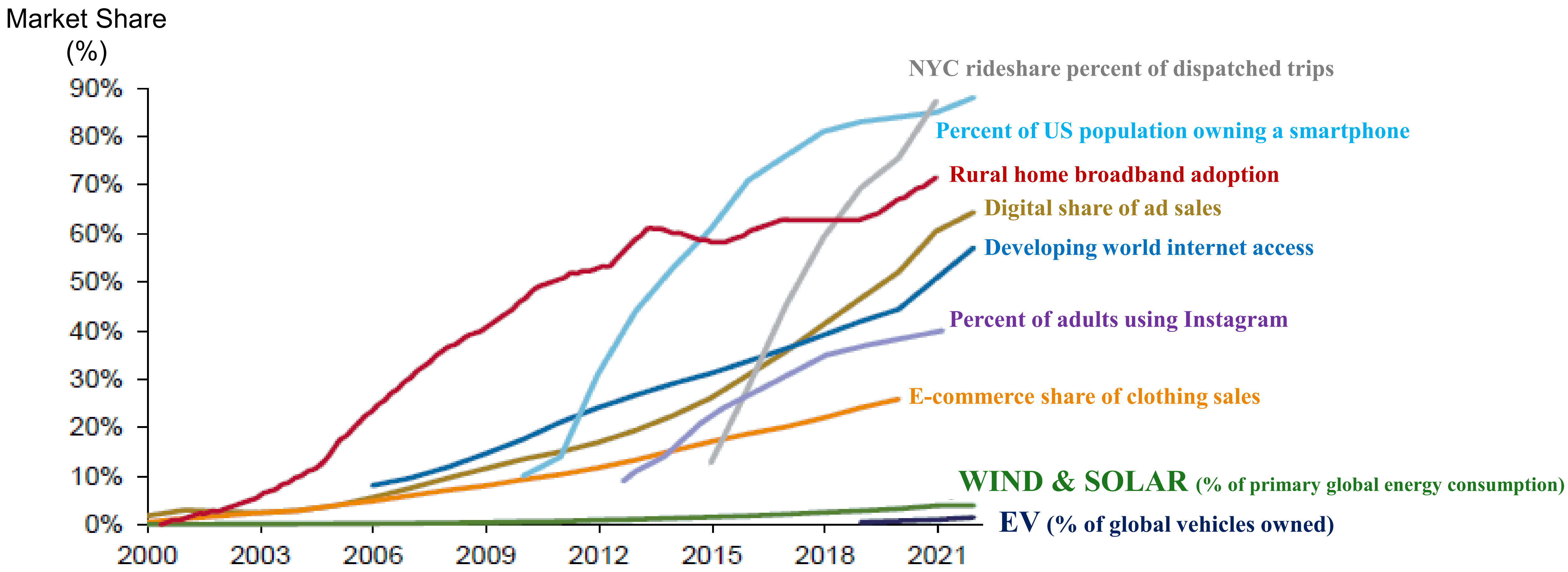
Europe leading in renewable energy supply growth and market share gains…
only accelerated by government-mandated hydrocarbon supply cuts

VORTUS Investments

Source: 2021 Annual Energy Paper, JP Morgan Research

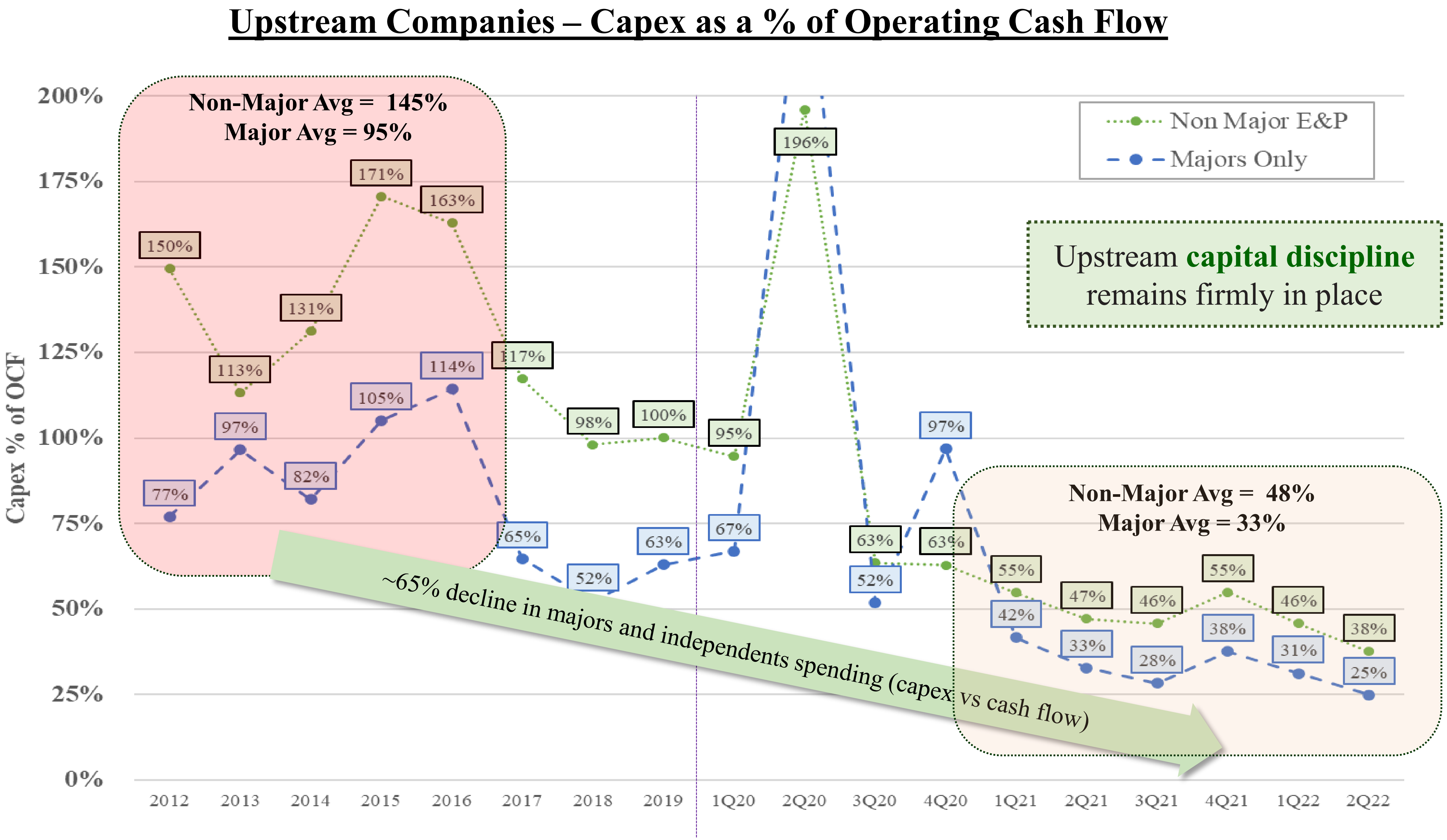
…But At What Pace?

Energy Transition adoption rates do not follow the same growth trajectory as Technology Transition adoption rates (e.g. internet, rideshare, smartphones, etc.)



Source: GroupM, Census, BP, IEA, FHV, Pew Research, NYC Taxi & Limousine Commission, JPMAM. 2021; JPM 2022 Annual Energy Paper.

From OVER-invest to UNDER-invest

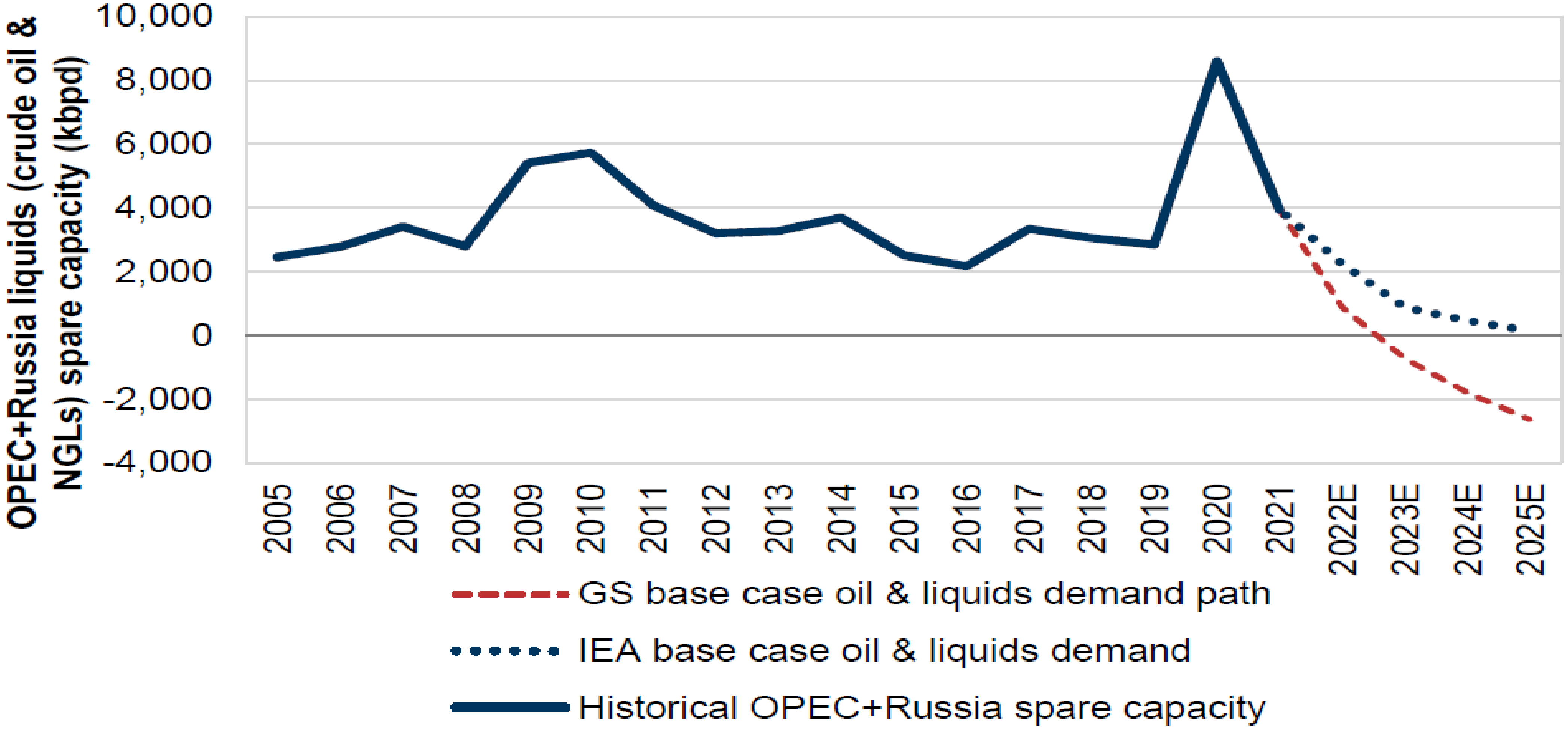


VORTUS Investments

Source: FactSet as of 9/23/2022; Non-Majors include: EOG, OXY, PXD, DVN, HES, CLR, CTRA, FANG, MRO, EQT, CHK, OVV, APA, AR, RRC, SWN, MTDR, PDCE, MUR, SM, CRK, CRC, CPE, LPI; Majors include: XOM, CVX, SHEL, BP, COP

OPEC Not Picking Up the Slack

OPEC+Russia liquids (crude and NGLs) spare capacity under different demand scenarios



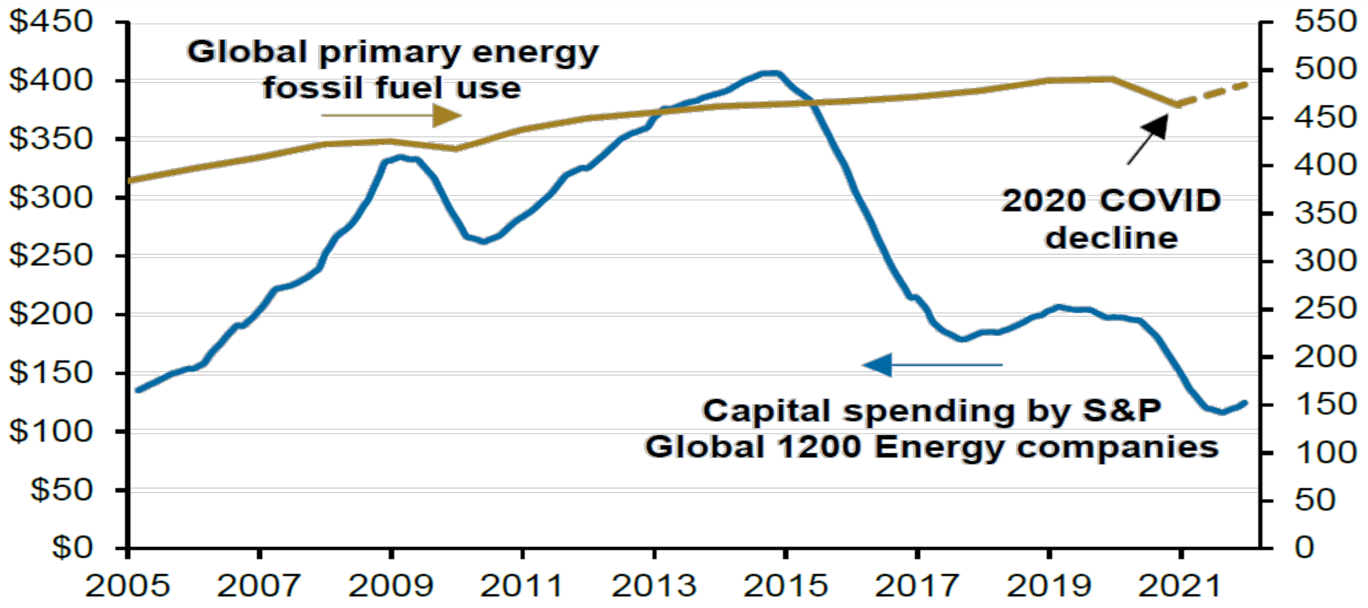
The implied incremental call on OPEC+ over the next several years will likely exhaust OPEC spare capacity

VORTUS Investments

Source: IEA Oil Market Report, Goldman Sachs Global Investment Research, April 2022

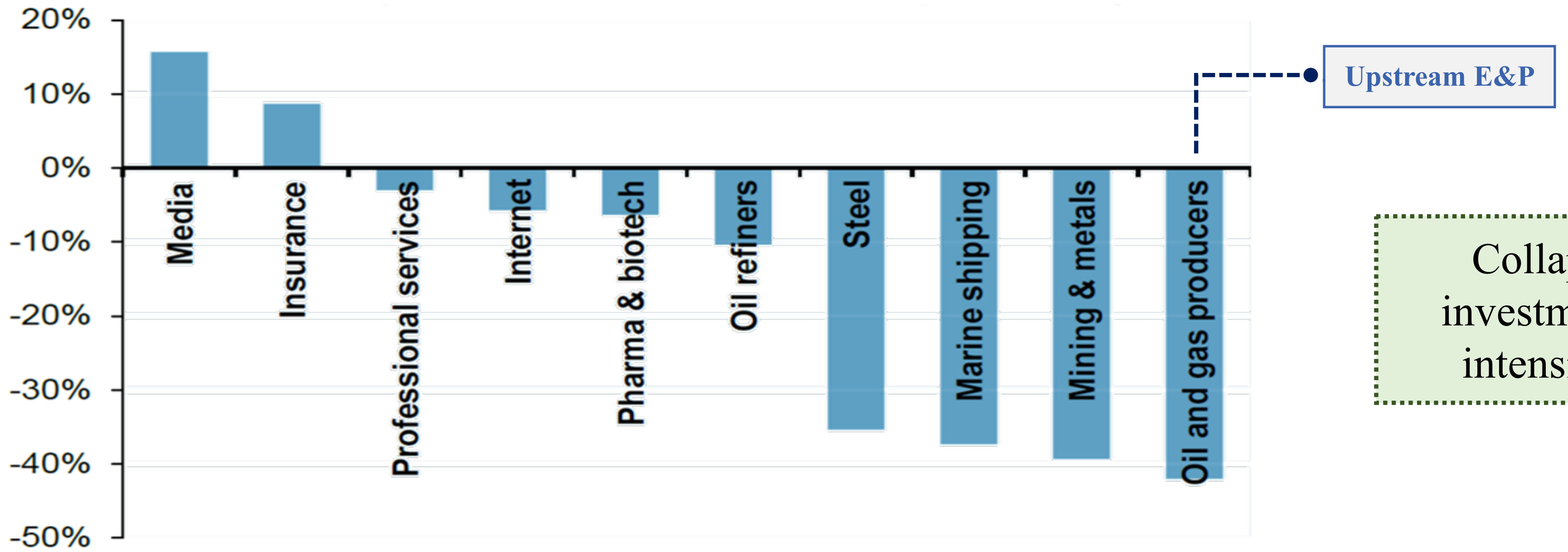
Years of Underinvestment in Supply

Capex and Consumption



Fossil fuel capex falling despite no change in consumption

2022 Expected Investment Level vs 10-Yr Average



Collapse in global investment in energy-intensive industries

VORTUS Investments

Sources: BP, Bloomberg, IEA, JPMAM. Dec 2021. Dotted lines = estimates, JPMAM. 2021; JPM 2022 Annual Energy Paper (upper); GS, JPMAM. November 10, 2021 (lower)

Responsibly Sourcing Hydrocarbons

Our Attention to ESG Considerations

- Vortus strives to achieve best practices among investment advisers, in particular in the areas of governance, investor disclosure, valuation procedures, environmental practices and risk management
- We believe that material environmental, social and governance ("ESG") issues can have an impact on the financial performance of our investments as well as the communities in which the Firm and its portfolio companies conduct business
- We seek to implement an approach to ESG considerations that starts with initial due diligence and continues throughout the investment process to exit

Investment Analysis and Due Diligence

- Vortus seeks to evaluate ESG issues to determine their potential impact on investment performance.
- The particular issues considered vary based on the underlying operating business and investment involved.
- The Firm's review may include the following topics where applicable
    - Compliance with environmental law
    - History of land use and potential environmental liabilities (including Phase I and Phase II environmental site assessments)
    - Target's existing ESG policy
    - Governance issues (including corporate structure and equity ownership, background checks, senior management qualifications)
    - Financial and accounting matters

Responsible Portfolio Company Ownership

- Vortus seeks to manage its investments with a view to long-term value creation and may consider certain environmental, public health, safety, and social issues associated with its investments during the period of ownership.
- Vortus seeks to use governance structures that provide appropriate levels of oversight in the areas of audit, risk management and potential conflicts of interest, and to implement compensation and other policies that align the interests of owners and management.
- Vortus seeks to monitor compliance by its portfolio companies with applicable national, state, and local laws and regulations, and is committed to providing its portfolio companies with appropriate resources for compliance.
- To the extent possible, Vortus seeks to encourage its portfolio companies to advance these same principles in a way which is consistent with their business activities and strategic objectives.

Accountability and Transparency

- Vortus seeks to provide, upon request, timely and adequate information to its investors on the matters addressed herein, including on environmental, social and corporate governance risks, in a way that is clear, fair and not misleading, and works to foster transparency about the Firm's activities as appropriate.

August 23, 2023

COMMERCIAL INSURANCE, SURETY & RISK MANAGEMENT EDUCATION

NAVIGATING THE INSURANCE MARKET

David Artzerounian, Partner, SVP, Energy Team Lead
www.usi.com

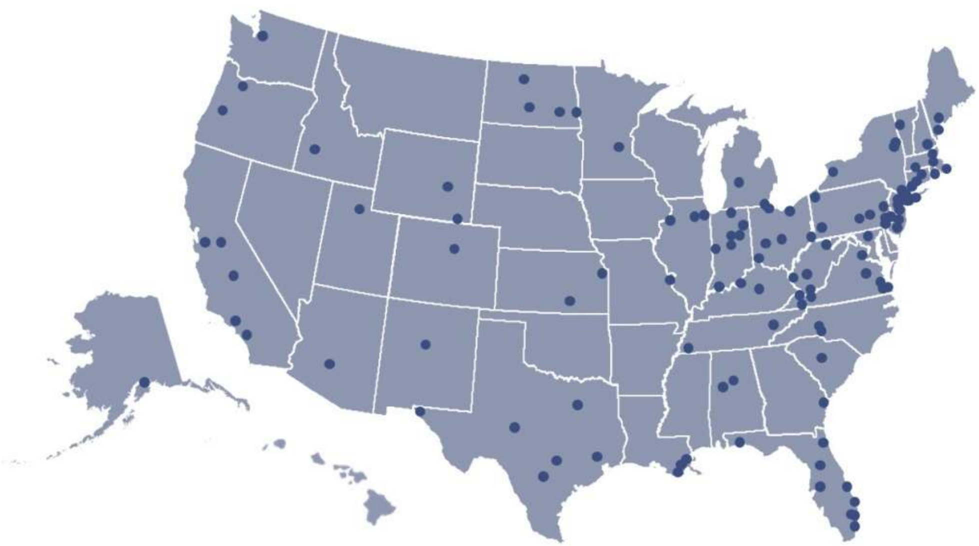
Agenda

- Who is USI?
- Current State of Market
- Challenge Areas / News
- Risk Financing
- Risk Mapping
- Risk Control | Risk Profile
- Risk Transfer | Niche Coverage
- Optimizing Value
- Questions | Contact | Connect

USI Brings National Capabilities & Local Expertise

USI is a national insurance brokerage and consulting firm with more than 200 local offices connected across the U.S. and a leading market position in all core businesses.

Top 10 US Broker - $2.5B+ in U.S. revenue



Commercial P&C | Employee Benefits | Personal Risk | Retirement Consulting

USI's Southwest Region

- Revenue $300M+ and over 750 insurance professionals with an average tenure of 13 years and specialists across a broad range of industries
- Dedicated technical experts in analytics, risk financing, claims, risk control, environmental, and executive risk
- 13 offices located in Arizona, Louisiana, New Mexico, and Texas
- Industry focus on **Energy**

Risk Management **Insurance Brokerage Business**

We believe the “traditional” insurance purchasing model is broken.

- *Executives and organizations are frustrated, in the dark, and exposed to excess and unexpected costs.*
- *The typical process of gathering data, going to market, and negotiating vigorously leaves untold dollars on the table because it leaves the ultimate leverage in the hands of the carriers.*

We believe in a different approach to the market.

- *Analytically-driven pre-underwriting processes drive better and consistent outcomes.*
- *Math dictates the most efficient means of capital deployment.*
- *Decision makers need actionable insight, transparency and budget certainty.*
- *Our approach creates real leverage and increased control over costs.*

OMNI

USI’s Proprietary Analytics

Trivia Question

How large is the US Property & Casualty insurance industry in annual written premiums?

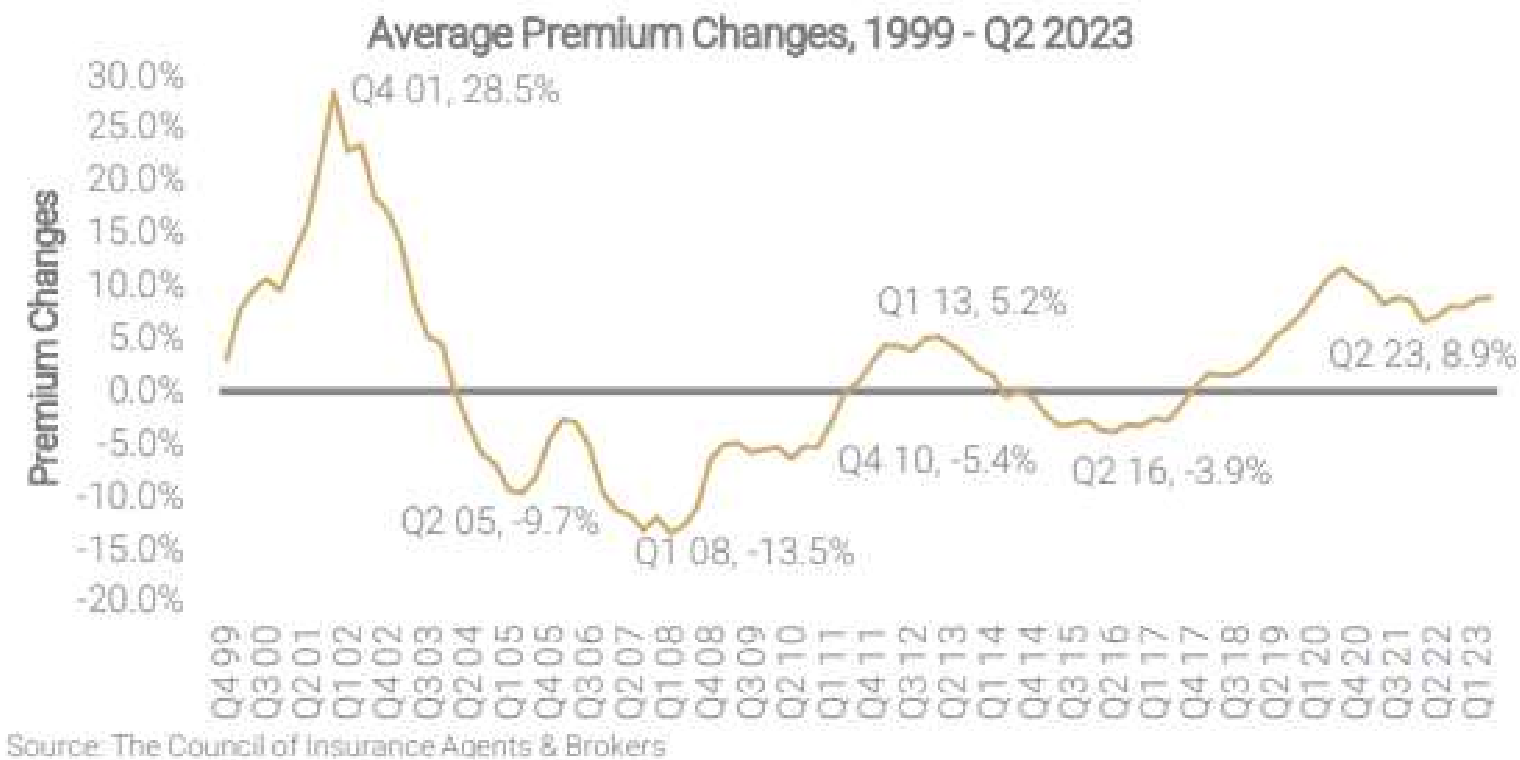
A: **>$250B USD**

B: **$250B - $500B USD**

C: **$500B - $750B USD**

D: **$750B + USD**

Growing Fatigue Due to High-Rate Increases, Demanding Renewals



2023 Market Update

Rate Forecast by Product Line

Primary General/Products Liability
+ 10 - 15%

Workers Compensation (guaranteed cost)
- 10% - + 10%

Umbrella/Excess
+ 5 - 25% | Reduced Capacity

Environmental/Pollution
- 5% - +5%

Primary Auto Liability
+ 5 - 30%

Control of Well
+ 5 - 15%

Executive Risk
+ 0 - 20%

Cyber Liability
+ 0 - 20%

Property/Equipment
+ 5 - 100%

Surety
Interest Rate Sensitive

Factors Impacting Insurance Cost

What's Within My Control

- Selecting A Broker Partner – Expertise, Market Access, Leverage
- Marketing / Shopping Carriers – Driving in Competition
- Changing Program Design – Deductibles, Captives
- Reducing Claims – ~70% of Premium
- Improving Risk Profile – Safety Program Overhaul

What's Outside My Control

- Interest Rates – Lower interest rates
- Adverse Weather – Hurricanes, Wildfires
- Industry Events – Deepwater Horizon
- Legal Environment – Nuclear Judgements, Litigation Finance
- Society – Social Inflation, ESG
- Inflation – Construction Costs

Poll Question

Which P&C insurance line has been the most difficult renewal in the last 12 months?

A: Umbrella & Excess Liability

B: Control of Well & Lease Property

C: Cybersecurity

D: General Liability & Environmental Liability

E: Don't Know – I'm not involved in Insurance

F: Other Not Mentioned – Feel free to share

Poll Question

Favorite Property & Casualty Insurance Carrier?

A: **Chubb**

B: **Travelers**

C: **Berkley**

D: **JH Blades**

E: **Other Not Mentioned (There are Many!)**

F: **Not A Fan of Any**

Poll Question

What's your level of individual involvement in Property & Casualty Insurance?

A: **Not Involved At All**

B: **On Team That Manages**

C: **Manage Personally**

D: **Executive Oversight**

The Exponential Rise of Nuclear Verdicts

Extreme jury awards – known as "nuclear verdicts" – the new normal? From 2015 to 2019, the average verdict in the National Law Journal's Top 100 Verdicts more than **tripled from $64 million to $214 million**

What is a "nuclear" verdict? According to Harold Kim, President of the Institute for Legal Reform, it's **any verdict in excess of $10 million**. "It sounds very apocalyptic, but I think it's a fitting term," he remarked. "We've seen national headlines with verdicts reaching in the billions of dollars and, unfortunately, it's not just an isolated event."

The trucking industry is "under siege." In addition to pandemic-related pressures, freight carriers are among the hardest hit, with many forced to file for bankruptcy after receiving nuclear verdicts. "There is a significant concern that moving freight, which is so critical to our economy, is going to start freezing up," said Kim. "**The blast radius of this reaches well beyond the trucking industry,"** he said.

Nuclear Verdicts (cont.)

CAUSES

- Online, TV and billboard advertising. “Trial advertising is one of the biggest drivers of nuclear verdicts,” noted Kim. Punctuating his point: in a poll of our 2,000-person audience, 88% had seen a mass tort ad in the past week. In addition to bringing in plaintiffs, these ads influence jury pools. “On TV alone, the plaintiffs’ bar is spending billions,” Kim added. “This is not just one-off ads … this is a systematic, orchestrated marketing effort.”
- Unregulated third-party funding. “It’s like the Wild West,” Kim observed. Litigation funding – the leveraging of capital from third parties like hedge and sovereign wealth funds to back potentially lucrative lawsuits – is now a $39 billion industry, with limited regulation or disclosure requirements. Kim sees third parties with no interest injecting themselves into the system as a major concern. “They really hide in the shadows. If you’re a defendant, you’re not going to know who has a financial interest in the case.”
- Social inflation. As public exposure to news of extreme jury awards, attorney advertising and litigation funding increases, jurors become desensitized to nuclear settlements. “It’s hard to predict social inflation trends, making it challenging to underwrite the risks,” noted Cruz. “And society seems to be getting more comfortable with overlooking the personal responsibility.” Think Mahomes Contract

ACTIONS:

- Pick your battles. “We need to pick the right cases to settle, and the right cases to take to trial,” Cruz noted – adding that, when a case goes to court, “it’s imperative we win.”
- Pick the right insurance partner. “Look for a carrier with a strong risk control department to help you evaluate the risks,” Cruz advised. “Make sure your carrier is leveraging data and analytics to optimize outcomes for your clients. When the loss happens, you also want a carrier that will put the right resources on the case to protect your clients.”
- Require transparency in third-party funding. A handful of states and judicial districts require disclosure of third-party funding agreements, and it’s being discussed in the hallways of Congress. “There has to be an urgency in terms of making sure that your elected officials know that this is an important issue,” Kim emphasized. (Travelers Institute)

JUDICIAL HELLHOLES®

1. GEORGIA
2. THE SUPREME COURT OF PENNSYLVANIA & THE PHILADELPHIA COURT OF COMMON PLEAS
3. CALIFORNIA
4. NEW YORK
5. COOK COUNTY, ILLINOIS
6. SOUTH CAROLINA ASBESTOS LITIGATION
7. LOUISIANA
8. ST. LOUIS

WATCH LIST

TEXAS'S COURT OF APPEALS FOR THE FIFTH DISTRICT repeatedly misapplies established U.S. Supreme Court and state precedents and procedures, requiring review and reversal by the state's high court. It has developed a reputation for being pro-plaintiff and pro-liability expansion.

JH Blades seeks new energy liability backing as Markel pulls $75mn paper

Samuel Casey 24 January 2023

Chubb to insure oil, gas projects only if they cut methane emissions

Reuters

March 22, 2023 11:57 AM CDT · Updated 5 months ago

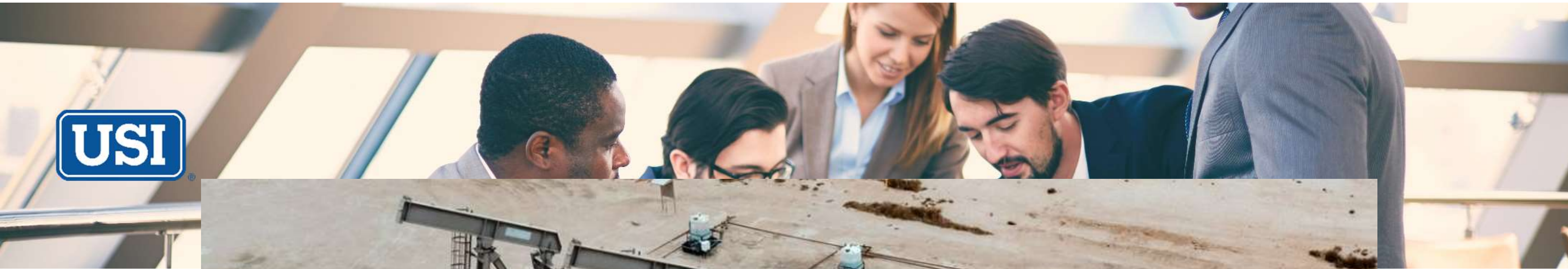
Aa

A handout screen grab from thermographic video footage shot with an infrared camera and made available to Reuters June 10, 2021 by Clean Air Task Force (CATF), shows what appears to be a plume of methane gas flowing from a vent stack at the SNAM underground storage facility in Minerbio, Italy. CATF found methane seeping into the atmosphere at Acquire Lice... Read more

MILAN, March 22 (Reuters) - Chubb (CB.BN), the world's biggest property and casualty insurer, said on Wednesday it would from now on provide coverage for oil and gas extraction projects only to clients that proved they had plans to reduce methane emissions.

A byproduct of oil and gas production, methane emissions are among the most damaging greenhouse gases for climate change.

The new criteria will be immediately effective, Chubb said, adding customers would have some time "to develop an action plan based on their individual risk characteristics."



A quake in West Texas earlier this week might prompt a review of management practices and affect oil operations. JORDAN VONDERHAAR/BLOOMBERG NEWS

Munich Re backs oil & gas decommissioning product by OneNexus

18th October 2022 - Author: Matt Sheehan

Reinsurer Munich Re has agreed to provide backstop capital for a new funding product from OneNexus that seeks to provide the oil and gas industry with an option to reduce its environmental footprint.

OneNexus's Asset Retirement Obligation (ARO) product aims to address the decommissioning liabilities associated with retiring long-lived hydrocarbon producing assets, such as wells, facilities, and production and gathering systems.

The ARO liabilities held on energy company balance sheets remain largely unfunded, and, if neglected, OneNexus says the number of orphaned wells in the US will continue to increase, leaving a burden on taxpayers and creating environmental hazards.

The company plans to use its captive insurer, OneNexus Oklahoma Captive Corp (OOCC) and a partnership with Munich Re Energy Transition Finance (MRETF) to safeguards funds in a regulated 'lock box' structure until the capital is needed for the decommissioning of the oil and gas wells.

United States

U.S. property catastrophe reinsurance rates rise up to 50% on July 1, report says

Reuters

July 3, 2023 8:59 AM CDT · Updated 2 months ago

Aa

[1/2] A burned car and the remains of a burned-out home are shown after a fast-moving wildfire ripped through an affluent neighborhood in Laguna Niguel, California, U.S., May 12, 2022. REUTERS/Mike Blake/File Photo *Acquire Licensing Rights*

LONDON, July 3 (Reuters) - U.S. property catastrophe reinsurance rates rose by as much as 50% at a key July 1 renewal date, broker Gallagher Re said in a report on Monday, with states such as California and Florida increasingly hit by wildfires and hurricanes.

Reinsurers insure insurance companies, and have been raising rates in recent years because of steepening losses, which industry players put down in part to the impact of climate change. Higher reinsurance rates can affect the premiums which insurers charge to their customers.

Risk Management

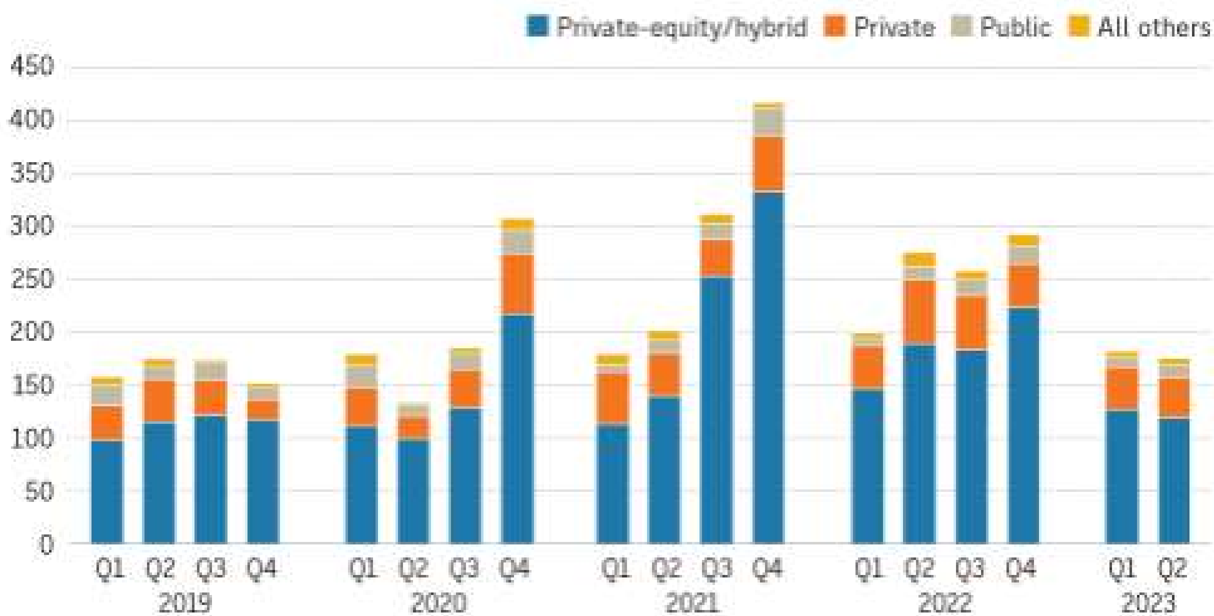
Broker M&A deals fall in first half

Gavin Souter

July 17, 2023

SHARE

TRANSACTIONS BY QUARTER BY TYPE (2019 – Q2 2023)



Source: Optis Partners LLC

CICA
CAPTIVE INSURANCE COMPANIES ASSOCIATION®

INDUSTRY NEWS

Captives are no longer an 'alternative market' – Paul Phillips

May 24, 2023 • CICA Staff

Art & Science of Program Design

- **Guaranteed Cost**
- **Dividend**
- **Deductible**
- **Captives**
- **Self - Insurance**

Risk Mapping
Frequency & Severity

Client		Loss Frequency				
Risk Map 8.23.2023		Rare 1	Unlikely 2	Moderate 3	Likely 4	Certain 5
Loss Severity	Catastrophic 5	5	10	15	20	25
	Major 4	4	8	12	16	20
	Moderate 3	3	6	9	12	15
	Minor 2	2	4	6	8	10
	Insignificant 1	1	2	3	4	5

Risk Outcome
Low
Moderate
Significant
High

Articulate Your Risk Profile

MSAs & Contractual Risk Transfer

HSE Program | HR Procedures

Safety Hazards Associated with Oil and Gas Extraction Activities

Oil and gas well drilling and servicing activities involve many different types of equipment and materials. Recognizing and controlling hazards is critical to preventing injuries and deaths. Several of these hazards are highlighted below. See Standards and Enforcement for more information on evaluation and control requirements.

- Vehicle Collisions
- Struck-By/ Caught-In/ Caught-Between
- Explosions and Fires
- Falls
- Confined Spaces
- Ergonomic Hazards
- High Pressure Lines and Equipment
- Electrical and Other Hazardous Energy
- Machine Hazards
- Planning and Prevention

Potential health hazards are highlighted below. See Standards and Enforcement f
requirements.

- Diesel Particulate Matter
- Fatigue
- Hazardous Chemicals
- Hydrocarbon Gases and Vapors (HGVs) and Low Oxygen Environments
- Hydrogen Sulfide
- Naturally Occurring Radioactive Material (NORM)
- Noise
- Silica
- Temperature Extremes

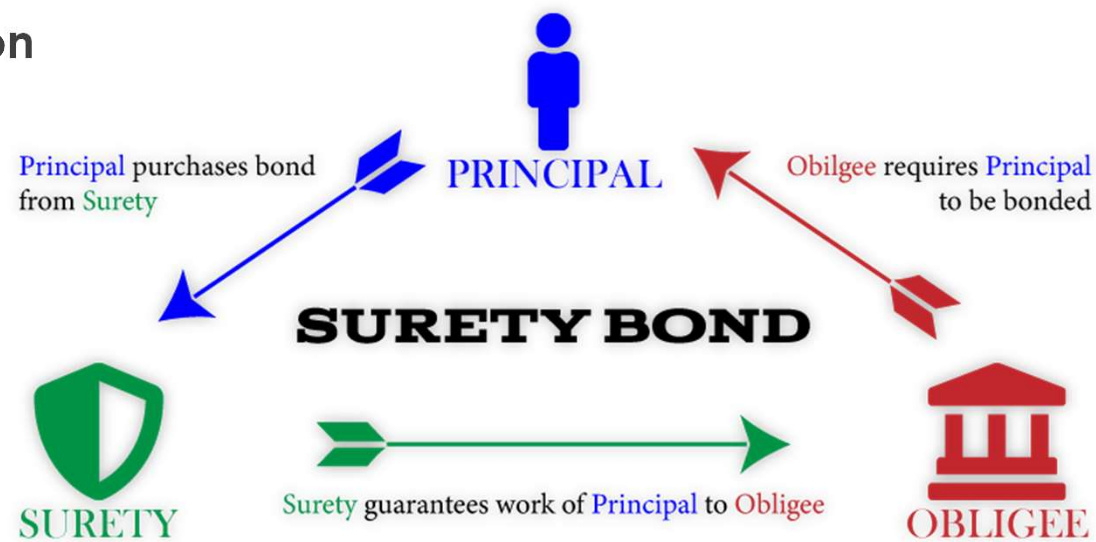
Balance Sheet – Over/Under Insured

<u>Universe of Coverage:</u>

- Workers' Compensation
- General Liability
- Automobile Liability
- Umbrella/Excess
- Property / Equipment / Lease Property
- Control of Well / Operators Extra Expense
- Pollution
- Directors & Officers
- Employment Practices
- Crime
- Fiduciary
- Cyber
- Downhole Tool
- International / Kidnap & Ransom
- Maritime / Hull / Cargo
- Other

Common Surety/Bond Obligations

- Plugging & Abandonment
- Reclamation/Surface Restoration
- Tax Production
- Right of Way
- DOT
- Others



Coverage Distinctions

Surety Bonds vs. Traditional Insurance

Surety Bonds	Traditional Insurance
Three Party Agreement Most surety bonds are three party agreements – the surety guarantees the faithful performance of the principal to the obligee	**Two Party Agreement** Insurance is usually two party agreements whereby the insurance company agrees to pay the insured directly for a covered loss incurred
Risk Transfer	**Risk Transfer**
Premium: fee for prequalification	**Premium: based on expected loss**
No expectation of loss	**Actuarially determined premiums cover losses and expenses**

Trivia Question

What century was Lloyds of London established?

A: **1600s**

B: **1700s**

C: **1800s**

D: **1900s**

Benefits of Captives

Companies join Captives for a variety of reasons, but most often, to improve the cost of and/or control over their overall corporate risk program

Risk Management

- Promote loss control through effective risk management
- More control over claims administration and claim handling
- Direct access to the commercial reinsurance market

Insurance

- Participate in profitable risks
- Allow for greater certainty in costs and flexibility through varying market cycles
- Take advantage of purchasing power

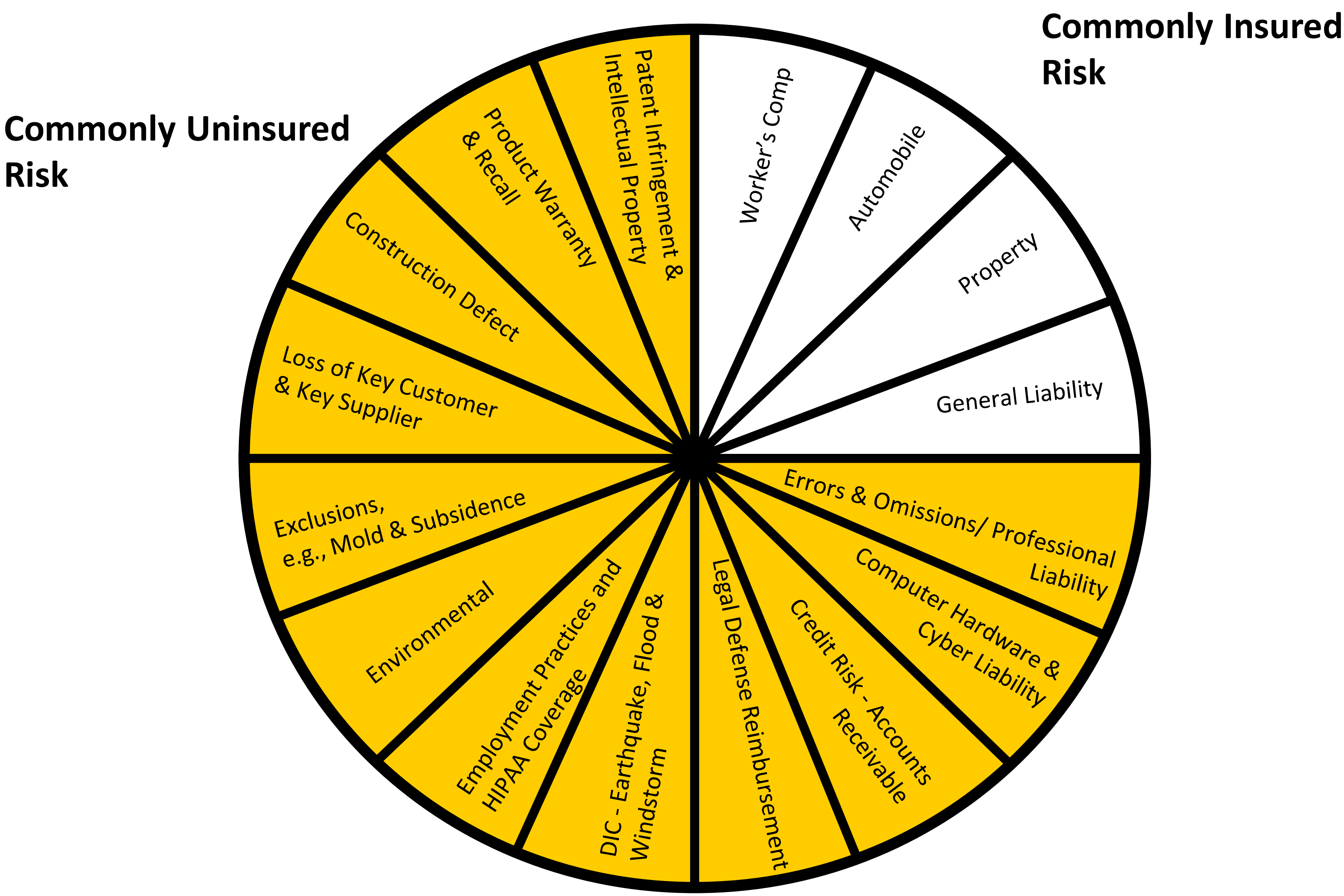
Financial Benefits

- Investment earnings and cash flow
- Balance sheet protection
- Tax planning opportunities
- Potential profit center
- Potential for underwriting profit

Strategic Planning

- Integration with long term client strategy
  - Parent company strategies
  - Joint ventures and new geographic territories
  - Capture insurance-related profits

Captive Strategy: Alternative Risk Transfer



Group Captive Candidates

Companies that…

- Are seeking a Long Term solution to their insurance needs
- Are entrepreneurial and looking for control and stability in their insurance costs
- Total cost of risk for primary casualty lines (WC, GL, & Auto) ranging from $100,000 to $5 million
  - Majority of insureds who enter into group captive were formerly on guaranteed cost or dividend programs (75%). Remaining were on low deductible programs.
- Have favorable prior loss history
- Top down commitment to safety and controlling losses
- Appetite for taking risk and sharing risk with others
- Have a good financial profile
- Ability to post collateral – cash or letter of credit
- Willing to attend semi-annual shareholders meetings which are held outside the US

Well Control Risk

What is Downhole Tool Insurance

	SELF-INSURED	LOST-IN-HOLE (CONTRACTOR)	DOWNHOLE TOOL INSURANCE
Coverage Limit	N/A	50% value (select tools)	100% value (max limit)
Insured Exposure	N/A	50%	10% deductible
Pricing	$0	Day rate	Day rate
Fishing Requirements	N/A	Most common wording: make three attempts	Make an attempt to retrieve tools
Damaged Tools	N/A	Not typically covered	Covered
Tools From Multiple Carriers Coverage	N/A	No	Yes, if scheduled
Operator-Owned Tool Coverage	N/A	No	Yes, if scheduled

‘Gradual’ Environmental Risks

Tanks Collapse & Pipeline Leak

Poll Question

What's your perception of insurance?

A: Necessary Evil

B: Waste of Money

C: Dreaded Transaction Once Per Year

D: All of the Above

E: A Vital Product Powering Global Commerce

Program Diagnostic Findings

Identify Balance Sheet Exposure:

Share Cost Reduction Opportunities:

Share Cash Flow Opportunities:

Reduce Administrative Work:

Enhance Budgeting Certainty & Enterprise Planning:

Renewal Strategy

- Start the process early (3-6m+) and set goals relative to market
- Create a multi-year strategy (short, intermediate, long term)
- Select a broker with expertise, leverage and consultative approach
- Customize program leveraging data benchmarking / analytics
- Articulate your risk profile, controls, & operations to underwriters
- Know your claims and if bad trends exist, take control
- Ensure the underwriting data is accurate, not just carried forward
- Revisit risk financing; Total Cost of Risk (TCOR) not just premium






Questions? Please Connect @

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Current Banking Environment

SAVANNAH BARLOW – FROST BANK


BANK

svb Silicon Valley Bank

Signature
SIGNATURE BAN

- Regional bank founded in 1983 focused on serving venture capital and the tech industry with $210 billion in assets and $199 billion in deposits at YE 2022.
- Largest bank failure since the 2008 financial crisis.

<u>Timeline:</u>

- March 8th – SVB sent a letter to stakeholders announcing $1.8 billion loss and plan to raise $2.25 billion in capital to handle withdrawal requests. Moody's downgraded bond rating.
- March 9th – SVB stock fell 60% and by the end of the day customers had initiated $42 billion in withdrawals
- March 10th – U.S. Regulators took control and shut down the bank.
- March 12th – Bids to acquire SVB were due and U.S. government announced it would backstock all SVB deposits.
- March 13th – SVB's U.K. business sold to HSBC for £1. and SVB reopens for business as Silicon Valley Bridge Bank.
- March 17th – SVB files for Chapter 11 bankruptcy protection and second attempt at bids due
- March 26th – FDIC announced First Citizens Bank will purchase SVB and assume $72 billion in assets at a discounted rate of $16.5 billion. FDIC retains $90 billion in assets and securities.

- 19th largest bank in the U.S. with over $110 billion in assets and $88 billion in deposits as of YE 2022.
- This bank failure cost the Deposit Insurance Fund around $2.5 billion.

Timeline:

- March 10th – Stock price fell by 79% and depositors make large withdraws largely due to the failure of SVB and Signatures high amounts of uninsured deposits with exposure to the crypto sector.
- March 12th – Regulators shut down Signature Bank citing systemic risk and all deposits/assets were transferred to Signature Bridge bank operated by the FDIC.
- March 19th – FDIC announced the purchase of Signature Bank by Flagstar Bank, a subsidiary of New York Community Bancorp

- San Francisco based bank founded in 1985 with $229 billion in assets and $104 billion in deposits.
- Focused on high net worth client base – fewer customer accounts with more individualized service.

Timeline:

- March 10th – Stock price begins to fall.
- March 16th – 62% drop in stock price since March 10th. 11 banks inject $30 billion in uninsured deposits into First Republic to try to avoid SVB fate.
- April 24th – Earnings report shows a $102 billion outflow in deposits in Q1.
- April 26th – Stock price hits $5.69.
- May 1st – FDIC announces bank closure and sale to JPMorgan Chase and rebranded 84 branches in 8 states.

Liquidity is King

Diversified Base

Consumer Confidence

THE FDIC COVERS

- Checking accounts
- Negotiable Order of Withdrawal (NOW) accounts
- Savings accounts
- Money Market Deposit Accounts (MMDAs)
- Time deposits such as certificates of deposit (CDs)
- Cashier's checks, money orders, and other official items issued by a bank

THE FDIC DOES NOT COVER

- Stock investments
- Bond investments
- Mutual funds
- Life insurance policies
- Annuities
- Municipal securities
- Safe deposit boxes or their contents
- U.S. Treasury bills, bonds or notes

FDIC DEPOSIT INSURANCE COVERAGE LIMITS BY ACCOUNT OWNERSHIP CATEGORY

SINGLE ACCOUNTS OWNED BY ONE PERSON	$ 250,000 PER OWNER
JOINT ACCOUNTS OWNED BY TWO OR MORE PERSONS	$ 250,000 PER CO-OWNER
CERTAIN RETIREMENT ACCOUNTS INCLUDES IRAS	$ 250,000 PER OWNER
REVOCABLE TRUST ACCOUNTS	$ 250,000 PER OWNER PER UNIQUE BENEFICIARY
CORPORATION, PARTNERSHIP AND UNINCORPORATED ASSOCIATION ACCOUNTS	$ 250,000 PER CORPORATION, PARTNERSHIP OR UNINCORPORATED ASSOCIATION
IRREVOCABLE TRUST ACCOUNTS	$ 250,000 FOR THE NONCONTINGENT INTEREST OF EACH UNIQUE BENEFICIARY
EMPLOYEE BENEFIT PLAN ACCOUNTS	$ 250,000 FOR THE NONCONTINGENT INTEREST OF EACH PLAN PARTICIPANT
GOVERNMENT ACCOUNTS	$ 250,000 PER OFFICIAL CUSTODIAN (MORE COVERAGE AVAILABLE SUBJECT TO SPECIFIC CONDITIONS)

FDIC
FEDERAL DEPOSIT INSURANCE CORPORATION

https://edie.fdic.gov/calculator.html

Bank Changes

What happens to my deposits if my bank fails?

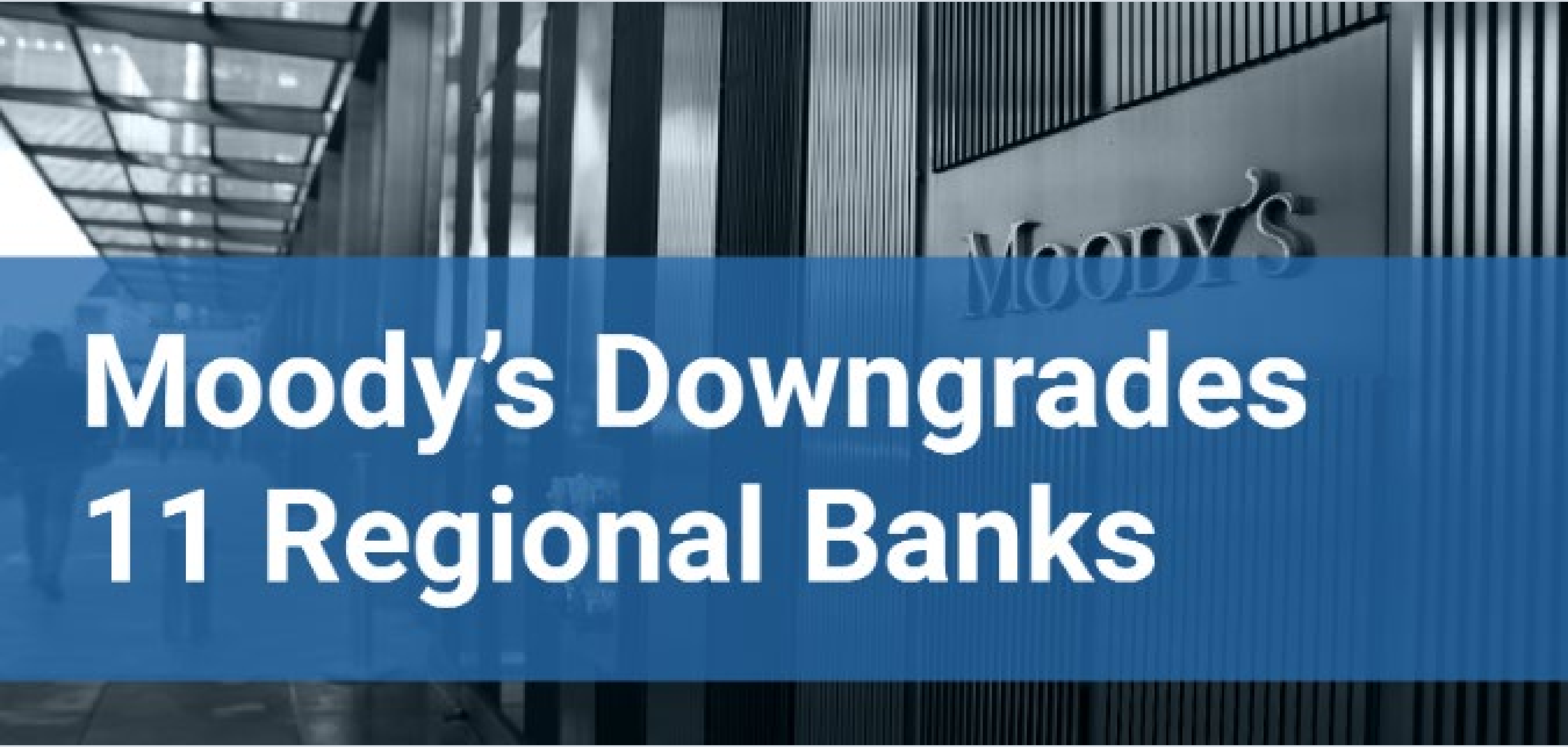
In the unlikely event of a bank failure, the FDIC acts quickly to protect insured deposits by arranging a sale to a healthy bank, or by paying depositors directly for their deposit accounts to the insured limit.

- **Purchase and Assumption Transaction:** This is the preferred and most common method, under which a healthy bank assumes the insured deposits of the failed bank. Insured depositors of the failed bank immediately become depositors of the assuming bank and have access to their insured funds. The assuming bank may also purchase loans and other assets of the failed bank.

  It is important for account owners to note that their deposit contract was with the failed bank and is considered void upon the failure of the bank. The assuming institution has no obligation to maintain either the failed bank rates or terms of the account agreement. Depositors of a failed bank, however, do have the option of either setting up a new account with the acquiring institution or withdrawing some or all of their funds without penalty.

- **Deposit Payoff:** When there is no open bank acquirer for the deposits, the FDIC will pay the depositor directly by check up to the insured balance in each account. Such payments usually begin within a few days after the bank closing.

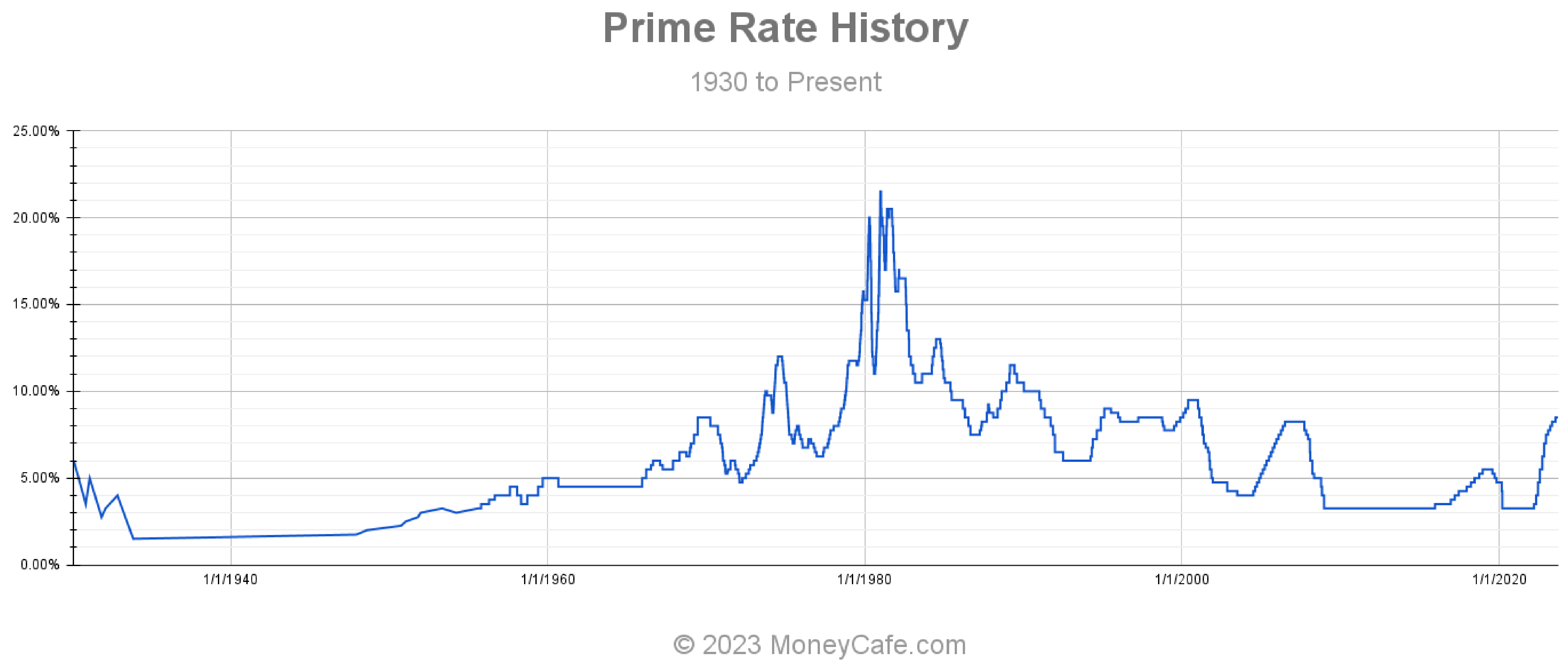
Moody’s Downgrades 11 Regional Banks



Moody's Bank Downgrades 2023					
Bank Name	New Rating	Outlook	Total Assets ($B)	Cost of Funds	Loans/Deposits
Pinnacle Financial	BAA2	Negative	$18,487	1.44	80%
Fulton Financial	BAA2	Negative	$27,356	1.44	99%
Prosperity Bancshares	A1	Stable	$39,915	1.02	79%
BOK Financial	BAA1	Stable	$49,275	2.02	70%
Webster Financial	BAA2	Stable	$74,038	1.81	88%
Associated Banc- Corp	BAA2	Stable	$41,219	2.20	93%
Old National Bancorp	A1	Negative	$48,497	1.34	90%
M&T Bank Corp	BAA1	Stable	$207,671	1.40	82%
Commerce Bank	A3	Stable	$32,872	1.07	66%
Amarillo National Bank	BAA2	Stable	$8,583	2.79	95%

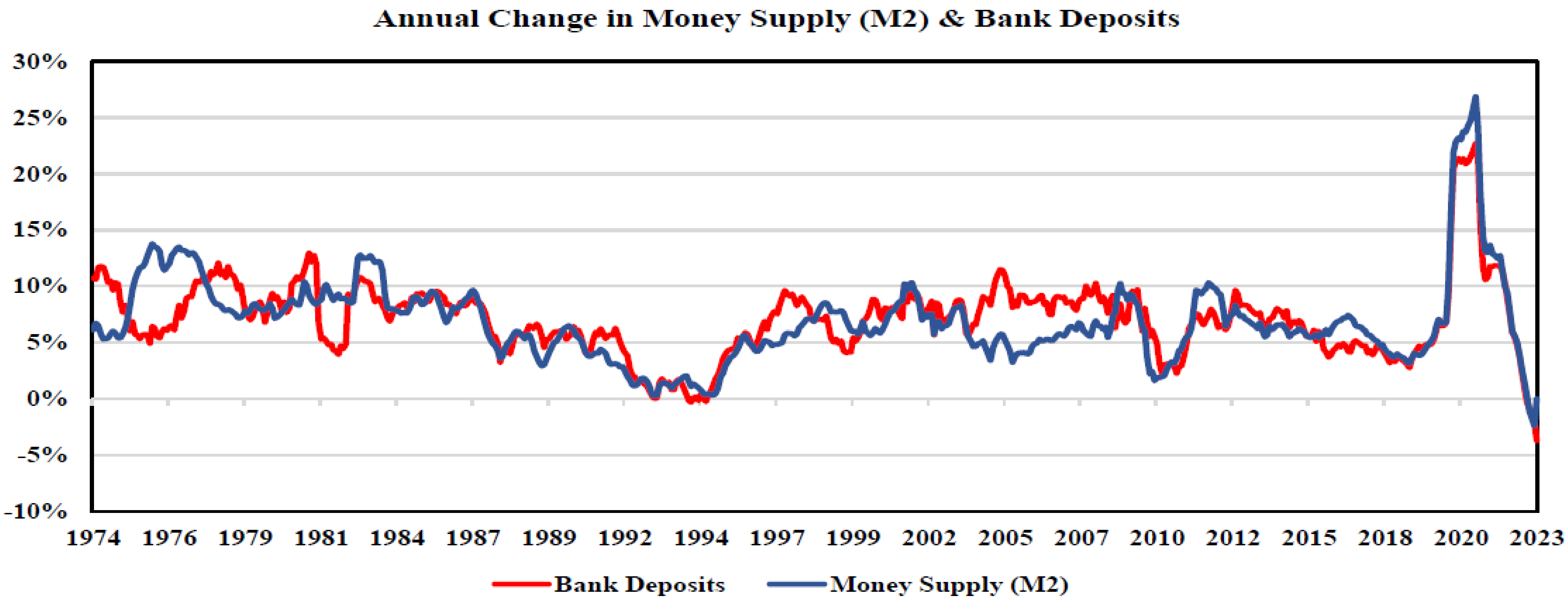
Moody's Bank Review for Downgrade			
Bank Name	**Current Rating**	**Current Outlook**	**Total Assets ($B)**
Cullen/Frost Bank	A3	On Watch	$48,644
Bank of New York Mellon	AA2	On Watch	$214,805
U.S Bankcorp	A3	On Watch	$674,805
Truist	A2	On Watch	$534,190
State Street	AA2	On Watch	$37,600
Northern Trust	A1	On Watch	$156,750

Moody's Bank Negative Outlooks		
Bank Name	**Current Rating**	**Current Outlook**
Simmons First National	BAA2	Negative
Fifth Third	BAA1	Negative
F.N.B. Corp	BAA2	Negative
Citizens Financial	BAA1	Negative
Capital One	BAA1	Negative
Huntington Bancshares	BAA1	Negative
PNC	A3	Negative
Regions Financial	BAA1	Negative
Cadence Bank	BAA1	Negative
Ally Bank	BAA2	Negative
Bank OZK	BAA3	Negative



Prime Rate History
1930 to Present
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
1/1/1940
1/1/1960
1/1/1980
1/1/2000
1/1/2020
© 2023 MoneyCafe.com

Change Date	Prime Rate
2023-July-27	8.50%
2023-May-4	8.25%
2023-March-23	8.00%
2023-February-2	7.75%
2022-December-15	7.50%
2022-November-3	7.00%
2022-September-22	6.25%
2022-July-28	5.50%
2022-June-16	4.75%
2022-May-5	4.00%
2022-March-17	3.50%



Source: Board of Governors of the Federal Reserve System

Oil & Gas Lending

- Fewer Banks willing to lend to the Industry
- Conservative advance rates
- Reduction in value of upside in determining borrowing bases
- Use of proceeds limited to drilling program and PDP acquisitions
- Borrowing Base vs. Elected Commitments
- Tiered structures:
  - Pricing
  - Hedging
  - Restricted payment language – limitation on distributions
- Syndications

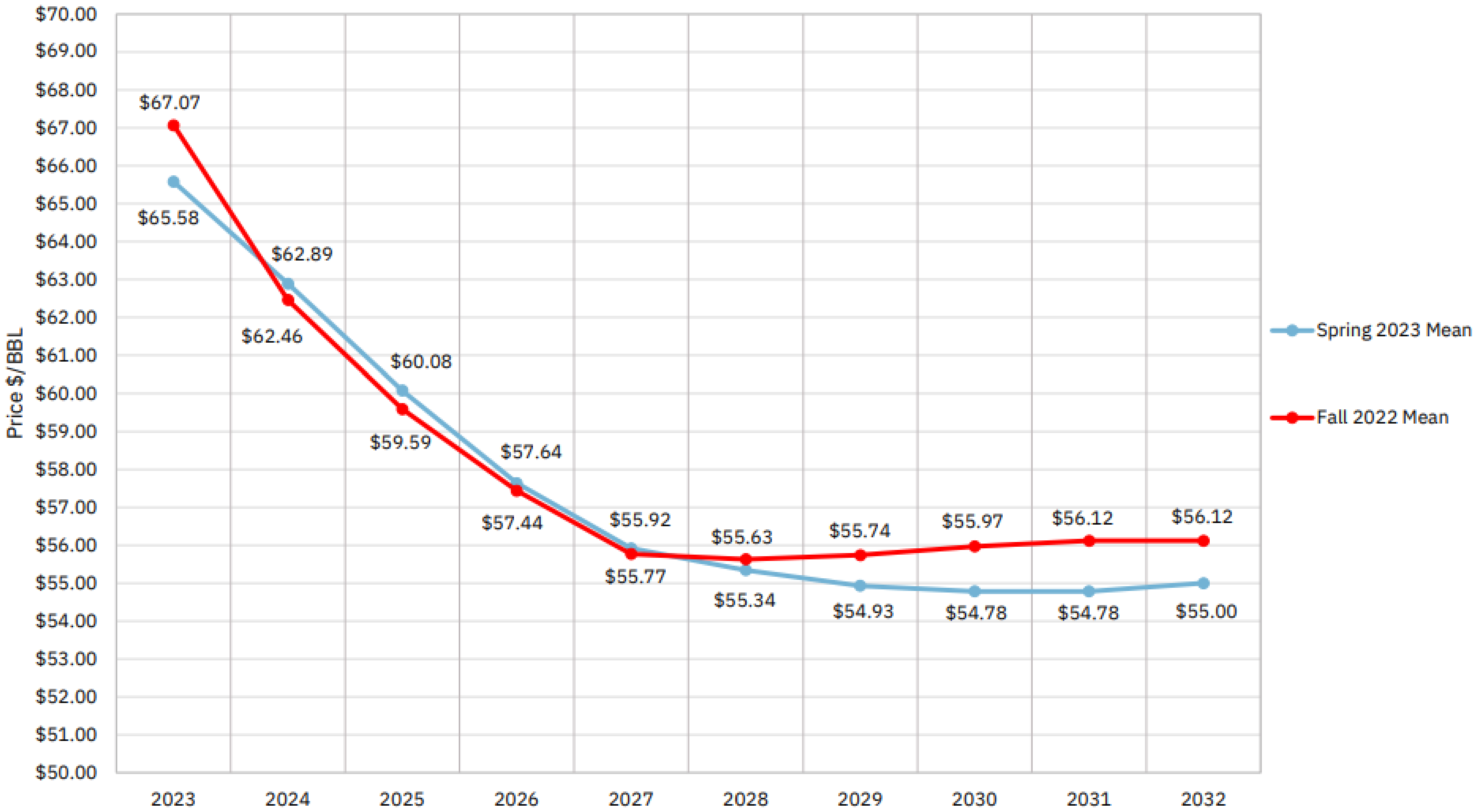
Haynes Boone Energy Bank Price Deck Survey

Participating Banks – Spring 2023

- Amegy Bank
- Arvest Bank
- Barclays
- BOK Financial
- Cathay Bank
- Citizens Financial Group
- Comerica Bank
- East West Bank
- Fifth Third Bank
- First Horizon Bank
- First International Bank & Trust
- Frost Bank
- Gulf Capital Bank
- Modern Bank
- Pegasus Bank
- Sumitomo Mitsui Banking Corporation
- TD Securities
- Truist Securities
- U.S. Bank
- WaFd Bank
- Wells Fargo
- West Texas National Bank

Haynes Boone Energy Bank Price Deck Survey

Oil Base Case – Fall 2022 vs. Spring 2023



This chart displays the cumulative mean for the fall 2022 and spring 2023 price decks.

HAYNES BOONE

It’s about more than money.

It’s about keeping our word.

Experience the Frost difference.

Named one of the 2023 Best U.S. Banks with assets of $50 billion and above.

Cullen/Frost Bankers

Company Highlights

Listing	**NYSE:CFR**
Market Capitalization ($ billions)	6.9
Total Assets	48.6
Trust Assets	44.9
Total Loans	17.7
Total Deposits	40.7
Moody's L-T Rating / Outlook	A3/Under Review[1]
S&P L-T Rating / Outlook	A-/Stable

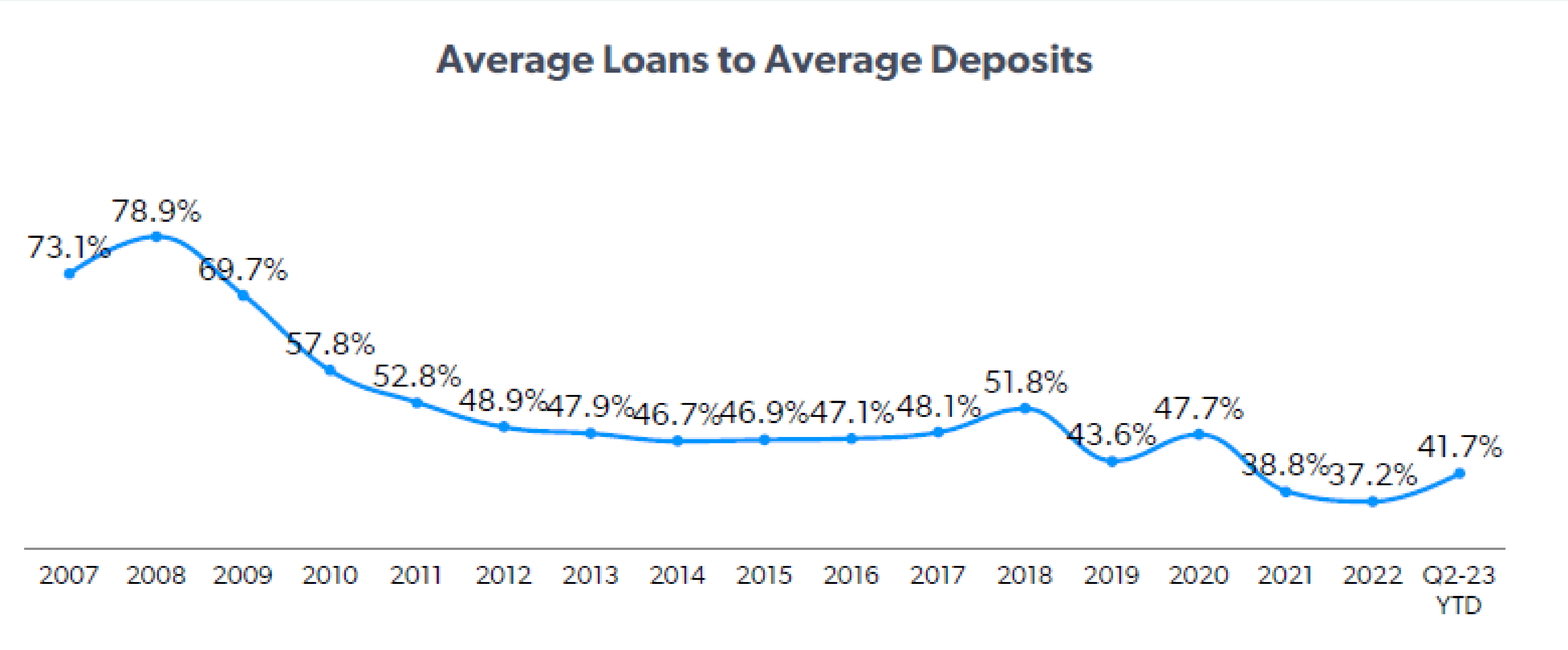
Award Winning Value Proposition

J.D. Power

- Highest ranked retail bank in Texas in the J.D. Power 2023 U.S. Retail Banking Satisfaction Survey
- #1 Ranking since inception and for 14 consecutive years

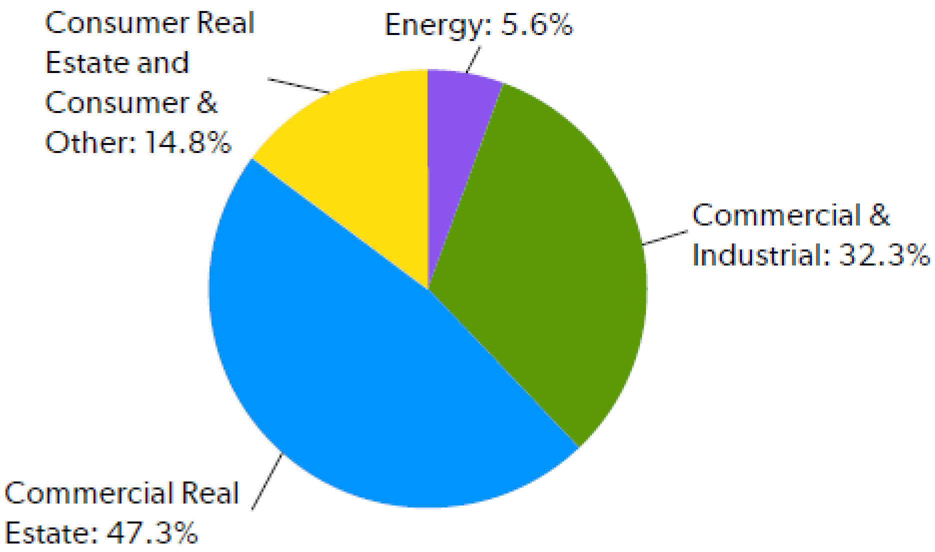
- For the seventh consecutive year Frost received more Greenwich Excellence and Best Brand Awards in 2022 than any other bank Nationwide
- 16 middle market banking awards
- 17 small business banking awards

Source: S&P Global Market Intelligence
Note: Market and financial data as of 30-Jun-23
1 - As of Aug. 18, 2023


Average Loans to Average Deposits
73.1%
78.9%
69.7%
57.8%
52.8%
48.9%
47.9%
46.7%
46.9%
47.1%
48.1%
51.8%
43.6%
47.7%
38.8%
37.2%
41.7%
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Q2-23 YTD

Diversified Loan Portfolio

Loan Composition (Q2-23)

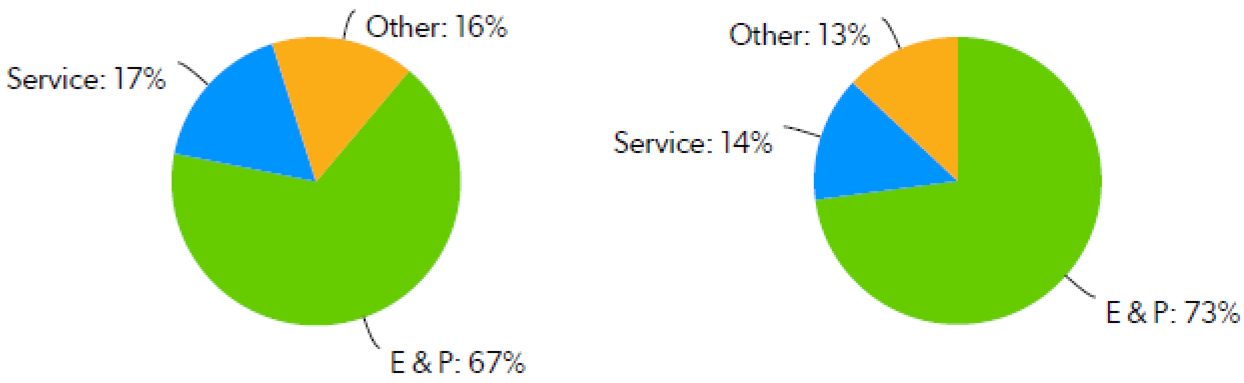


Q2-23 Period End Loans[1] to Deposits: 43.5%

Energy Loan Portfolio

- Lending to clients in the energy sector is a core competency of Frost Bank that spans decades
- Today's portfolio is well balanced with the majority of loans in production and secured by proven, developed and producing reserves
- Combined Special Mention[1] and Classified[2] loans have declined by 96% since reaching a near-term peak in Q1-16
- Energy related allowance for loan losses as a percentage of total energy loans was 1.51% as of Q2-2023

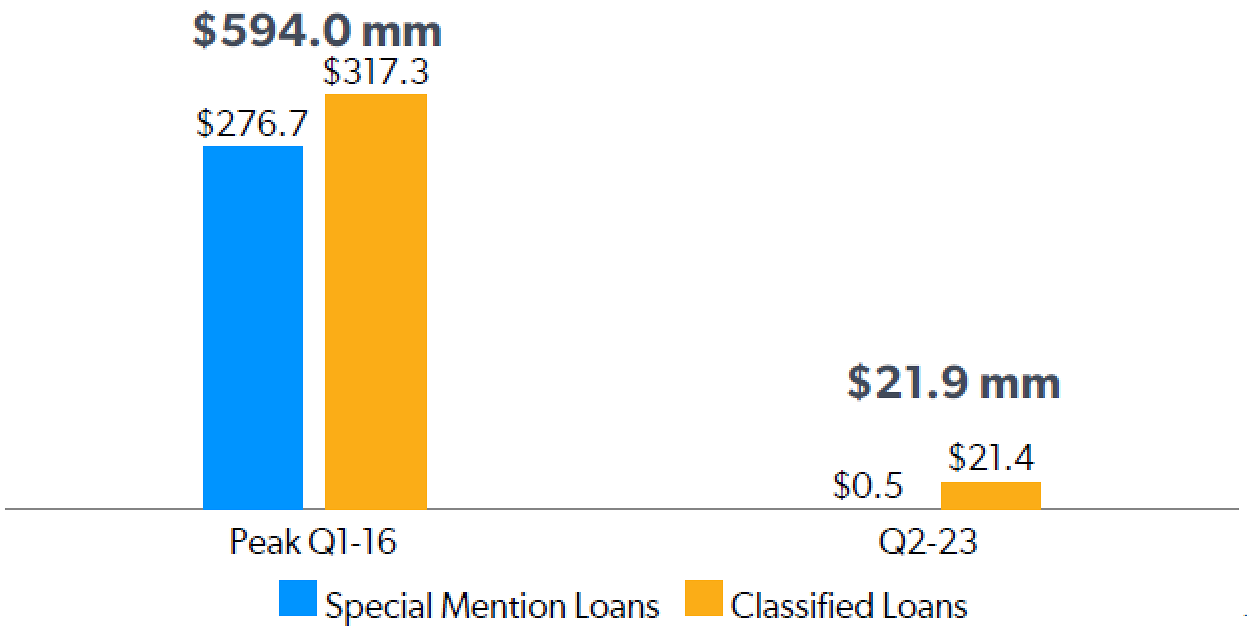
Reduced Energy Exposure



Peak Q1-15, $1.8 billion
(16.2% of Total Loans)

Q2-23 ,$1.0 billion
(5.6% of Total Loans)

Risk Profile



1 Special Mention loans include risk grade 10
2 Classified loans include risk grades 11-13

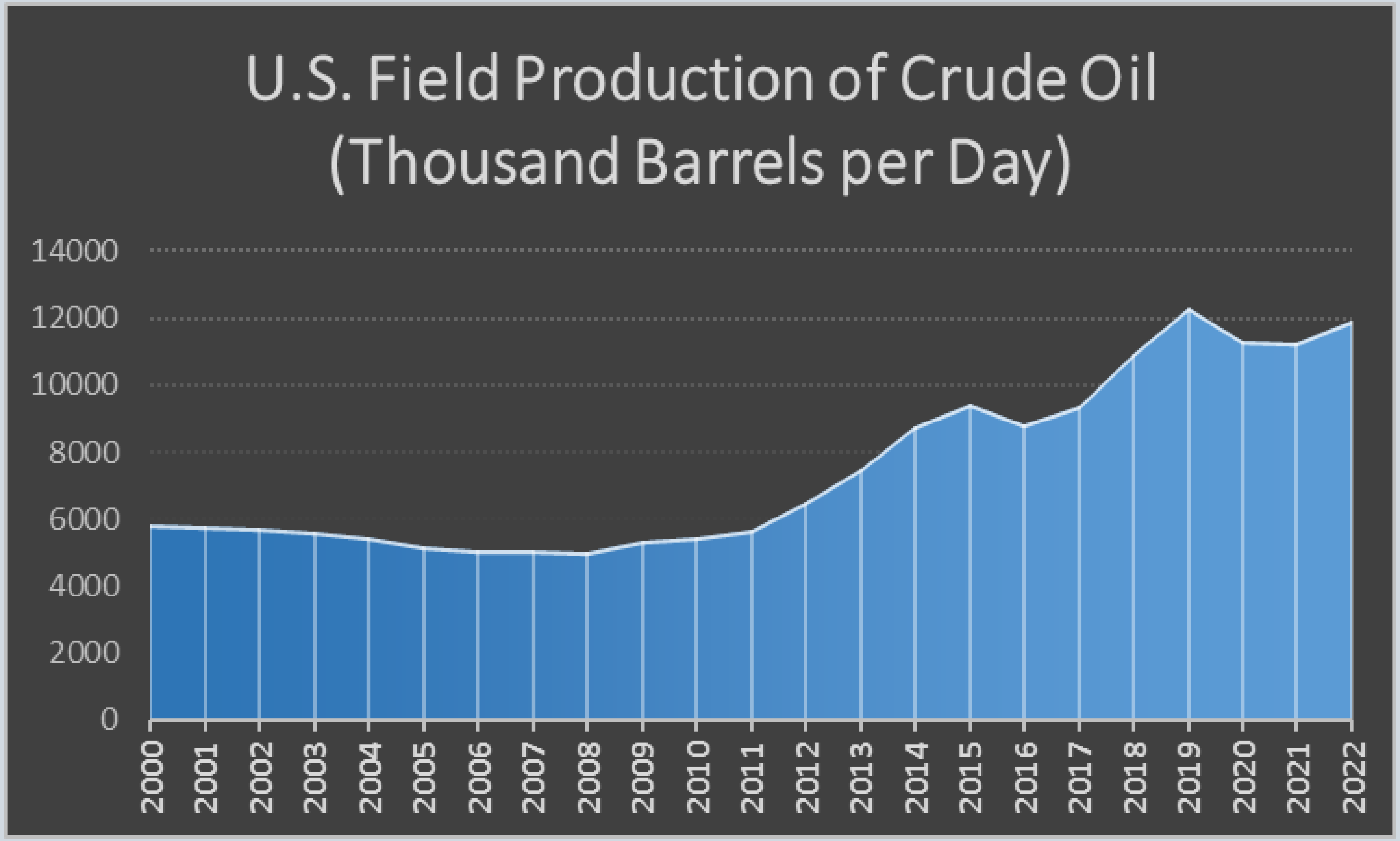
Frost Bank Price Deck

OIL PRICE FORECAST (NYMEX)		
Year	Base	Sensitivity (75% of Base)
2023	$67.50	$50.63
2024	$65.00	$48.75
2025	$62.50	$46.88
2026	$60.00	$45.00
2027	$57.50	$43.13
2028	$55.00	$41.25
2029	$55.00	$41.25
2030	$55.00	$41.25
2031	$55.00	$41.25
Esc.	Flat	Flat

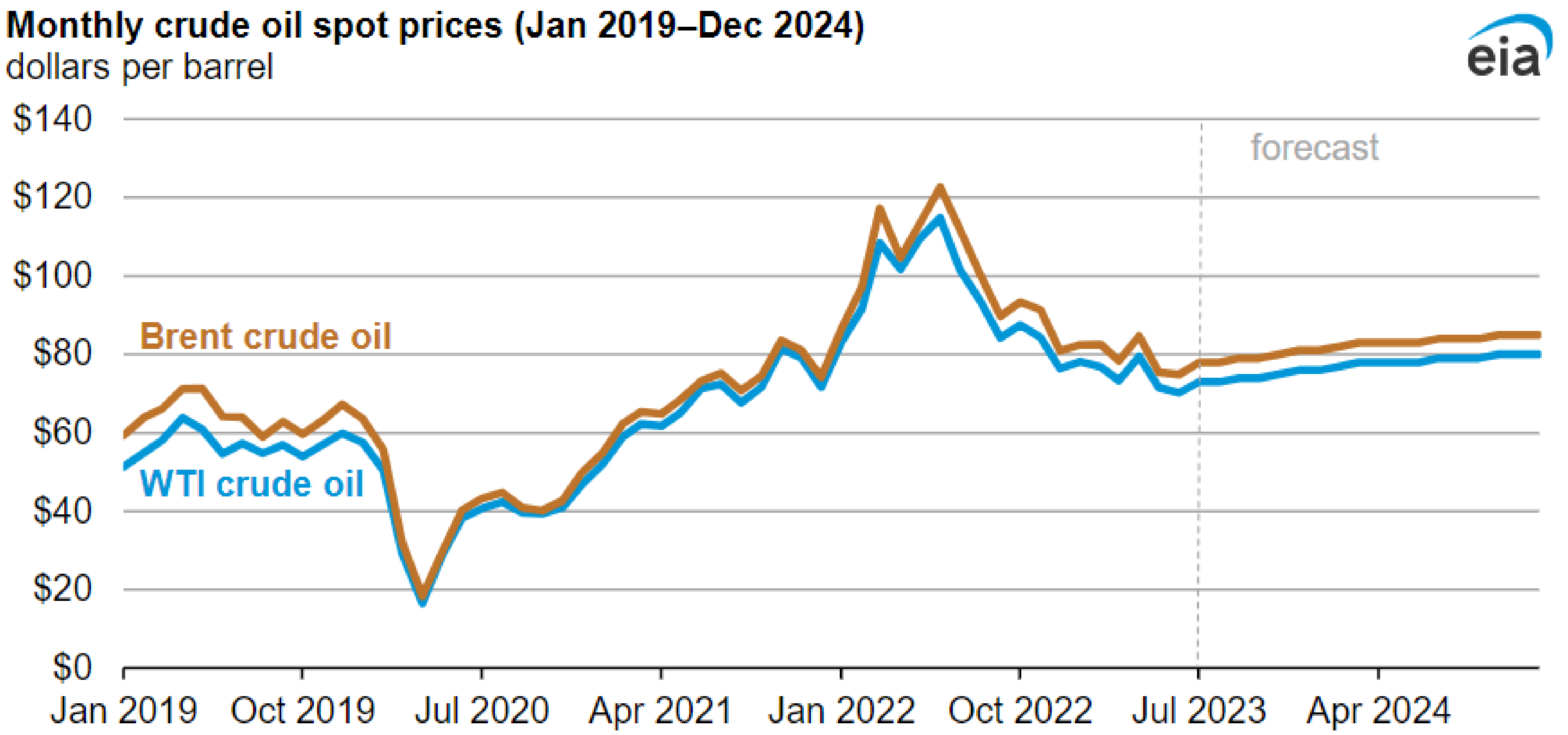
GAS PRICE FORECAST (Henry Hub)		
Year	Base	Sensitivity (75% of Base)
2023	$2.25	$1.69
2024	$2.75	$2.06
2025	$3.25	$2.44
2026	$3.25	$2.44
2027	$3.25	$2.44
2028	$3.25	$2.44
2029	$3.25	$2.44
2030	$3.25	$2.44
2031	$3.25	$2.44
Esc.	Flat	Flat

NGL PRICE FORECAST (35% of oil price forecast)		
Year	Base	Sensitivity (75% of Base)
2023	$23.63	$17.72
2024	$22.75	$17.06
2025	$21.88	$16.41
2026	$21.00	$15.75
2027	$20.13	$15.10
2028	$19.25	$14.44
2029	$19.25	$14.44
2030	$19.25	$14.44
2031	$19.25	$14.44
Esc.	Flat	Flat

United States Oil and Gas Basins


U.S. Field Production of Crude Oil
(Thousand Barrels per Day)
14000
12000
10000
8000
6000
4000
2000
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

EIA forecasts crude oil prices will increase through 2024 as demand rises above supply



Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, July 2023
Note: WTI=West Texas Intermediate

Saudi Energy Minister Says OPEC Targeting Stable Oil Prices

Saudi Arabia Energy Minister Prince Abdulaziz bin Salman said OPEC is working to keep oil markets stable and improve global energy security, without targeting any specific price level for crude.

“**Proactive, preemptive and precaution** — these three words will address how we are attending to the situation knowing there are uncertainties coming from multiple directions,” Prince Abdulaziz said during a discussion at the World Petroleum Congress.

By Devika Krishna Kumar
September 18, 2023 at 10:01 AM CDT
Updated on September 18, 2023 at 10:54 AM CDT

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CG&A

CAWLEY, GILLESPIE & ASSOCIATES, INC.
PETROLEUM CONSULTANTS

Understanding Reserve Reports:

The Inputs, Outputs and Challenges

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Fort Worth Energy Conference
September 20, 2023

What Are We Going to Talk About?

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I. Why CG&A?
II. Defining Reserves and Reserve Report
III. Who Uses Them and Why?
IV. Evaluation Process
V. Elements of and Interpreting the Report
VI. Closing and Q&A

Background

CG&A

- Petroleum Consultants, with a focus on Reservoir Engineering & Reporting
- Established in 1961 in Fort Worth, with additional offices in Houston and Austin
- Texas Professional Engineering Firm (F-693)
- Honest and reputable company, with a long history of delivering for our industry
- Relied upon by banks, private equity, investors
- Professional, ethical & highly experienced staff
  - 35 Employees (29 Technical)
  - 20 Engineers (8 Professional)
  - 3 Certified Professional Geologists
  - 8 Technical Analysts

II. Defining Reserves and Reserve Reports

Conventional vs Unconventional Reservoirs

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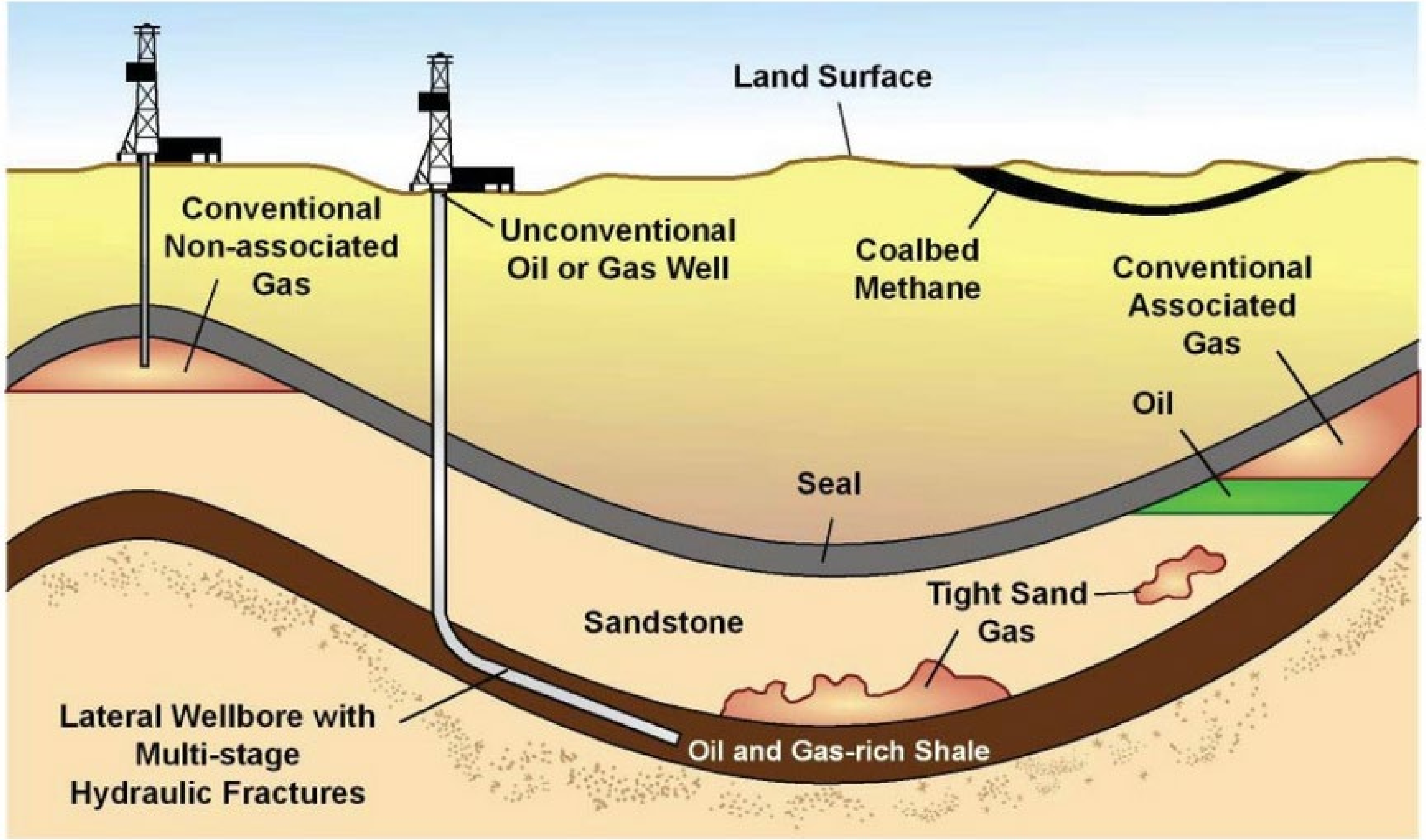
The Geology of Conventional and Unconventional Oil and Gas



Source: EIA

Reserves & Risk

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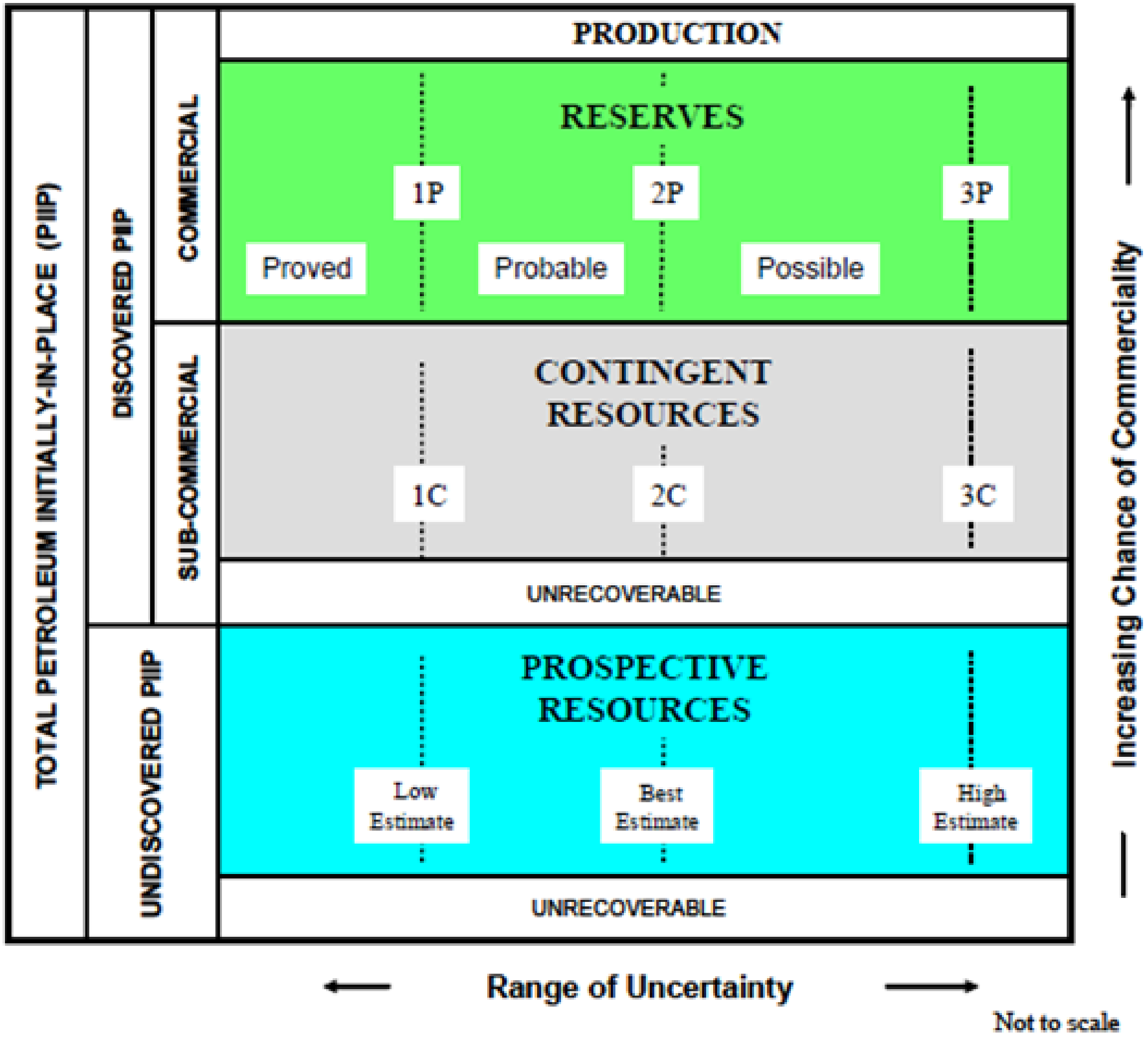
Reserves are those quantities of petroleum anticipated to be commercially recoverable by application of development projects to known accumulations from a given date forward under defined conditions.

Reserves must satisfy four criteria: **discovered, recoverable, commercial, and remaining** based on the development project(s) applied. Reserves are further categorized in accordance with the **level of certainty** associated with the estimates and may be sub-classified based on project maturity and/or characterized by the development and production status.

To be included in the Reserves class, a project must be sufficiently defined to establish its **commercial viability**. This includes the requirement that there is evidence of firm intention to proceed with development within a reasonable time-frame.

A reasonable time-frame for the initiation of development depends on the specific circumstances and varies according to the scope of the project. While **five years is recommended as a benchmark**, a longer time-frame could be applied where, for example, development of an economic project is deferred at the option of the producer for, among other things, market-related reasons or to meet contractual or strategic objectives. In all cases, the justification for classification as Reserves should be clearly documented.

To be included in the Reserves class, there must be a **high confidence in the commercial maturity and economic producibility of the reservoir** as supported by actual production or formation tests. In certain cases, Reserves may be assigned on the basis of well logs and/or core analysis that indicate the subject reservoir is hydrocarbon-bearing and is analogous to reservoirs in the same area that are producing or have demonstrated the ability to produce on formation tests.



SPE-PRMS: If deterministic methods are used, the term **"reasonable certainty"** is intended to express **a high degree of confidence that the quantities will be recovered**. If probabilistic methods are used, there should be at least a 90% probability (P90) that the quantities recovered will equal or exceed the estimate.

SEC: **Proved oil and gas reserves** are those quantities of oil and gas, which, by analysis of geoscience and engineering data, can be estimated with **reasonable certainty** to be **economically producible** from a given date forward, from **known reservoirs**, and under **existing economic conditions**, operating methods, and government regulations, regardless of whether deterministic or probabilistic methods are used for the estimation.

Proved Reserves

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Status	Definition	Guidelines
Developed Reserves	Developed Reserves are expected quantities to be recovered from existing wells and facilities.	Reserves are considered developed only after the necessary equipment has been installed, or when the costs to do so are relatively minor compared to the cost of a well. Where required facilities become unavailable, it may be necessary to reclassify Developed Reserves as Undeveloped. Developed Reserves may be further sub-classified as Producing or Non-Producing.
Developed Producing Reserves	Developed Producing Reserves are expected to be recovered from completion intervals that are open and producing at the time of the estimate.	Improved recovery reserves are considered producing only after the improved recovery project is in operation.
Developed Non-Producing Reserves	Developed Non-Producing Reserves include shut-in and behind-pipe Reserves.	Shut-in Reserves are expected to be recovered from (1) completion intervals which are open at the time of the estimate but which have not yet started producing, (2) wells which were shut-in for market conditions or pipeline connections, or (3) wells not capable of production for mechanical reasons. Behind-pipe Reserves are expected to be recovered from zones in existing wells which will require additional completion work or future re-completion prior to start of production. In all cases, production can be initiated or restored with relatively low expenditure compared to the cost of drilling a new well.
Undeveloped Reserves	Undeveloped Reserves are quantities expected to be recovered through future investments:	(1) from new wells on undrilled acreage in known accumulations, (2) from deepening existing wells to a different (but known) reservoir, (3) from infill wells that will increase recovery, or (4) where a relatively large expenditure (e.g. when compared to the cost of drilling a new well) is required to (a) recomplete an existing well or (b) install production or transportation facilities for primary or improved recovery projects.

What is a Reserve Report?

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- Third-party report of remaining quantities of minerals which can be economically recovered over a length of time under certain set of conditions

- Reporting can be a formal, certified third party reserve report or a non-certified audit letter commenting on the merits of other work

- Other types of evaluations may include audits/review of specific properties only and procedural reviews where no reserves are stated

- Report includes the sources and reliability of data, assumptions applied, results (cash flows, property details, annual outlook) and limitations in distribution and use of the report

- They do not contain interest/debt payments or federal income tax unless specifically noted

- Signed and sealed by competent party (i.e., professional engineer)

- Independent third-party requires
  - No financial ties between the auditor and the company
  - No ownership in assets being evaluated
  - Fee should not be contingency (outcome) based
  - Specify this in report

What is a Reserve Report?

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- Reports are prepared in accordance with the most appropriate industry reserves and resources guidelines, and will state which one is used…

    - SPE-PRMS – 2018 Petroleum Resources Management System (PRMS) approved by the Society of Petroleum Engineers (SPE)

    - SEC – U.S. Securities and Exchange Commission (SEC) Regulation S-X (210.4-10) and Regulation S-K (229.1200)
        - FASB 69 (30)(b) – consistent with "current and constant costs" guidance

    - COGEH NI 51-101 – Canadian Oil and Gas Evaluation Handbook (COGEH), as prepared by SPEE (Calgary Chapter) and Canadian Institute of Mining, Metallurgy & Petroleum (Petroleum Society)

- Purpose is to establish consistent set of guidelines and framework intended to reduce the subjective nature of evaluating these assets and provide confidence to end users of such reports

III. Who Uses Them and Why?

Who Needs Reserve Reports?

Banks
Lending Purposes

Producers
Budgeting, Development Planning, Financing

Tax and Legal Professionals
Taxation and Estate Planning

M&A&D/ Private Equity Firms
Market Valuations, Equity Determinations

Securities and Exchange Commission
Mandatory Regulatory Filings

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Use Cases and Pricing Assumptions

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Report Use	Defined?	Typical Pricing Applied
SEC Filing	Yes, by SEC guidelines	Trailing 12-month average
Bank Facility	Yes, by bank	Bank-provided forward-looking strip (Base & Sensitivity cases)
Company Internal	No	SEC and/or strip at company's discretion
Tax & Legal	No	(Modified) strip at preparer's discretion
M&A&D/PE	No	SEC and/or strip at company's discretion

PRMS vs SEC Comparison table

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Element	PRMS	SEC
Pricing Assumption	Undefined, allows futures pricing	"…shall be the average price during the 12-month period prior to the ending date of the period covered by the report, determined as an unweighted arithmetic average of the first-day-of-the-month price for each month within such period, unless prices are defined by contractual arrangements, excluding escalations based upon future conditions."
Hedges	Allowed	Not Allowed
3rd Party Revenues	Allowed	Not Allowed
Economic Conditions	Based on existing or anticipated conditions	Based on existing (last 12 mo) conditions
Escalation	Allowed	Not Allowed
Development Timing Requirement	"reasonable timeframe" (suggest 5-yrs)	5 Years from initial booking ("5-Year Rule")

IV. Evaluation Process

Economic Review

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Item	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	12 Mo Avg	6 Mo Avg
Net Production Volumes														
Oil - Bbls	5,554	7,193	5,832	6,661	6,672	6,301	5,589	5,877	6,008	5,154	7,085	7,174	6,258	6,148
Gas - Mcf	17,443	19,417	14,551	19,025	17,129	14,800	15,383	15,728	15,814	15,741	23,788	25,758	17,881	18,702
Natural gas liquids - Bbls	2,465	1,823	2,150	2,748	2,776	2,320	2,345	2,421	2,427	2,266	3,018	3,105	2,489	2,597
Net Revenues														
Oil revenue	389,187	576,013	453,977	475,056	550,677	577,028	611,574	616,302	658,954	597,329	720,494	682,486	575,757	647,857
Gas revenue	53,350	82,426	57,992	55,736	43,961	58,742	45,468	65,300	93,809	100,930	125,382	177,865	80,080	101,459
NGL revenue	73,101	62,649	59,720	58,573	75,748	68,644	77,201	78,699	81,178	78,137	86,927	88,471	74,087	81,769
NGL Yield	63.8	43.7	63.7	65.9	71.9	67.3	64.2	67.1	66.5	64.1	62.6		63.7	64.9
Shrink	45%	47%	43%	46%	44%	43%	42%	44%	43%	45%	49%		45%	45%
Price Differentials														
Oil Diff, $/bbl	-1.32	-1.06	-1.27	-0.17	-0.15	-0.14	0.49	2.94	-0.36	1.76	1.55	3.71	0.50	1.68
Gas Diff, $/mcf	-1.31	-1.60	-2.22	-2.52	-1.46	-2.30	-1.61	-1.18	-1.33	-2.50	-1.28	-1.78	-1.76	-1.61
NGL Ratio	0.42	0.42	0.35	0.30	0.33	0.32	0.30	0.32	0.30	0.30	0.29	0.31	0.33	0.30
Index Prices														
WTI Cushing (Bloomberg) $/bbl	71.39	81.14	79.12	71.49	82.68	91.72	108.94	101.92	110.04	114.14	100.14	91.42	92.01	104.43
Final Gas NYMEX $/MMBTU	4.37	5.84	6.20	5.45	4.02	6.27	4.57	5.34	7.27	8.91	6.55	8.69	6.12	6.89
Taxes														
Severance taxes	16,019	32,489	21,512	19,082	28,337	26,061	31,680	32,702	36,842	35,617	40,475	41,648	30,205	36,494
Ad valorem taxes	6,387	6,387	4,146	4,136	7,306	7,306	7,306	7,306	7,306	7,306	7,306	17,820	7,502	9,059

- Production date vs accounting date
- Consider regional issues that might affect pricing/production (basis blowouts, changing markets, etc.)
- Reporting lags, partial months and missing new wells
- Ad Valorem (property) tax incurred annually but economics program calculates monthly

Economic Review

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Ad valorem taxes	6,387	6,387	4,146	4,136	7,306	7,306	7,306	7,306	7,306	7,306	7,306	17,820	7,502	9,059

- Consider $ vs % adjustments
- Last day vs monthly average gas price
- 2-stream (Oil/Wet Gas) vs 3-stream (Oil/Residue Gas/NGL) reconciliation

Economic Review

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Item	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	12 Mo Avg	6 Mo Avg
LOE														
Accrued LOE	15,317	-15,317	0	9,879	-9,879	0	585	-585	0	10,176	-10,176	0	0	0
Chemicals and treating	17,889	11,399	5,916	16,252	10,543	15,645	9,467	8,062	20,464	12,201	14,903	18,985	13,477	14,014
Contract services	27,588	20,187	21,263	18,953	21,066	20,577	22,184	20,276	24,597	20,094	20,956	22,951	21,724	21,843
Electricity and fuel	52	34	49	97	0	48	96	0	49	63	34	47	47	48
Equipment service / rental	32,546	20,584	49,369	29,940	37,843	30,445	39,002	31,615	31,626	31,659	31,535	31,177	33,112	32,769
Gathering and treating	4,746	4,324	4,524	3,826	4,201	3,978	3,586	4,268	4,183	4,299	5,571	7,017	4,544	4,821
Producing well insurance	4,472	4,472	4,472	4,472	4,472	4,472	4,472	4,472	4,472	4,472	4,472	4,472	4,472	4,472
Legal services	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials and supplies	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saltwater disposal	33,734	43,300	17,220	45,928	23,045	38,243	28,976	24,634	26,999	43,098	35,622	29,999	32,567	31,555
Sub-surface maintenance	2,957	11,254	2,530	0	0	1,662	0	0	2,073	0	10,844	32,288	5,301	7,534
Surface maintenance	28,960	26,897	36,436	38,955	37,512	19,704	50,556	21,576	32,329	46,507	56,604	44,136	36,681	41,951
Workover, intangible cost	14,533	37,723	2,282	92,022	0	0	0	0	31,158	610,794	36,905	14,172	69,966	115,505
Lease fuel royalty	3,970	6,331	6,353	6,085	4,755	5,004	6,560	6,076	7,320	9,699	10,026	8,522	6,725	8,034
Miscellaneous	3,879	3,078	6,634	3,726	2,958	4,158	3,496	4,856	4,402	4,369	7,684	3,468	4,392	4,712
Direct operating expenses	197,031	180,651	161,193	274,272	143,822	151,242	176,288	132,558	196,978	804,737	232,287	235,054	240,509	296,317

- Watch out for Fixed vs Variable costs, non-recurring charges, incomplete months
- Make sure to review long term vs. short term averages
- Must accept LOS (lease operating statement) "as presented"

LOS Tie out Plots

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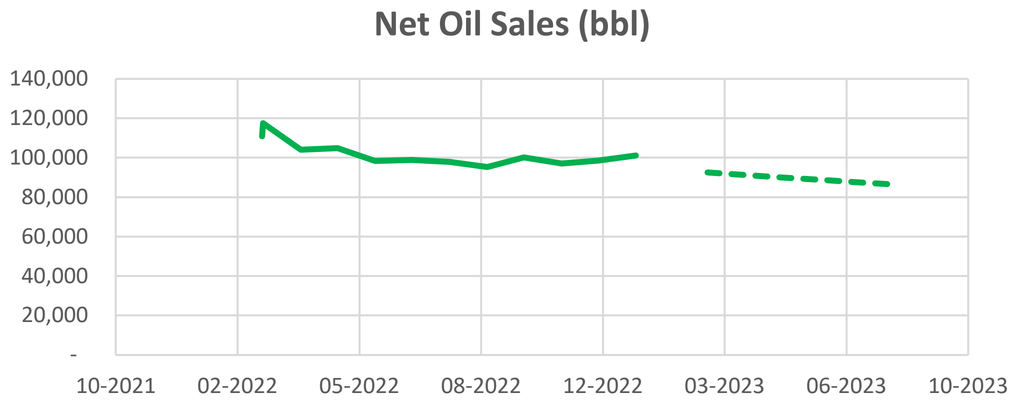

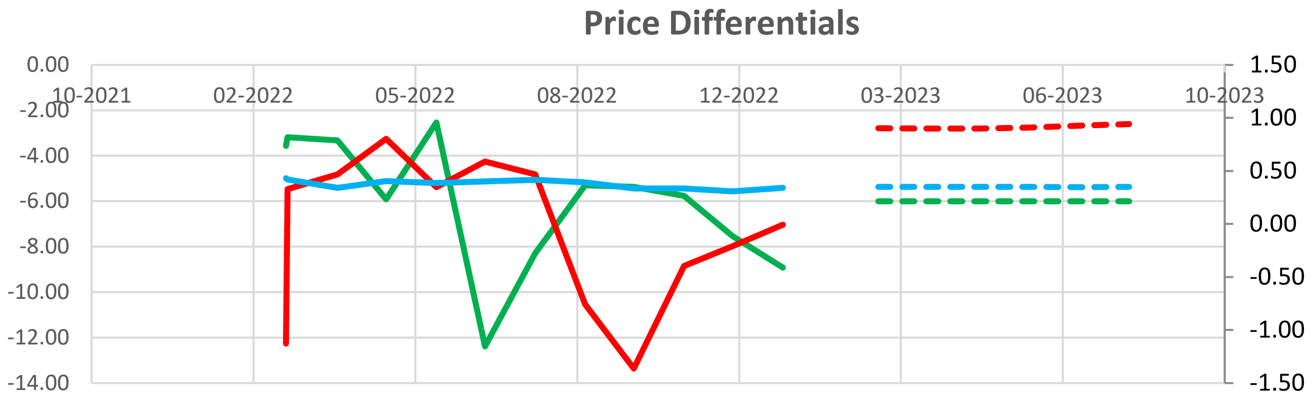

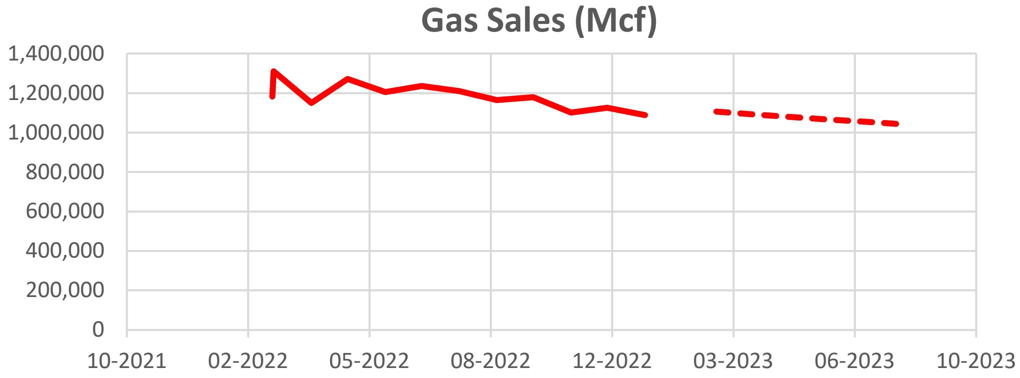

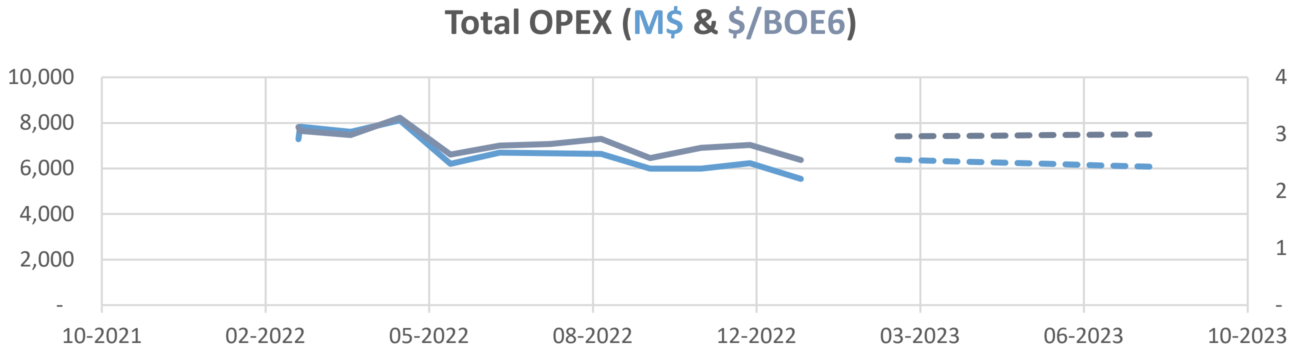

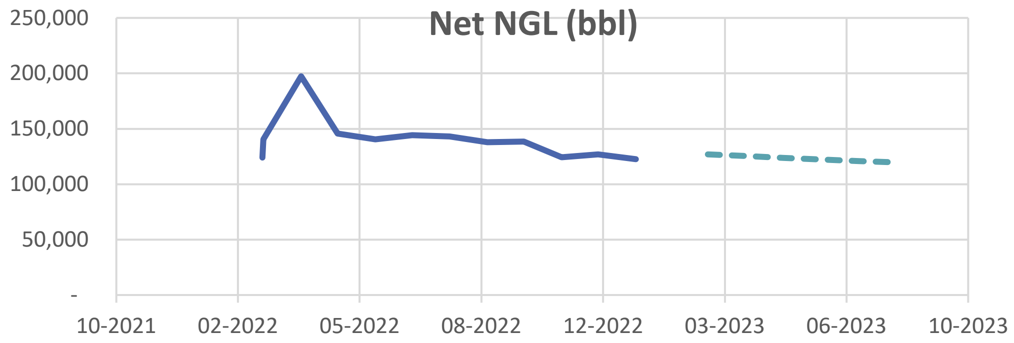

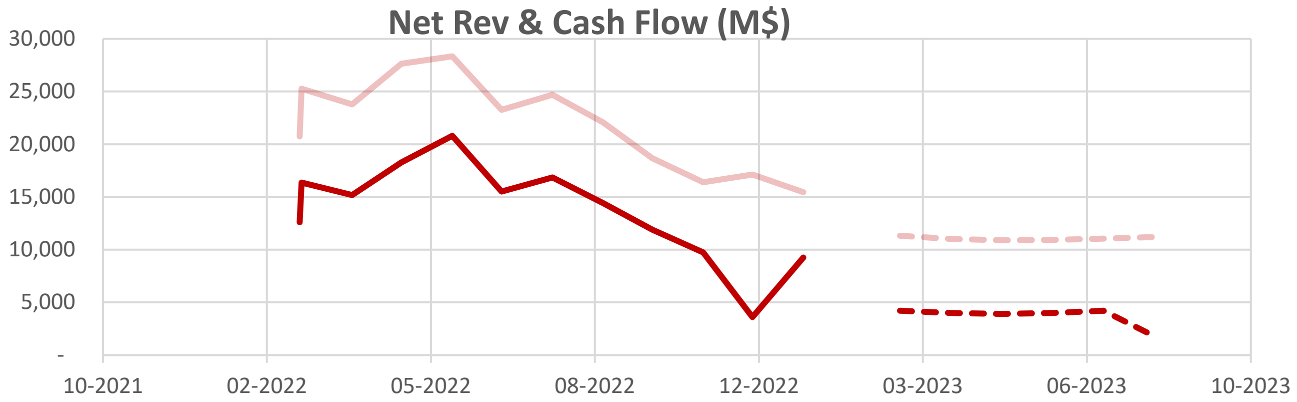

V. Elements of and Interpreting the Report

Reserve Report Construction

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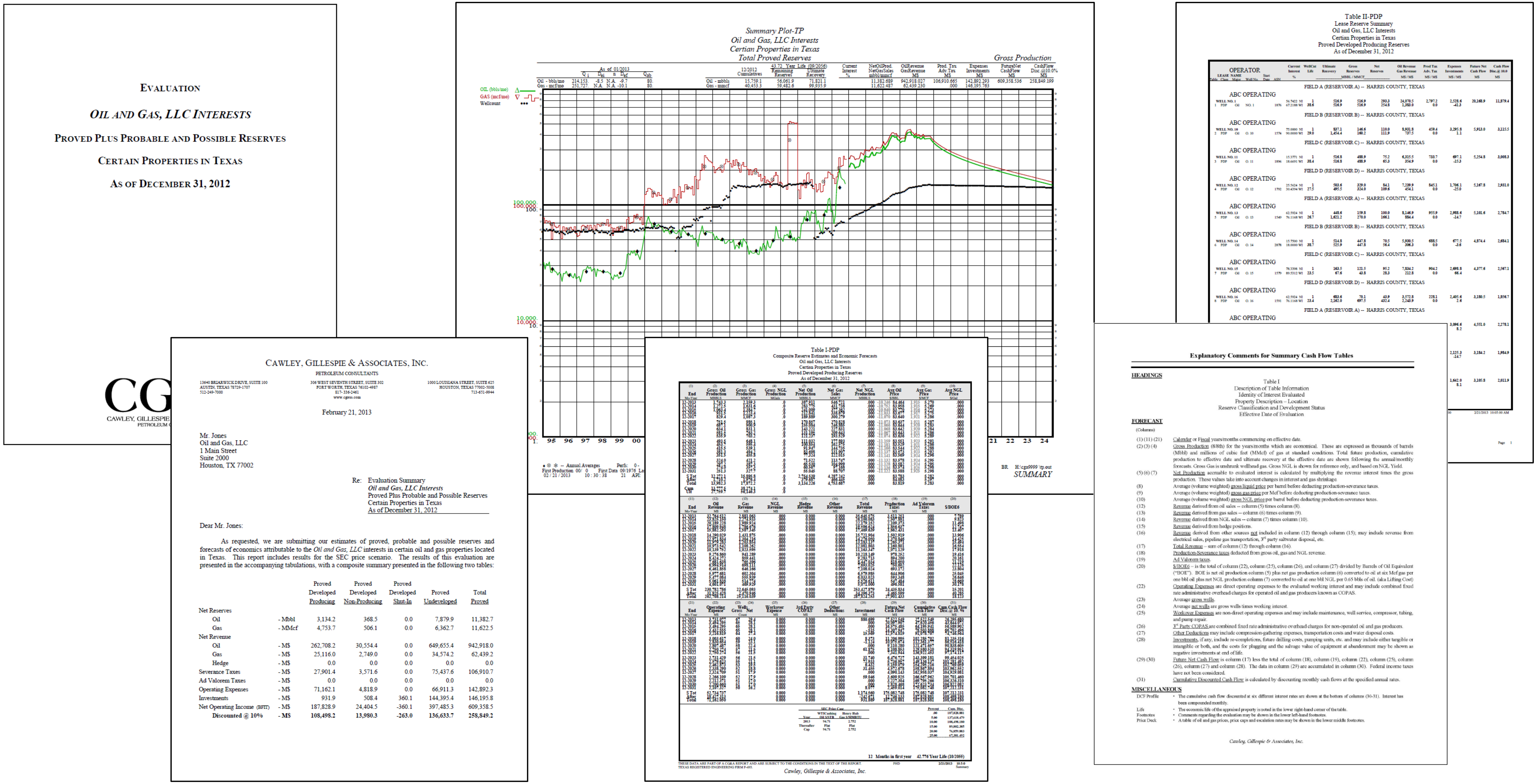

Reserves Report – Production Forecast

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Production Rate versus Time Graph (Semilog)

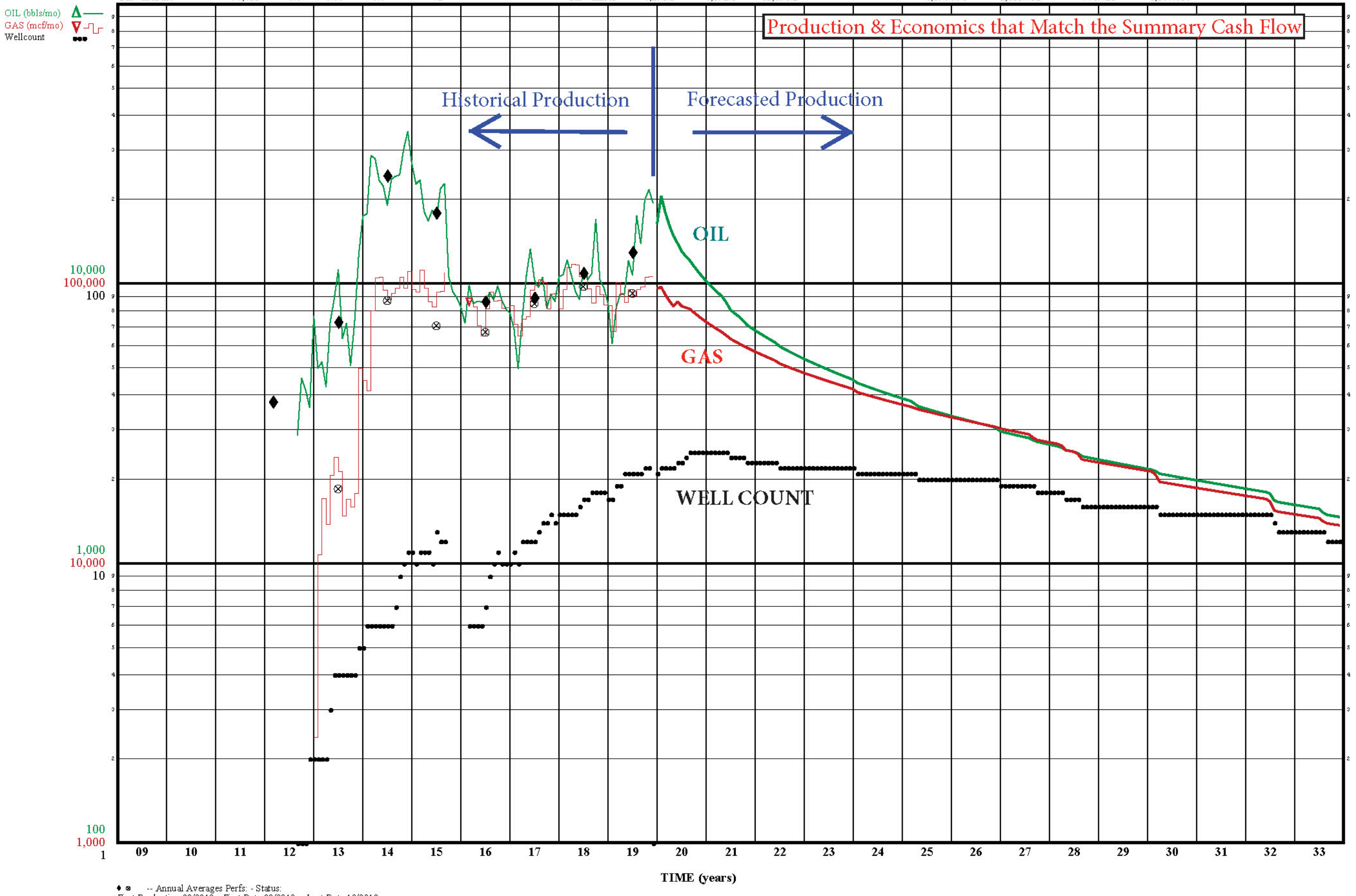
Summary Plot - Total Proved
Example Exploration, LLC Interests
Various Oil & Gas Properties in Texas
Total Proved Reserves

Gross Production

	As of 01/2020 Qi	Dei	n	Def	Qab
Oil - bbls/mo	16,329	0.0	0.00	0.0	62
Gas - mcf/mo	96,035	0.0	0.00	0.0	72

	12/2019 Cumulatives	46.00 Year Life (12/2065) Remaining Reserves	Ultimate Recovery
Oil - mbbls	1,066.9	871.7	1,938.7
Gas - mmcf	6,298.5	6,892.8	13,191.2

Current Interest %	NetOilProd. NetGasSales mbbl/mmcf	OilRevenue GasRevenue M$	Prod. Tax Adv. Tax M$	Expenses Investments M$	FutureNet CashFlow M$	CashFlow Disc.@10.0% M$
	561.240	30,009.525	2,022.580	16,535.150	17,434.577	11,196.248
	1,890.991	2,185.452	771.428	1,807.680		



-- Annual Averages Perfs: - Status:
First Production 09/2012-- First Data 09/2012 -- Last Data 12/2019
Run Date: 01/13/2020

Cawley, Gillespie & Associates, Inc.

Reserves Report – Cash Flow Page

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Table I - Total Proved
Composite Reserve Estimates and Economic Forecasts
Example Exploration, LLC Interests
Various Oil & Gas Properties in Texas
Total Proved Reserves
As of December 31, 2019

12-Month Annual Time Frames (19 Yrs Shown)

Gross Wellhead Production

Net Product Sales

Net Product Prices Expected

(1) End Mo-Year	(2) Gross Oil Production MBBLS	(3) Gross Gas Production MMCF	(4) Gross NGL Production MBBLS	(5) Net Oil Production MBBLS	(6) Net Gas Sales MMCF	(7) Net NGL Production MBBLS	(8) Avg Oil Price $/BBL	(9) Avg Gas Price $/MCF	(10) Avg NGL Price $/BBL
12-2020	170.9	1,018.9	76.1	111.880	261.144	49.881	53.470	1.156	17.654
12-2021	101.2	777.0	61.9	66.502	215.297	41.123	53.470	1.156	17.654
12-2022	72.9	629.8	51.3	47.710	178.861	34.164	53.470	1.156	17.654
12-2023	59.5	540.0	44.4	38.806	154.854	29.578	53.470	1.156	17.654
12-2024	50.4	471.9	39.0	32.728	135.820	25.943	53.470	1.156	17.654
12-2025	43.3	421.2	35.0	28.145	121.898	23.284	53.470	1.156	17.654
12-2026	38.4	383.1	31.9	24.951	111.308	21.261	53.470	1.156	17.654
12-2027	33.9	346.9	28.9	22.035	100.910	19.275	53.470	1.156	17.654
12-2028	30.2	300.8	25.0	19.491	86.336	16.491	53.470	1.156	17.654
12-2029	27.2	266.4	22.1	17.477	75.735	14.466	53.470	1.156	17.654
12-2030	24.8	235.1	19.5	15.886	65.937	12.595	53.470	1.156	17.654
12-2031	23.0	216.5	17.9	14.709	60.490	11.554	53.470	1.156	17.654
12-2032	21.0	196.3	16.3	13.332	54.344	10.380	53.470	1.156	17.654
12-2033	18.5	172.2	14.2	11.687	47.022	8.982	53.470	1.156	17.654
12-2034	16.7	116.6	9.5	10.484	28.792	5.499	53.470	1.156	17.654
12-2035	15.4	95.3	7.7	9.638	22.302	4.260	53.470	1.156	17.654
12-2036	14.5	89.7	7.3	9.040	21.020	4.015	53.470	1.156	17.654
12-2037	13.0	83.5	6.8	8.015	19.704	3.764	53.470	1.156	17.654
12-2038	12.1	78.3	6.4	7.438	18.523	3.538	53.470	1.156	17.654
S Tot	786.7	6,439.6	521.2	509.955	1,780.299	340.052	53.470	1.156	17.654
After	85.0	453.2	38.2	51.285	110.692	21.143	53.470	1.156	17.654
Total	871.7	6,892.8	559.4	561.240	1,890.991	361.195	53.470	1.156	17.654
Cum	1,066.9	6,298.5	0.0						
Ult	1,938.7	13,191.2	559.4						

Total Reserves

Prior Cumulative Production from Producing Wells

Ultimate Reserves (EUR) from Producers & Drills

State Sev & Ad Val Taxes (% of Revenue)

All Revenue Sources

Lifting Costs

(11) End Mo-Year	(12) Oil Revenue M$	(13) Gas Revenue M$	(14) NGL Revenue M$	(15) Hedge Revenue M$	(16) Other Revenue M$	(17) Total Revenue M$	(18) Production Taxes M$	(19) Ad Valorem Taxes M$	(20) $/BOE6
12-2020	5,982.241	301.809	880.581	0.000	0.000	7,164.632	363.862	143.293	10.995
12-2021	3,555.837	248.822	725.982	0.000	0.000	4,530.641	236.679	90.613	11.666
12-2022	2,551.029	206.713	603.122	0.000	0.000	3,360.865	178.085	67.217	11.618
12-2023	2,074.966	178.968	522.170	0.000	0.000	2,776.104	148.034	55.522	12.540
12-2024	1,749.956	156.970	457.986	0.000	0.000	2,364.912	126.620	47.298	13.244
12-2025	1,504.932	140.880	411.042	0.000	0.000	2,056.854	110.621	41.137	13.926
12-2026	1,334.140	128.640	375.331	0.000	0.000	1,838.111	99.168	36.762	14.694
12-2027	1,178.235	116.624	340.271	0.000	0.000	1,635.129	88.466	32.703	15.176
12-2028	1,042.179	99.781	291.127	0.000	0.000	1,433.087	77.258	28.662	15.465
12-2029	934.488	87.528	255.379	0.000	0.000	1,277.395	68.704	25.548	15.898
12-2030	849.450	76.205	222.340	0.000	0.000	1,147.995	61.466	22.960	16.385
12-2031	786.500	69.909	203.971	0.000	0.000	1,060.380	56.720	21.208	17.037
12-2032	712.864	62.806	183.248	0.000	0.000	958.919	51.246	19.178	17.337
12-2033	624.915	54.344	158.558	0.000	0.000	837.817	44.714	16.756	17.305
12-2034	560.567	33.275	97.087	0.000	0.000	690.929	35.563	13.819	18.927
12-2035	515.321	25.775	75.203	0.000	0.000	616.298	31.278	12.326	20.186
12-2036	483.372	24.294	70.881	0.000	0.000	578.547	29.373	11.571	21.061
12-2037	428.583	22.773	66.443	0.000	0.000	517.799	26.406	10.356	21.180
12-2038	397.717	21.407	62.459	0.000	0.000	481.583	24.585	9.632	21.985
S Tot	27,267.291	2,057.522	6,003.182	0.000	0.000	35,327.996	1,858.848	706.560	13.824
After	2,742.234	127.929	373.256	0.000	0.000	3,243.419	163.732	64.868	27.892
Total	30,009.525	2,185.452	6,376.438	0.000	0.000	38,571.415	2,022.580	771.428	14.881

All Operating Costs

Capital Spend

Annual & Cumulative Cash Flow

(21) End Mo-Year	(22) Operating Expense M$	(23) Wells Gross Count	(24) Wells Net Count	(25) Workover Expense M$	(26) 3rd Party COPAS M$	(27) Other Deductions M$	(28) Investment M$	(29) Future Net Cash Flow M$	(30) Cumulative Cash Flow M$	(31) Cum.Cash Flow Disc.@ 10.0% M$
12-2020	828.663	25	22.0	0.000	0.000	1,236.488	1,807.680	2,784.646	2,784.646	2,612.975
12-2021	726.181	25	22.0	0.000	0.000	780.010	0.000	2,697.159	5,481.805	4,958.163
12-2022	611.393	23	20.3	0.000	0.000	547.244	0.000	1,956.925	7,438.730	6,503.759
12-2023	591.367	22	19.3	0.000	0.000	460.026	0.000	1,521.155	8,959.885	7,595.604
12-2024	558.726	22	19.3	0.000	0.000	397.833	0.000	1,234.436	10,194.321	8,400.873
12-2025	533.155	21	18.3	0.000	0.000	352.479	0.000	1,019.463	11,213.783	9,005.280
12-2026	523.691	20	17.6	0.000	0.000	318.621	0.000	859.868	12,073.652	9,468.698
12-2027	491.430	19	16.9	0.000	0.000	288.327	0.000	734.203	12,807.855	9,828.407
12-2028	437.102	18	15.9	0.000	0.000	252.630	0.000	637.435	13,445.290	10,112.285
12-2029	403.100	16	13.9	0.000	0.000	224.907	0.000	555.135	14,000.425	10,336.985
12-2030	374.657	16	13.9	0.000	0.000	199.841	0.000	489.071	14,489.496	10,516.953
12-2031	366.600	15	12.9	0.000	0.000	183.512	0.000	432.140	14,921.636	10,661.521
12-2032	338.488	15	12.9	0.000	0.000	166.643	0.000	383.364	15,305.000	10,778.117
12-2033	291.171	13	10.9	0.000	0.000	147.715	0.000	337.460	15,642.460	10,871.405
12-2034	247.603	12	10.2	0.000	0.000	109.307	0.000	284.637	15,927.097	10,942.987
12-2035	232.597	10	8.2	0.000	0.000	92.875	0.000	247.222	16,174.319	10,999.475
12-2036	232.597	10	8.2	0.000	0.000	86.546	0.000	218.460	16,392.779	11,044.857
12-2037	212.043	10	8.2	0.000	0.000	79.090	0.000	189.904	16,582.682	11,080.714
12-2038	208.597	9	7.2	0.000	0.000	73.356	0.000	165.414	16,748.096	11,109.111
S Tot	8,209.361			0.000	0.000	5,997.450	1,807.680	16,748.096	16,748.096	11,109.111
After	1,878.943			0.000	0.000	449.396	0.000	686.481	17,434.577	11,196.248
Total	10,088.304			0.000	0.000	6,446.846	1,807.680	17,434.577	17,434.577	11,196.248

Benchmark Prices Applied

SEC Pricing YE2019

Year	WTI Cushing Oil $/STB	Henry Hub Gas $/MMBTU
2020	55.69	2.58
Thereafter	0.0%	0.0%
Cap	55.69	2.58

Discounted Cash Flow (DCF) at Various Discount Rates

Percent	Cum. Disc.
5.00	13,567.409
8.00	12,023.447
9.00	11,592.902
12.00	10,489.750
15.00	9,603.770
20.00	8,457.593

Economic Life from Eff. Date

12 Months in first year **46.001 Year Life (12/2065)**

THESE DATA ARE PART OF A CG&A REPORT AND ARE SUBJECT TO THE CONDITIONS IN THE TEXT OF THE REPORT. PHD 01/13/2020
TEXAS REGISTERED ENGINEERING FIRM F-693. Summary

Cawley, Gillespie & Associates, Inc.

VII. Closing and Q&A

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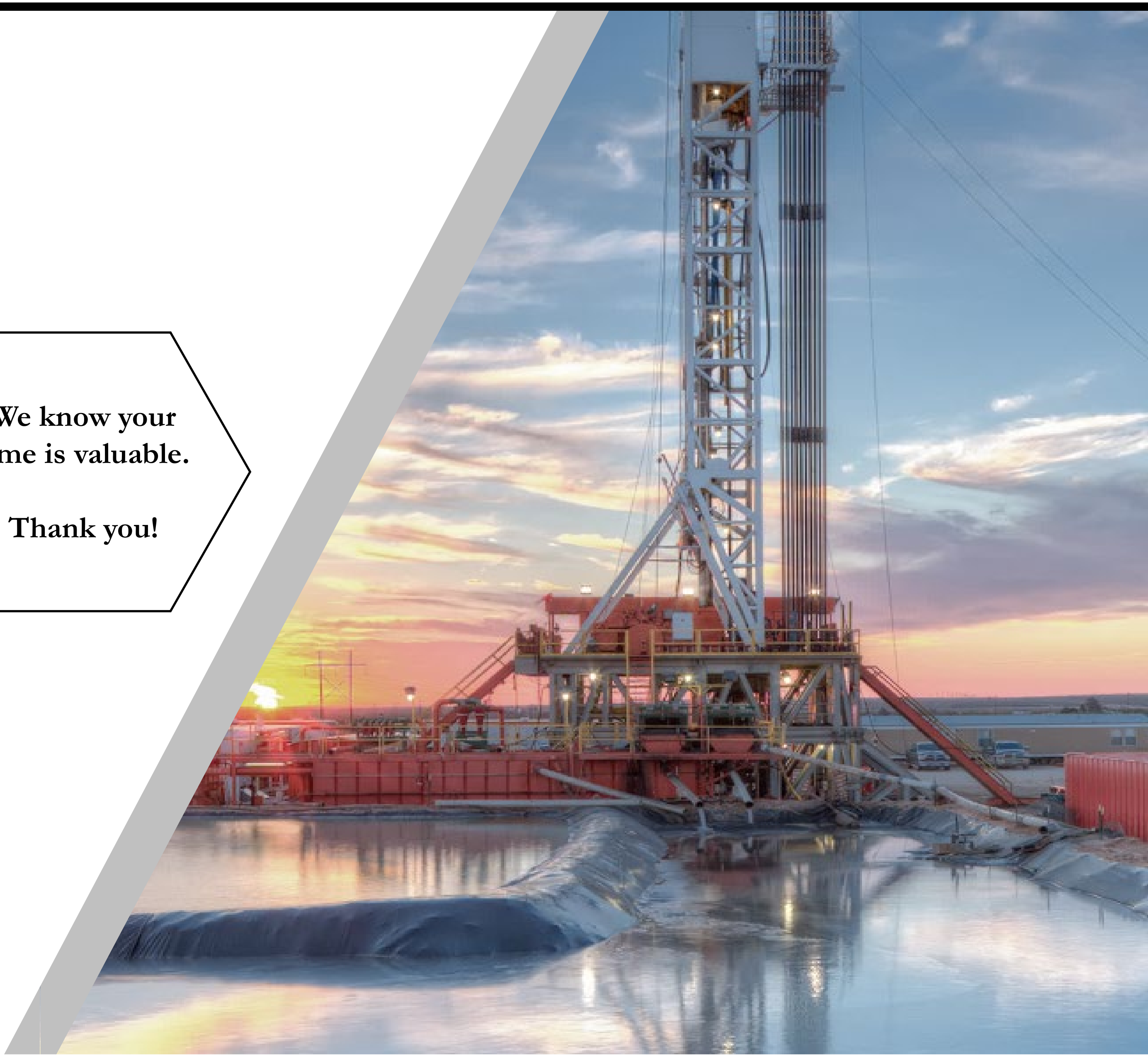
We know your time is valuable.

Thank you!



MINERAL MANAGEMENT

ISSUES & UPDATES FOR MINERAL OWNERS

WHAT IS MINERAL MANAGEMENT?

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- The Whitley Penn Mineral Management Team's goal is to make the owner's life as easy as possible by moving all mail, depositing, paperwork, etc. to our team. We also want the client to fully understand the status of operation on what they own, while also having peace of mind that the highest value will be extracted from those assets for years to come.
- Our team of experts include attorneys, certified landmen, certified mineral managers, CPAs, tax specialists, and certified appraisers.
- WP currently manages over 1,500,000 gross mineral acres and ~9,000 individual well bores across the United States, representing individual mineral owners, working interest owners, trusts, family offices, foundations, charities and aggregate mineral buyers.

MINERAL MANAGEMENT 101

UNCOVER THE FULL VALUE OF YOUR MINERAL PORTFOLIO

- **Asset Inventory -** Know what you own
- **Royalty Audit -** ex: TX has 4-year look-back period
- **Division Order Review -** Confirm interest in a well or unit
- **Proactive Land Management -** Look for issues with payments before they get out of hand, monitor permits, drilling, and timeliness of payments.
- **Software that you're comfortable working with**

WHAT TO WATCH OUT FOR

Check Detail Reviews:

1. Deductions
2. Severance Tax
3. Decimal Interest

Property Tax

Case Law we're watching that may affect future leasing:

- Produced Water
- Pore Space law

1. DEDUCTIONS

							0.00	[illegible]	
							6874.15	TX_SEV	
05/2023	OIL	0.0000	R2	68.75	13104.88	900997.23		859469.40	
							81.93	TX_REG	TX Regu
							41445.90	TX_SEV	TX Severance
04/2023	GAS	1.0230	R3	0.17	14102.31	2376.10		-19601.76	0.00002943 0.00002
							446.63	CMP	Compression
							0.00	COMP_RR	COMPRESSION
							0.00	DEHY1_RR	DEHYDRATION
							0.00	GATH1_RR	GATHERING_RR
							0.00	LVF_RR	LOW VOLUME FEE_RR
							0.00	MKTNG_RR	MARKETING_RR
							16510.55	PROCC	PROCESSING
							3268.54	TREAT_RR	Treating Fee
							1735.88	TREAT1_RR	TREATING_RR
							16.26	TX_REG	TX Regulatory Fee
							0.00	TX_SEV	TX Severance Tax
04/2023	PPROD	0.0000	R3	0.61	149730.61	91655.47		84781.32	0.00002943 0.00002943
							0.00	TX_REG	TX Regulatory Fee
							6874.15	TX_SEV	TX Severance Tax
04/2023	GAS	1.0230	R4	0.17	14102.31	2376.10		-19601.76	0.00002943 0.00002943
							446.63	CMP	Compression
							0.00	COMP_RR	COMPRESSION
							0.00	DEHY1_RR	DEHYDRATION
							0.00	GATH1_RR	GATHERING_RR
							0.00	LVF_RR	LOW VOLUME FEE_RR
							0.00	MKTNG_RR	MARKETING_RR
							16510.55	PROCC	PROCESSING
							3268.54	TREAT_RR	Treating Fee
							1735.88	TREAT1_RR	TREATING_RR
							16.26	TX_REG	TX Regulatory Fee
							0.00	TX_SEV	TX Severance Tax

TYPES OF DEDUCTIONS

1. State imposed taxes
2. Post-production Costs - expenses incurred in order to get the product from the wellhead to market
   - Gathering
   - Compression
   - Dehydration
   - Transportation
   - Marketing
   - Treating
   - Processing
   - Handling
   - Fuel
   - Low volume fee

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BURLINGTON RESOURCES OIL & GAS CO., LP V. TEXAS CRUDE ENERGY LLC, 573 S.W.3D 198 (TEX. 2019)

- *Burlington* – court re-iterated that royalty owners generally do not pay production costs, such as for geophysical surveying and drilling wells, but usually are required to pay post-production costs that are incurred to bring gas from the wellhead to market.
  - "market value at the well" defined as the commercial market value less expenses incurred to get product to market.

- *Burlington* allowed for varied definition of the value point and the value method so that post-production costs could be separated from the royalty calculated.
  - "gross value received" prohibits post-production deductions
  - "at the well" permits post-production deductions

STRONG LEASE LANGUAGE IS KEY TO AVOIDING DEDUCTIONS

- Express wording in the Lease
- Cost-free clause for deductions
- Case law can be very specific

BE AWARE OF DEDUCTION CHANGES OVER TIME

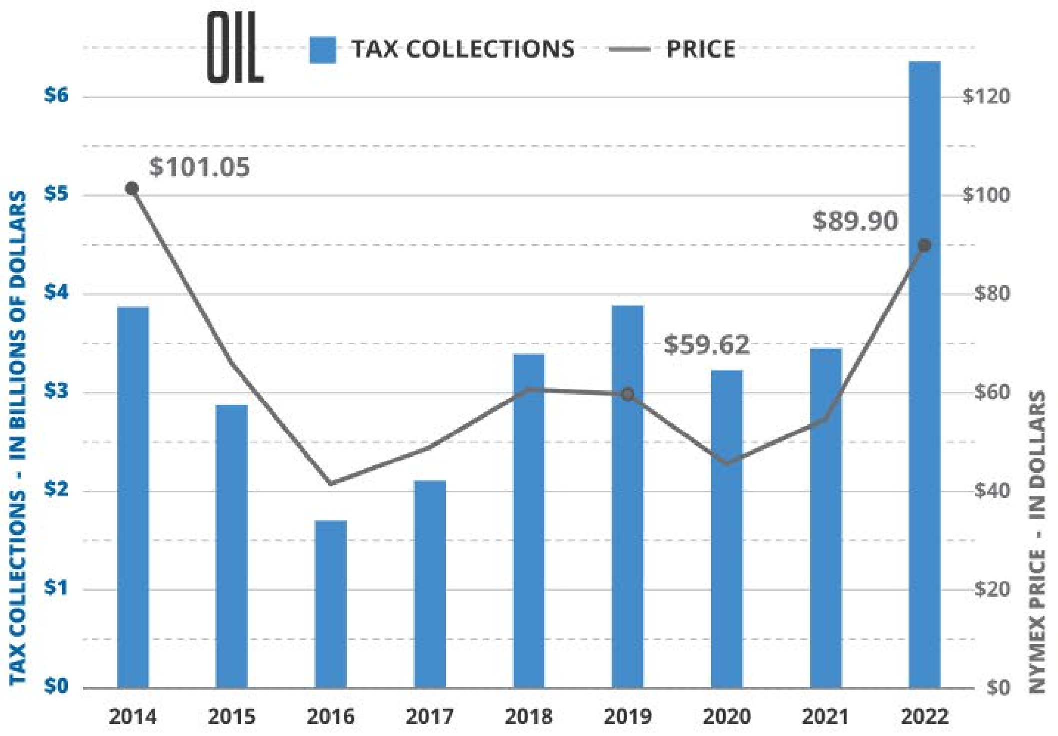
2. SEVERANCE TAX

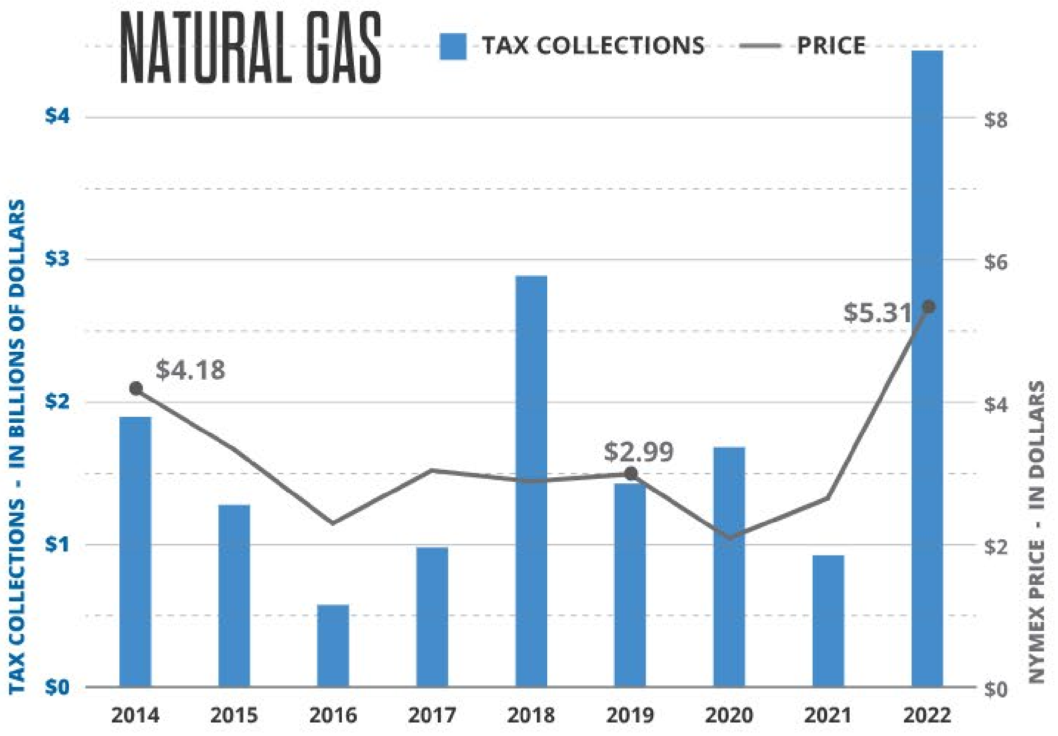
State tax imposed on the extraction of non-renewable natural resources, including oil, gas and mineral interests

HIGHLY VOLATILE! – determining factors are PRICE and PRODUCTION

Budgets are generally estimated based on multi-year severance tax averages

Oil and Natural Gas Production Taxes, Annual Collections and NYMEX Oil and Natural Gas Prices, FY 2014-2022





Sources: Texas Comptroller of Public Accounts; U.S. Energy Information Agency (E

SEVERANCE TAX RATES

North Dakota:
Generally 5%

Also levies oil extraction tax of 6.5%

Incentives for secondary and tertiary recovery projects

Oklahoma:
Generally 7%

New wells = 5% for first 36 months

Lower tax rates for secondary and tertiary recovery projects

Texas:
Gas = 7.5%
Oil = 4.6%
Condensate = 4.6%

Incentives for Enhanced Oil Recover (EOR), marginal wells and reuse/recycle hydraulic frac water, etc.

SHOW ME THE MONEY?

Most states allocate a larger portion of severance tax revenue to the general fund

OKLAHOMA: split between counties and school districts with remainder going to the state

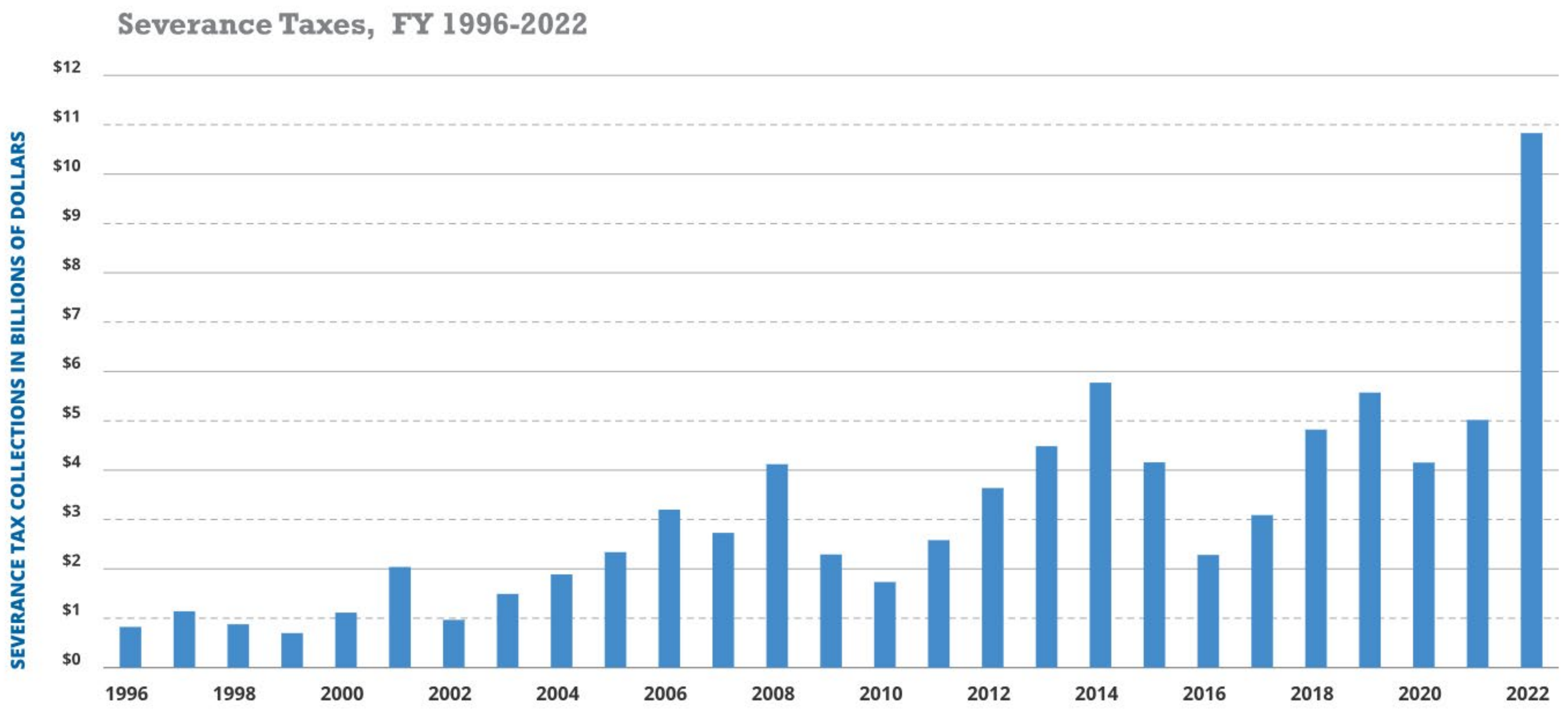
2022 – collected $1.152 billion

NORTH DAKOTA: split between State, Local, Tribal and permanent savings via the North Dakota Legacy Fund

2021- collected $1.662 billion

TEXAS: split between rainy day fund, state highway fund and the Foundation School Program (ensures that all school districts, receive "substantially equal access to similar revenue per student at similar tax effort." – Texas Education Agency)

Texas collected $10.83 billion in 2022 – HIGHTEST EVER!



Source: Texas Comptroller of Public Accounts

Glenn Hegar | Texas Comptroller of Public Accounts

93-011 (10-22)

3. ACCURATE OWNERSHIP DECIMAL

1. Calculate your interest
2. Confirm decimal on check is consistent with executed Division Orders
3. Contact the payor about discrepancies.

DECIMAL DISCREPANCIES?

- Title Issues/Concerns
- Human error
- System glitches
- Merger/Acquisition with incorrect deck pages

PROPERTY TAX

In March, county appraisal districts deliver value assessments which can be protested if the mineral owner does not agree with the value.

Mineral valuation can be determined using a

1. Market Value Comparison or
2. Discounted Cash Flow calculation

If not filing a protest, ask about early payment discounts.

DISCOUNTED CASH FLOW

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Gross well valuation proportionately reduced by net ownership.

Accounts for 4 variables to determine well value:

1. production decline curve
   - compare volumes on check details to volumes reported at RRC
2. operating expenses
3. prices
4. discount rate

PENDING LEGISLATION

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House Bill 456 originally allowed royalties owned by charities to be exempt from property tax.

The Texas Senate amended the bill to specific charities:

non-profit hospital, certain shelters, elderly care facilities, museums, zoos, libraries, performing art theaters, volunteer fire departments, and organizations that provide direct human health, and welfare services

Passed the Texas House and Senate. Currently with Governor. If signed, will take effect for 2024 taxes.

CURRENT ISSUES & PENDING CASE LAW

- Produced Water
- Rare Earth Minerals
- Carbon Capture & Storage

What is Produced Water?

- Produced Water – fluid byproduct that is returned to the surface during drilling and fracturing of wells.
- According to Energy.gov, the water can vary from fresh to brackish. The Appalachian Basin can present produced water that is 5-10 times saltier than seawater.
- Most is re-injected and stored underground but some is treated and reused by the operator.
- Produced water can also bring up lithium and other rare earth minerals.

Photo by AhmadullinS Science & Technology
https://en.ahmadullins.com/publiclist/produced-water/produced-water-treatment

RARE EARTH MINERALS

Spot pricing as of February 2023:

Lithium carbonate (precursor to compound used in lithium-ion batteries) averaged $53,304/ton

Lithium-ion is most often used in rechargeable batteries

PRODUCED WATER & **RARE EARTH MINERALS**

Drilling can use from 1.5M to 16M gallons of water.

- At minimum, 1.5M gallons of water = 6,259 tons
  - If rare earth minerals make up 0.05% = 3.1295 tons X $53,304 = $166,815

- At maximum, 16M gallons of water = 66,763 tons
  - If rare earth minerals make up 0.05% = 33.38 tons X $53,304 = $1,779,368

RARE EARTH MINERALS

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Who owns the rare earth minerals in produced water?

- Texas Natural Resources Code Sec. 122 – Unless expressly provided by in a contract (lease, SUA, etc.) the person who takes possession (operator) owns waste if treated for "beneficial use"
- RRC includes waste as an operator liability
- *Cactus Water Services vs. COG Operating, LLC*
  - Cactus leased the produced water from surface owner and attempted to claim the produced water
  - COG is the operator claiming produced water is waste which they possess
  - July 28, 2023 – Court of Appeals for 8th District of TX (El Paso) held that the mineral lessee under an O&G lease OWNS the water extracted simultaneously with oil and gas during production. Cactus has stated that they will appeal to the TX Supreme Court.
- Recent Legislation (bill passed and signed by Governor) –
  - House Bill 4856 – TCEQ has jurisdiction over recycled oil and gas fluids.
  - Senate Bill 1047 – Funding for Texas Produced Water Consortium

CARBON CAPTURE & STORAGE

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CCUS – carbon capture utilization and storage

Who owns pore space in Texas?
Senate Bill 2107 was introduced but didn’t pass committee. Its purpose was to clarify pore space as part of the surface estate and establish a Carbon Dioxide Storage Trust Fund to be held by the RRC to pay for damages occurring after the state assumes title to stored carbon dioxide.

North Dakota’s Supreme Court issued a unanimous decision in August 2022 that affirmed the right of surface owners to profits and use of pore space for waste-water disposal and they can seek damages for unauthorized injections or migration into their pore space.

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IMPORTANT TAKE-AWAYS

- Strong Lease language is essential
- Texas mineral owners are on notice to review and monitor oil and gas check detail for inaccuracies – Know what you Own!
- Texas has a 4 year look back period for reviews/corrections/adjustments
- Pay attention to new legislation and case law because it could affect your current and future leases.

Buffie Campbell

Mineral Assets Senior Manager

Buffie Campbell brings 18 years of mineral management experience to Whitley Penn. She previously served as Director of Mineral Management at Merit Advisors, Vice President, Mineral Management at J.P. Morgan Chase, and Vice President, Mineral Management at Argent Mineral Management. She served as Vice President of Symposium for the Texas Energy Council (2020 and 2021) and has been a featured speaker for numerous energy-related organizations, including the National Association of Royalty Owners (NARO). Buffie has significant experience in implementing processes and procedures for energy clients including bank set-up, internal accounting and controls, software set-up, and GIS mapping integration with revenue software. Throughout her career, she has managed assets for trusts, estates, foundations, charitable organizations, and agency accounts with real property and mineral interests throughout the United States.

Buffie received her BA in Psychology from the University of North Texas and JD from the Texas A&M University School of Law.

Contact

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Practice Areas

Land Administration

Industry Experience

Asset Management
Business Development
Title Review
Royalty Revenue Audits

Education

Juris Doctorate - Texas Wesleyan University School of Law (now Texas A&M School of Law)

Bachelor of Arts in Psychology - University of North Texas

Professional Affiliations

State Bar of Texas

State Bar of North Dakota

Certified Professional Landman with American Association of Professional Landmen

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Jason Fitzgerald

Mineral Assets Manager

Jason Fitzgerald comes from a long line of oil & gas producers spanning four generations in North Texas and brings a unique perspective to the Mineral and Royalty space. With a background in both operating and mineral management, he leverages this knowledge daily, to shape the best management solutions possible for interest owners nationwide. Prior to joining Whitley Penn, Jason spent 4 years with MineralWare, a leading oil and gas management software where he led the business development team. Jason has participated and presented at several royalty owner education events including the World Oilman's: Mineral and Royalty Conference (MARC) and the Royalty Owner Institute's Mineral Management 101 classes. Jason is also a Registered Mineral Manager with the National Association of Royalty Owners.

Jason received his BBA in Finance and Real Estate from Texas Christian University.

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Practice Areas

Land Administration
Mineral Management
Texas, Oklahoma, & Colorado

Industry Experience

Oil and Gas Software
Data and analytics
Oil and Gas Management

Education

BBA in Finance and Real Estate from Texas Christian University

Professional Affiliations

National Association of Royalty Owners
National Association of Division Order Analysts
American Association of Professional Landman

Lee Caple

Mineral Advisor

Lee Caple draws from four decades of experience in the management of corporate and personal oil and gas interests in order to provide outstanding service and results for his clients. His experience includes mineral marketing, mineral appraisals, lease acquisitions, lease marketing on behalf of clients, advisory and support related mineral management services, exploration, and large production sales. Having worked extensively in the non-profit world, Lee provides distinctively wholistic counsel to clients, focusing upon client's personal and financial goals with consideration given to their risk tolerance and financial obligations. Lee is a former NARO Board Member and received his BBA in Marketing from Southern Methodist University.

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lee@capleroyalty.com

Practice Areas
Lease Negotiation & Marketing
Mineral Management
Texas, & Oklahoma

Industry Experience
Operations
Expert Testimony
Land Management

Education
BBA in Marketing, Southern Methodist University

Professional Affiliations
National Association of Royalty Owners

quorum software

On Demand

A Modern Technology Suite in Oil & Gas

September 20, 2023

Introductions

Ryan Monahan

Director, Channels & Global Alliances

quorum software

Transforming the Business of Energy through Technology

Industry Leadership

95%
Top 20 E&P companies in the US trust Quorum

1,300+
Customers from emerging operators to supermajors & NOCs

1,450+
Team members with centuries of combined energy experience

Technology Leadership

25 Years
Of developing and delivering Energy Solutions

25%
Annual budget for R&D as a percentage of software revenue

500+
Employees dedicated to product development and innovation

quorum
Energy Suite

Planning, Economics & Reserves

- Strategy & Portfolio
- Business Planning
- Asset Development Planning
- Petroleum Economics
- Technical Forecasting
- Reserves Management

Execution & Well Operations

- Capital & Well Lifecycle Management
- Well Lifecycle Reporting
- Well Data Management

Production Management

- SCADA
- Production Operations

Land & Lease Management

- Land Management
- Land Acquisition
- Right of Way
- Renewable Development
- Document Management

Accounting

- Financials
- Revenue
- Division Order

Measurement

- Gas & Liquid Measurement
- Field Applications
- Oilfield Chemistry
- Environment & Emissions Management
- API Manual of Petroleum Measurement Standards (MPMS)

Midstream

- Gathering & Plant Accounting
- Pipeline Transaction Management
- Energy Marketing

LNG & Distribution

- Import/Export Terminal Management
- Utility/LDC Management

Logistics Management

- Personnel Logistics
- Cargo Logistics

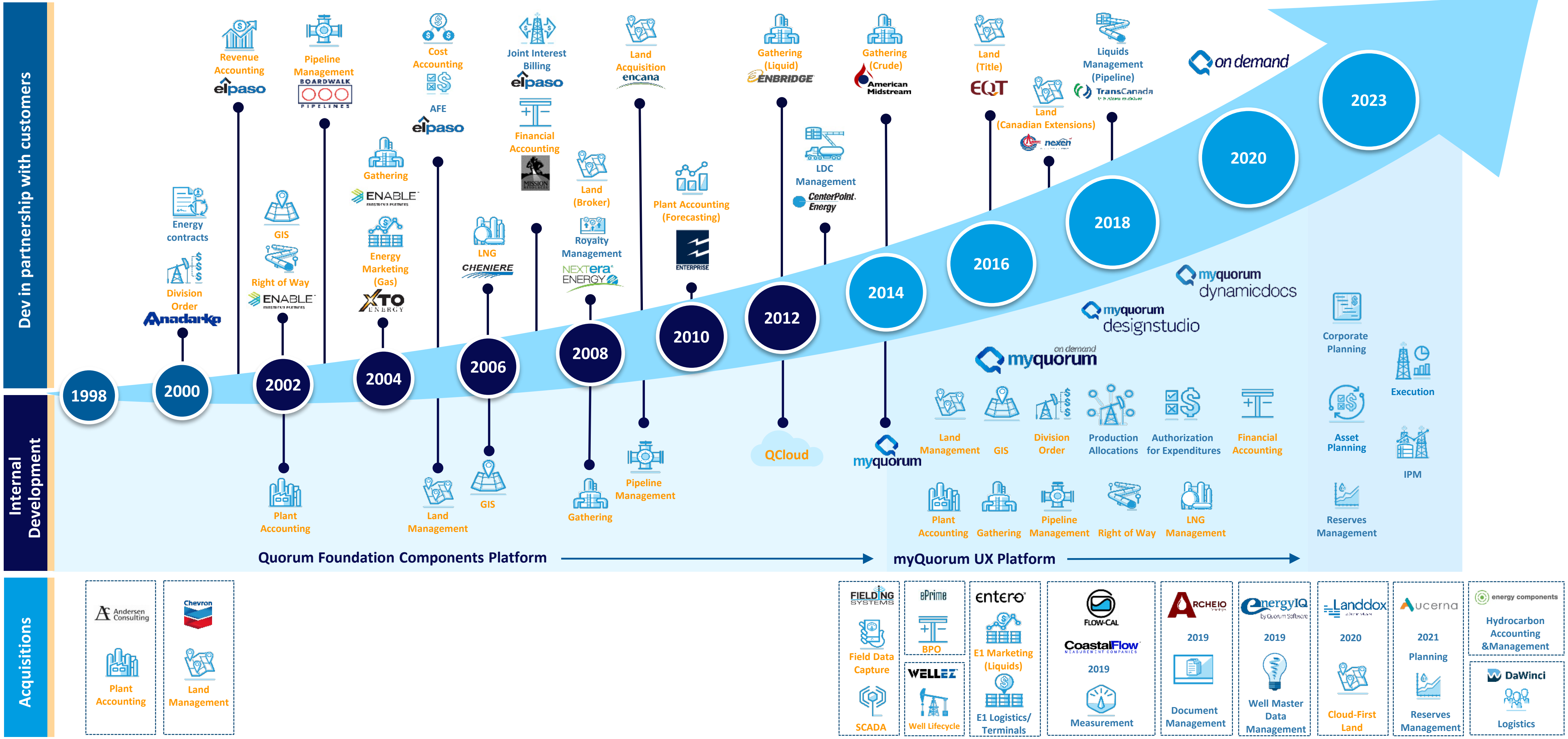
Energy IQ: Master Data Management | Visualization & API Integration | Document Management

Services & Support

Consulting | Implementation | Upgrades | Managed Services | Quorum University

Self Service | Help Desk | Incident & Service Requests | Out of Scope Support | Core Engineering Support | Hypercare

Quorum’s Technology Evolution



Co-development of new products & add-ons

Digital transformation with a focus on web, mobile, cloud & SaaS

quorum software

What is SaaS?

- SaaS stands for Software-as-a-Service
- A software model in which software is licensed on a subscription basis and centrally hosted
- Delivery models:
  - Single-tenant
  - Multi-tenant

Understanding SaaS

- **Overall SaaS Benefits**
  - Eliminate IT infrastructure Costs
  - Accessible from anywhere
  - Predictable price model

- **Multi-Tenant SaaS Benefits**
  - Speed
  - Lower Cost
  - Scalability
  - Customization without Coding
  - Continuous, consistent updates & maintenance
  - Consistency improves product quality and supportability

SaaS Applications in Daily Life

salesforce

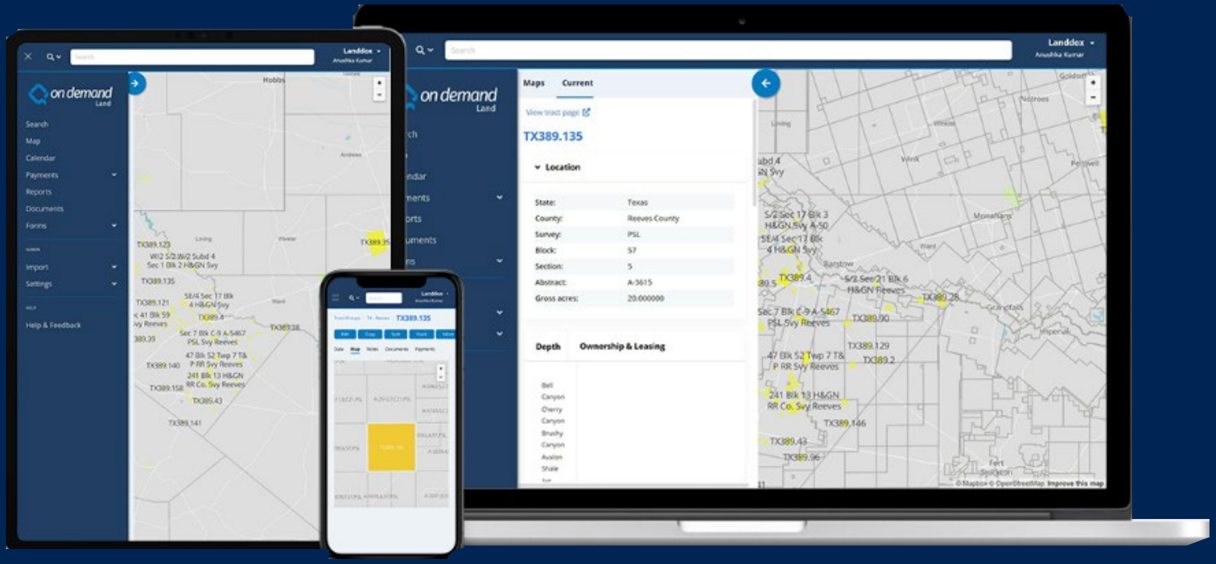
DocuSign®

Office 365

slack

Software Built for the Modern Energy Business

Upstream on demand



Modern Platform Unique to O&G

The Upstream On Demand applications have a consistent, underlying architecture allowing each tool to be utilized uniquely and effectively for all different use cases.

Accessibility	Maintenance And Support	Scalability	Flexible Configuration	Transparent Costs	Speed of Delivery

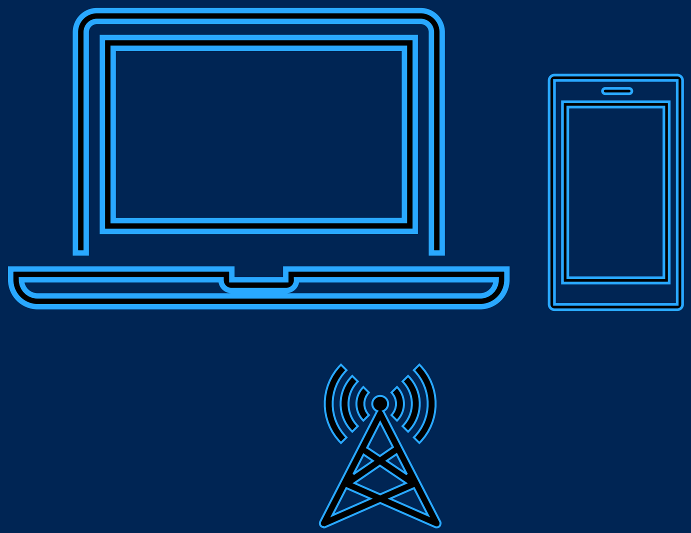
quorum software

Core Functionalities

Accessibility	Maintenance and Support	Scalability	Flexible Configuration	Transparent Costs	Speed of Delivery

Built for the internet

Accessibility | Maintenance and Support | Scalability | Flexible Configuration | Transparent Costs | Speed of Delivery



Access your tools anytime & anywhere.

All of the On Demand applications are natively-built to be used on the web. Whether you access through a laptop, tablet, or mobile device, as long as you have an internet connection, you can connect to your business.

Improved approach to maintenance

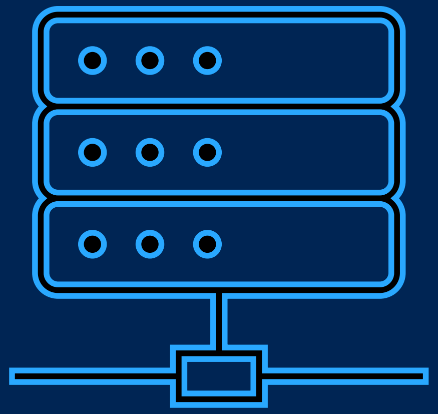
Accessibility | **Maintenance and Support** | Scalability | Flexible Configuration | Transparent Costs | Speed of Delivery

Standardized experience = simplified maintenance

All clients run the same version of each application meaning all updates and maintenance tasks can be performed centrally.

Sized for Startups & Majors

Accessibility | Maintenance and Support | Scalability | Flexible Configuration | Transparent Costs | Speed of Delivery



Architected to grow with you.

Each On Demand application has infrastructure designed to scale with your business. Companies managing 10s of wells can be running the same system as companies managing 1000s.

Unique Setup for Each Company

Accessibility | Maintenance and Support | Scalability | Flexible Configuration | Transparent Costs | Speed of Delivery

Configurable for every client.

Clients can tailor their environments to suit their specific needs and requirements. Additional customization can occur via APIs and connecting 3rd party applications.

Simplified Subscription Model

Accessibility | Maintenance and Support | Scalability | Flexible Configuration | Transparent Costs | Speed of Delivery

No hidden fees.

Subscription-based pricing includes all support and maintenance elements. The upgrade and patch process are long gone and you no longer experience metered support.

Faster Time to Value

Accessibility | Maintenance and Support | Scalability | Flexible Configuration | Transparent Costs | Speed of Delivery

Database ready within days.

New environments can be created within a matter of days or weeks from request. These new databases can be uploaded with your data, configured to meet your needs, and set up 'live' in a matter of weeks.

Upstream on demand

Core Capabilities

Roles & Permissions

Auditability

Report Writer

API Capabilities

Master Data Integration

Validated Uploads

Enhanced Security

SOC Compliance

Public Cloud Stability

Disaster Recovery

Enhanced Data Reporting

Core Functionalities

Accessibility

Maintenance and Support

Scalability

Flexible Configuration

Transparent Costs

Speed of Delivery

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Upstream on demand

Unlock your data

Accessibility

Maintenance and Support

Scalability

Flexible Configuration

Transparent Costs

Speed of Delivery

Data Hub

No compiling, no correcting, just clean data from every part of your business in no time.

Free Your Data: Pull the data into your own on-premise data stores and integrate with other enterprise data.

BYO-BI: Use any leading BI tool (PowerBI, Spotfire, Tableau) to connect and build your own BI analytics.

Future Proof: We focus on serving you data so that you have the freedom to evolve your data visualization strategy independent of the operational applications

quorum software

Upstream On Demand

Upstream Energy Software with the Simplicity of the Cloud

Planning, Economics & Reserves

Execution & Well Operations

Production Management

Land & Lease Management

Accounting

Measurement

Midstream

LNG & Distribution

Logistics Management

OGsql

Upstream on demand

Land
Land Management
Land Acquisition

Accounting
Financial
Revenue
Division Order

Dynamic Docs
Document Management

Production Operations
SCADA
Field Data Capture
Allocations
Regulatory Reporting

Well Header
Business Associates
AFE
COA

Jobs

Well Operations
Well Lifecycle Reporting

Upstream on demand

Key Highlights

96%

Customer Renewal Rate Through On Demand Suite of Solutions

500+

Companies (and Counting) Trust One or More On Demand Products

95%

Average CSAT Score Across On Demand Suite of Solutions

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Some of Our Customers…

Boomtown Oil
Ovintiv
dp DAYLIGHT PETROLEUM
NPC NEW PROSPECT COMPANY
BLACKBEARD OPERATING
LONGREACH ENERGY
BAYTEX
URBAN OIL & GAS GROUP LLC
POINT ENERGY PARTNERS
RAMenergy
Tall City Exploration
TEXAS AMERICAN RESOURCES CO.
SURGE Energy
BLACK MOUNTAIN OIL & GAS
WildFire Energy
SAGE NATURAL RESOURCES
TUG HILL OPERATING
bp
STEPHENS NATURAL RESOURCES
SAMSON OIL & GAS LIMITED

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Thank You.
May We Answer Your Questions?

quorumsoftware.com

WHITLEY PENN ENERGY CONFERENCE

What's New in the Oil Patch? 2023 Energy Case Law Update

Clark H. Rucker
Kelly Hart & Hallman LLP

KELLY HART
ATTORNEYS AT LAW

Kelly Hart & Hallman LLP

- Founded 1979
- 165 attorneys
- Full service law firm
- Offices in Fort Worth, Midland, Austin, New Orleans, Baton Rouge
- Oil, Gas & Energy Group (11 in FW)
  - All aspects of the energy industry in transactional, litigation and regulatory matters.
  - Clients include oil & gas exploration & development companies, mineral & royalty companies, energy investment groups, mid-stream & water logistics companies, electric utilities, alternative/renewable energy providers, & a wide variety of individuals, businesses & non-profit entities holding oil, gas & other mineral interests.

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Categories of Cases

- Double Fraction Cases
  - *Van Dyke v. Navigator Group*
  - *Bridges v. Uhl*
  - *Davis v. COG Operating, LLC*
- Adverse Possession of Working Interest
  - *PBEX II, LLC v. Dorchester Minerals, L.P.*
- Produced Water Ownership
  - *Cactus Water Services, LLC v. COG Operating, LLC*
- Royalty Disputes
  - *Devon Energy Production Co., L.P. v. Sheppard*
  - *H.L. Hawkins, Jr., Inc. v. Capitan Energy, Inc.*

Double Fraction Cases – Do the Math?

- **Question:** In an instrument granting a fraction of a fraction, what is granted?
- **Nonparticipating Royalty Interest (NPRI):** an interest in oil and gas production that is created from the mineral estate; no "executive rights" or right to participate in bonus, delay rentals, etc.; the NPRI owner comes along for the ride and gets paid its piece of the royalty if and when the minerals are produced
- **Fixed v. Floating:**
  - ***Fixed Interest:*** fixed royalty that does not change depending on the underlying royalty percentage – *i.e.*, 1/8 of all oil and gas produced (NPRI)
  - ***Floating interest:*** a percentage *of* royalty that can change depending on the underlying royalty percentage – *i.e.*, 1/8 of the lease royalty

Double Fraction Issues

- On minerals subject to a 1/4 royalty, what does language granting "½ of a 1/8 royalty" actually convey?
  - 1/16?
  - 1/8?
  - Other?
- Legacy of the 1/8 royalty:
  - 1930s to 1970s, landowner's royalty firmly set at 1/8
  - 1970s to present, landowner's royalty increased to 1/6 and now ¼
  - Reference to 1/8 means "of royalty" regardless of actual %
- Estate Misconception Theory:
  - Prevalent (but, mistaken) belief that a lessor retained only a 1/8 interest in the minerals rather than entire mineral estate in fee simple determinable with the possibility of reverter of the entire estate.
  - Thus, lessors would refer to what they thought reflected their entire interest in the "mineral estate" with a simple term they understood to convey the same message: "1/8."

The Double Fraction Problem

Case	Clause	Arguments
Van Dyke	"It is understood and agreed that one-half of one-eighth of all minerals and mineral rights in said land are reserved in grantors . . . and are not conveyed herein."	Grantors: This reserves ½ of the entire mineral estate, so entitled to ½ of all royalties (floating) Grantees: This reserves 1/16 of the mineral estate, so entitled to 1/16 of all royalties (fixed) Outcome: Floating
Bridges	Grantors reserve "an undivided one-half (1/2) of the usual one-eighth (1/8) royalty . . . if, as and when production is obtained, grantors, their heirs and assigns, shall receive one-half (1/2) of the usual one-eighth (1/8) royalty, or one-sixteenth (1/16) of the total production[.]"	Grantors: This reserves ½ of all royalties (floating) Grantees: This reserves 1/16 of all royalties (fixed) Outcome: Floating
Davis	Grantors convey a "1/32 interest in and to of the oil, gas, and other minerals" including "1/4 of all of the oil royalty and gas rentals, or royalty" under an existing lease. Once the lease terminated, the grantee would own a "1/4 interest in all oil, gas and other minerals."	Grantors: This conveyed only a 1/32 interest in the royalties (fixed) Grantees: This conveyed ¼ of all royalties (floating) Outcome: Floating

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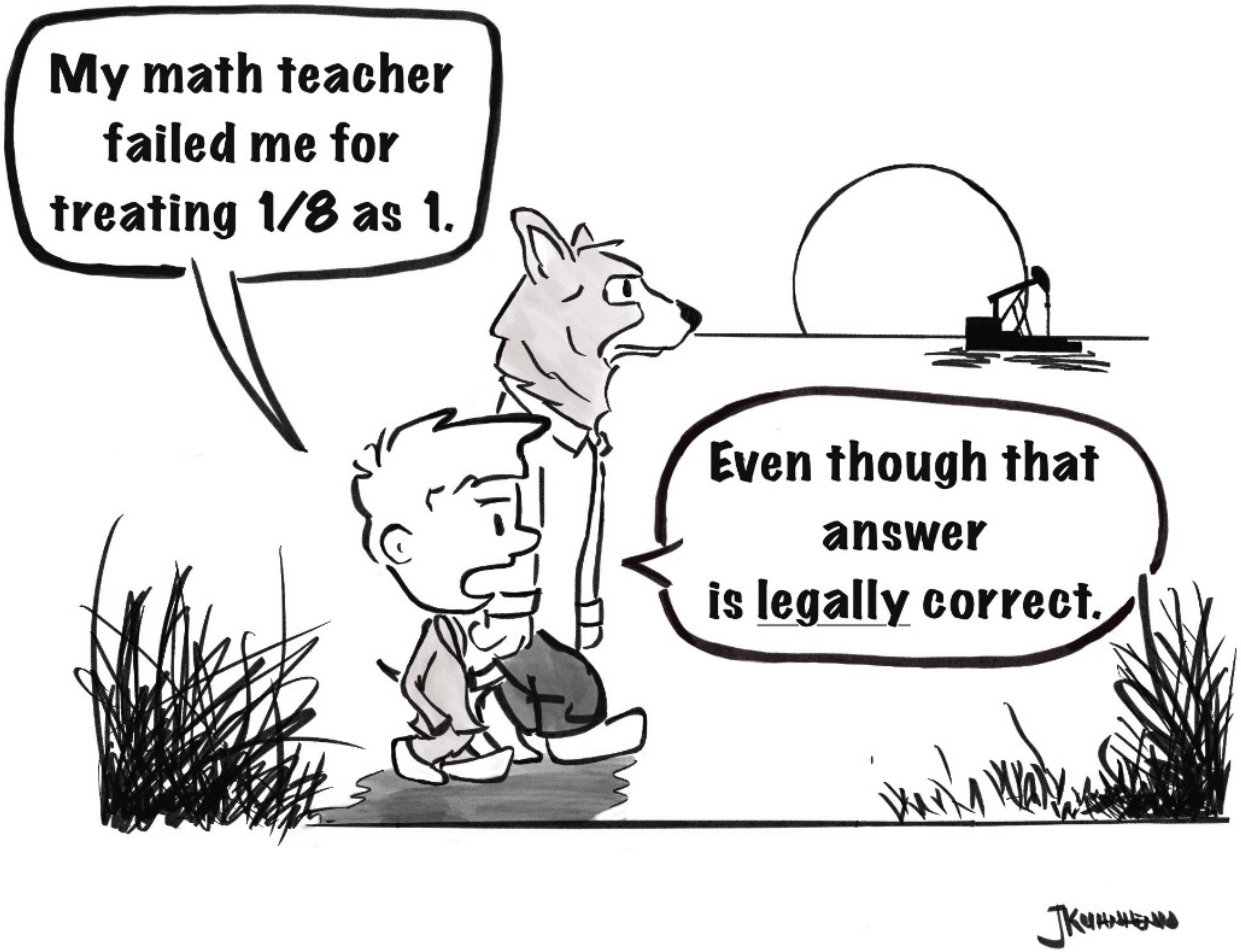
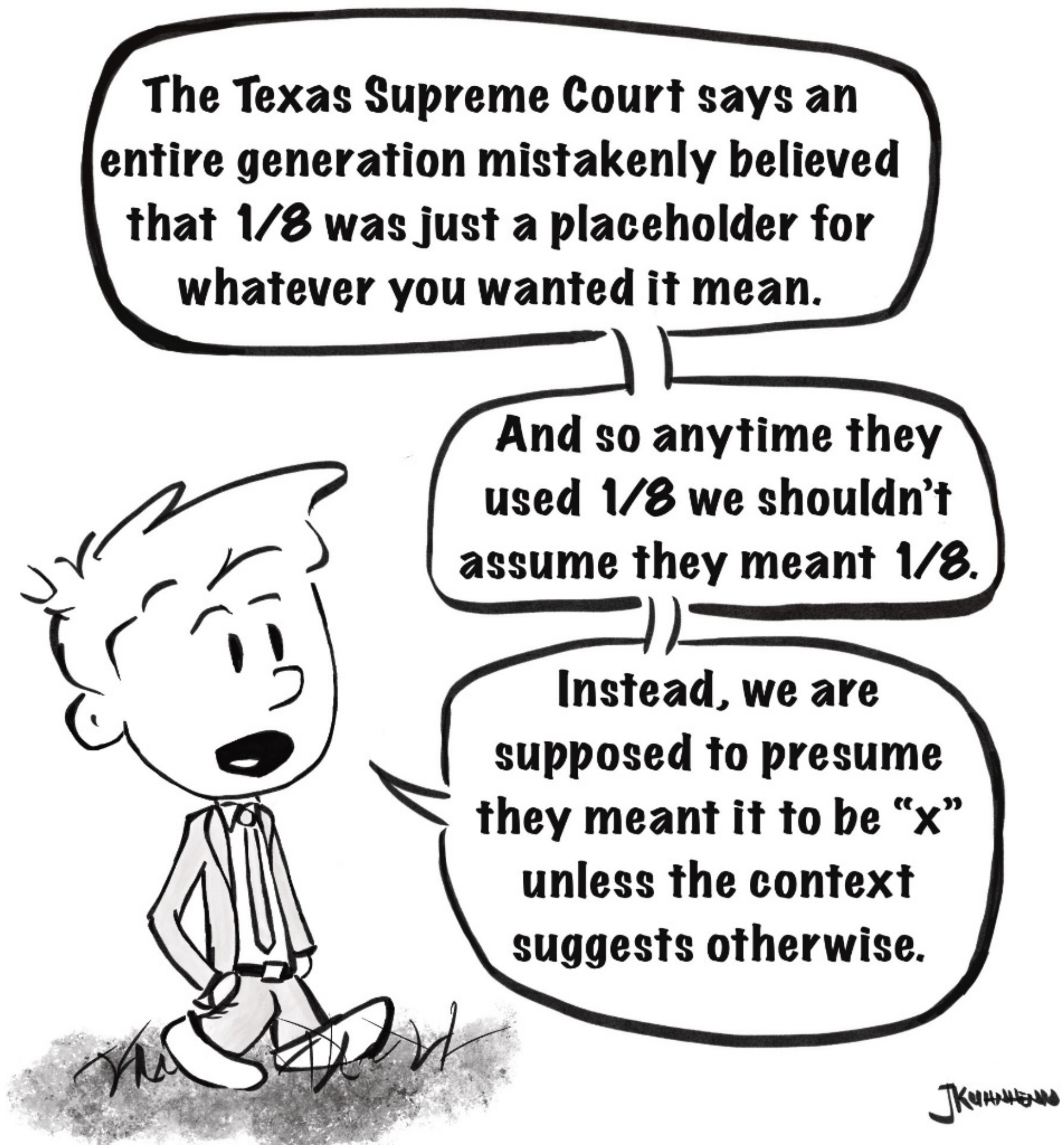
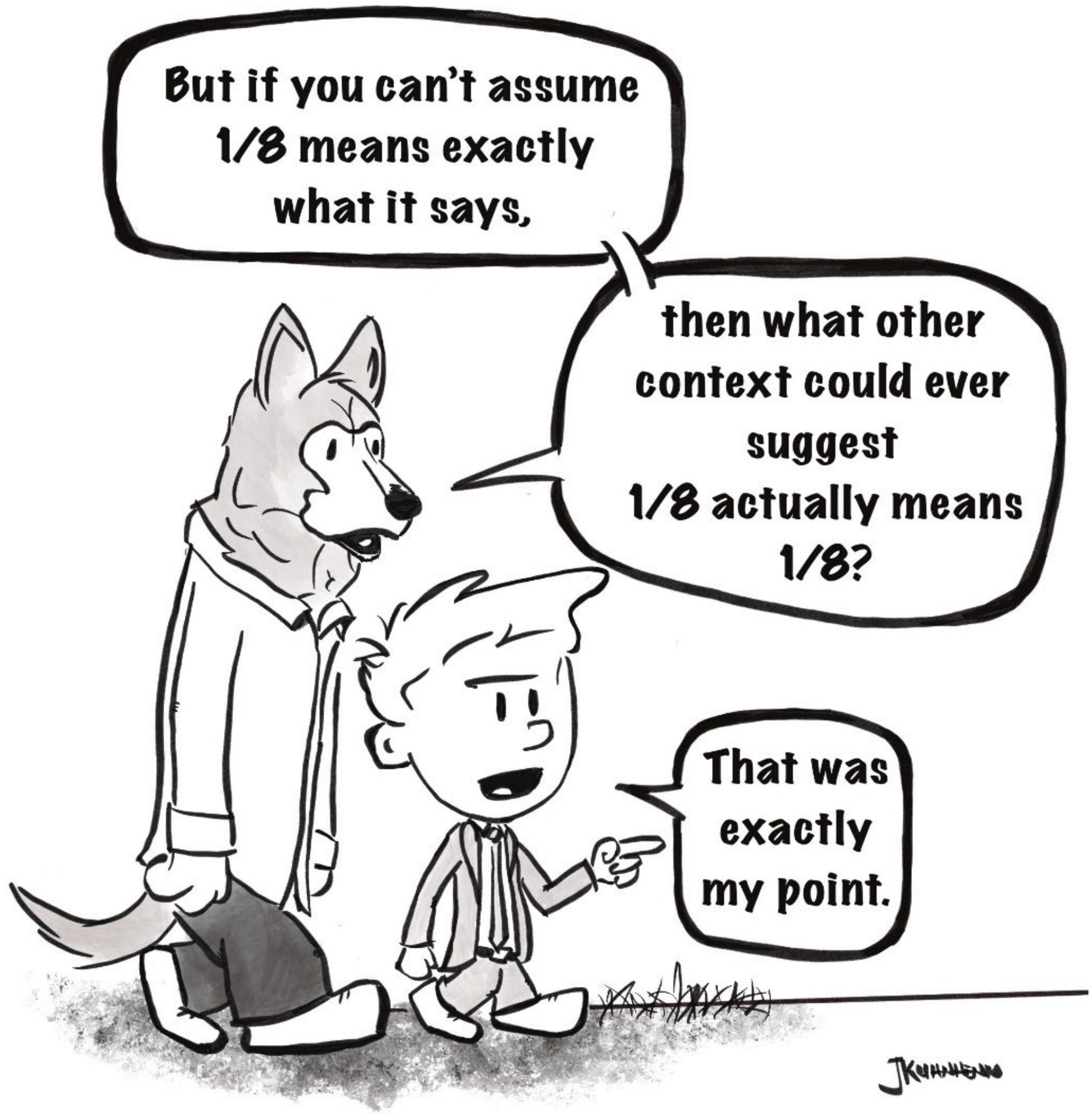
Lessons Learned?

- Texas Supreme Court in *Van Dyke*:
- "When courts confront a double fraction involving 1/8 in an instrument, the logic of our analysis . . . requires that we *begin* with ***a presumption that the mere use of such a double fraction was purposeful and that 1/8 reflects the entire mineral estate, not just 1/8 of it***."
- "Our analysis . . . thus warrants the use of a rebuttable presumption that the term 1/8 in a double fraction in mineral instruments of this era refers to ***the entire mineral estate***. Because there is 'little explanation' for using a double fraction for any other purpose, this presumption reflects historical usage and common sense."

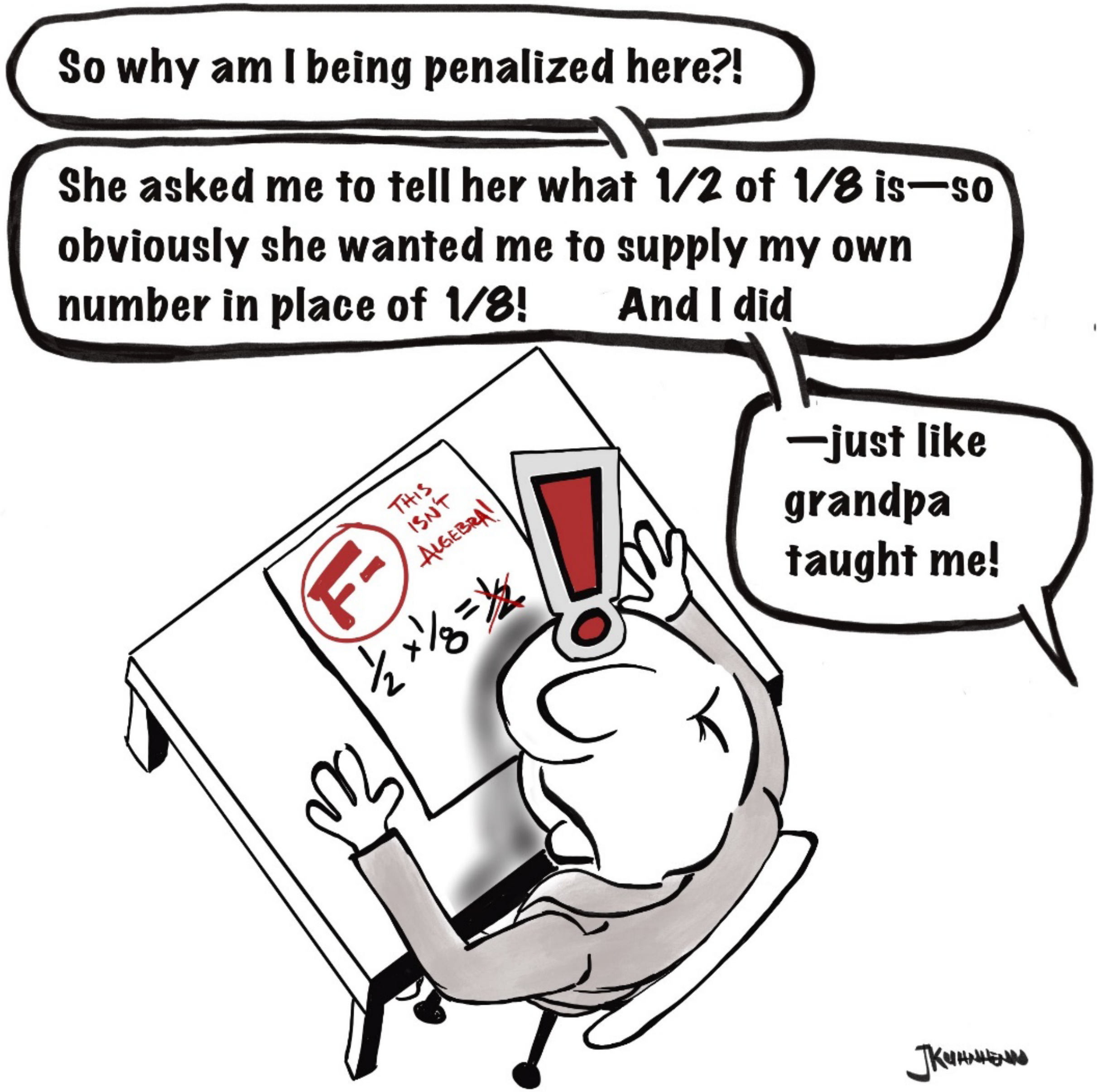
Math problems post-Van Dyke



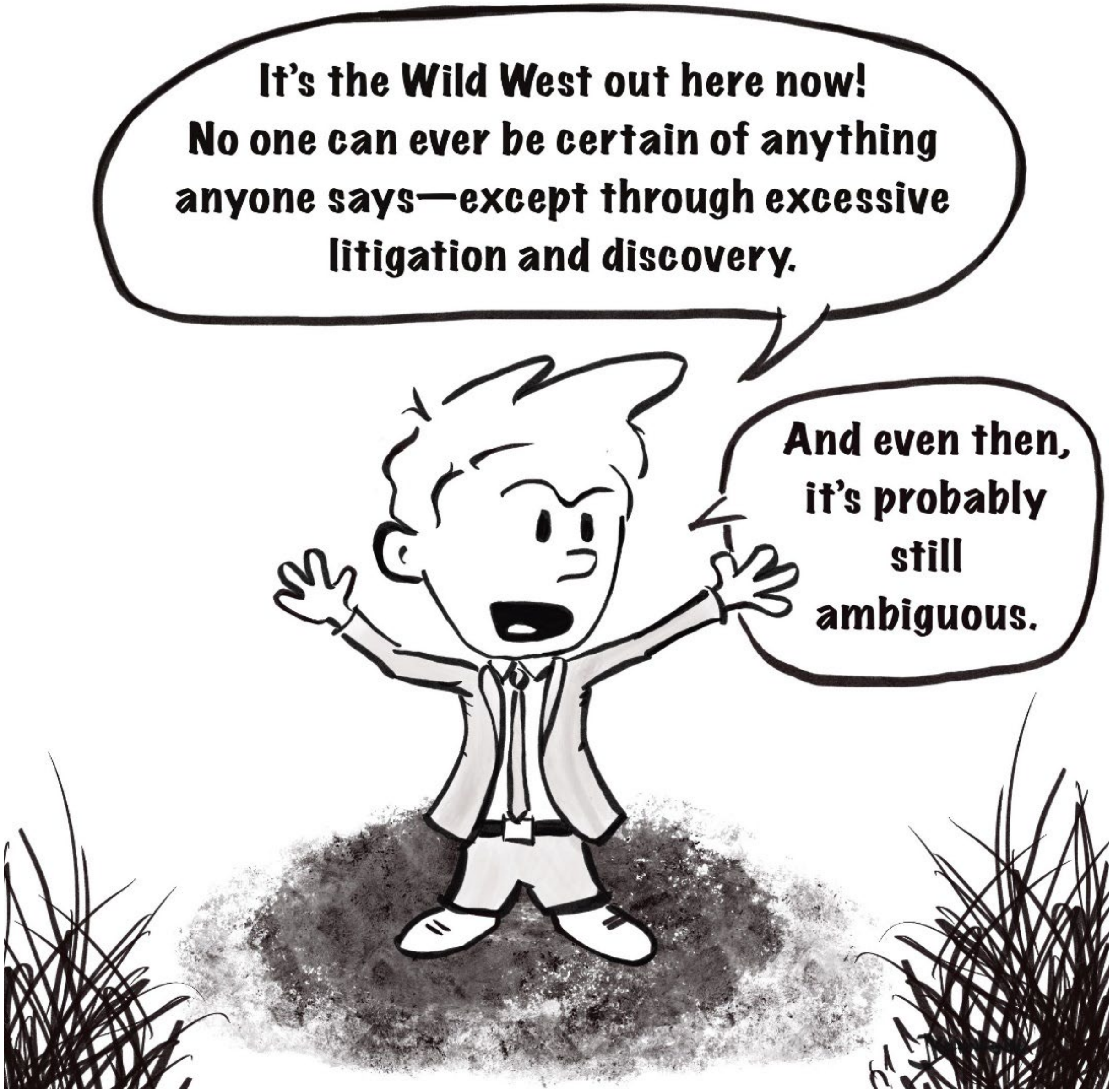

The Texas Supreme Court says an entire generation mistakenly believed that 1/8 was just a placeholder for whatever you wanted it mean.
And so anytime they used 1/8 we shouldn't assume they meant 1/8.
Instead, we are supposed to presume they meant it to be "x" unless the context suggests otherwise.
JKuhlmann

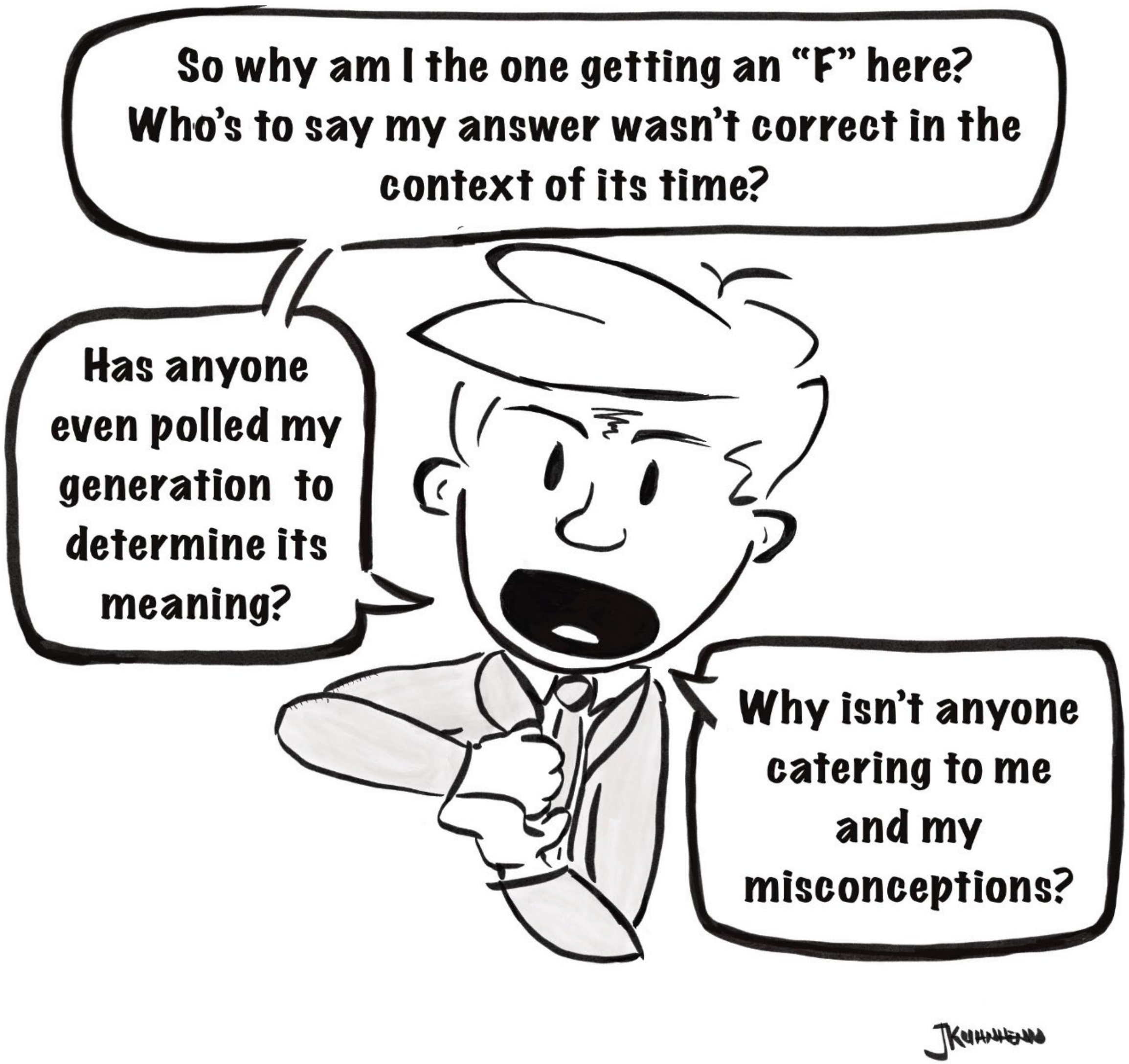

But if you can't assume 1/8 means exactly what it says,
then what other context could ever suggest 1/8 actually means 1/8?
That was exactly my point.
JKUHNHENN

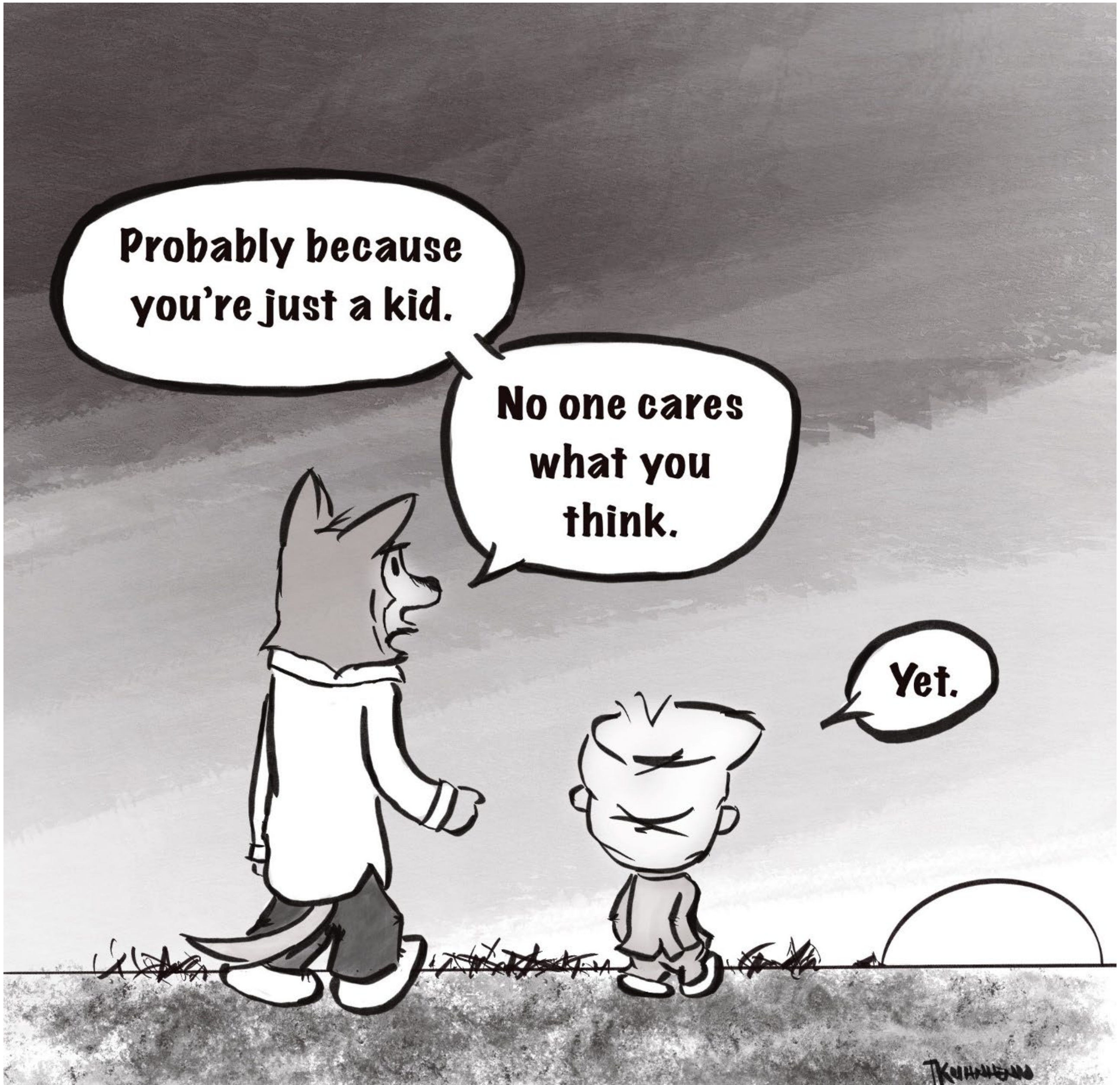

Nothing is absolute. Even numbers are subjective—social constructs!
A dozen is 12, unless a baker is counting.
We actively encourage and reward miscounting!


So why am I being penalized here?!
She asked me to tell her what 1/2 of 1/8 is—so obviously she wanted me to supply my own number in place of 1/8! And I did
—just like grandpa taught me!
THIS ISN'T ALGEBRA!
F-
$\frac{1}{2} \times \frac{1}{8} = \cancel{\frac{1}{2}}$


I guess your grandpa was born after the 1/8 misconception haze had lifted and should have known better.
Actually, we're still litigating that.


It's the Wild West out here now! No one can ever be certain of anything anyone says—except through excessive litigation and discovery.
And even then, it's probably still ambiguous.


So why am I the one getting an "F" here? Who's to say my answer wasn't correct in the context of its time?
Has anyone even polled my generation to determine its meaning?
Why isn't anyone catering to me and my misconceptions?


Probably because you're just a kid.
No one cares what you think.
Yet.
JKuhlmann

Adverse Possession of a Non-Operated Working Interest

- ***PBEX II, LLC v. Dorchester Minerals, L.P.***
  - Extension of *Natural Gas Pipeline Co. of America v. Pool* and *BP America Production Co. v. Marshall*, which held that an operator could adversely possess or revive an oil and gas lease that had expired by continuing to operate and pay royalties on production
- Torch 25% working interest owner in an oil and gas lease in Midland County and a party to JOA under which it was a non-operating working interest owner.
- 1990: Torch signed an assignment to Dorchester, which Torch later claimed erroneously included its working interest in the lease.
- 1990 to 2016: Dorchester participated as non-operating working interest owner in the lease, paying its share of costs and receiving its share of revenues.

PBEX II, LLC v. Dorchester Minerals, L.P.

- Adverse Possession: an actual and visible appropriation of real property, commenced and continued under a claim of right that is inconsistent with and is hostile to the claim of another person.
- 2016: Torch assigned its interest in the lease to PBEX and notified Dorchester that it disputed its 1990 assignment.
- Dorchester: acquired title to the lease by adverse possession.
- Torch and PBEX: one cannot adversely possess a non-operating working interest because not entitled to take possession of the minerals; interest is non-possessory Court: Dorchester wins – adversely possessed interest.

Who Owns Produced Water?

- Produced Water and its Value
- *Cactus Water Services, LLC v. COG Operating, LLC*
- Colliers (landowners) have 37,000 acres in Reeves County
- 2005 to present, Colliers have leased minerals to COG (Concho)
- COG has disposed of <u>52 million barrels</u> of produced water!!!

Cactus v. COG

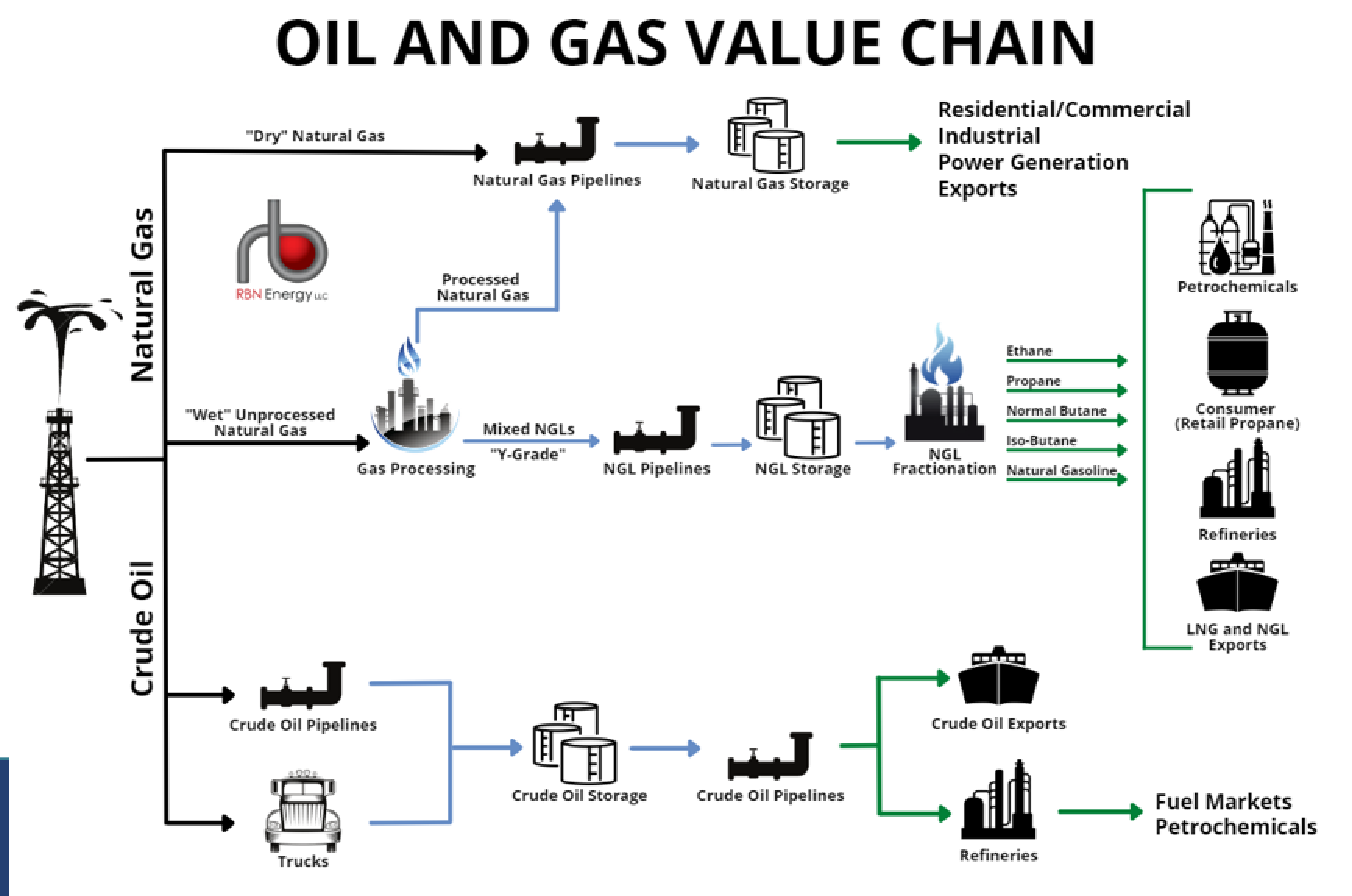
- 2019 & 2020: Colliers entered into a "water lease" agreement with Cactus, giving Cactus the rights to own and sell all water "produced from oil and gas wells and formations on or under the" Collier lands.
- Cactus notified COG that Cactus owned the produced water
  - OGLs convey to COG only the oil and gas under the property, and water, whether fresh or saline, belongs to the surface owner, subject only to the right of COG to use such water for exploration and production
- COG sued Cactus claiming that the Collier OGLs gave it the right to produced water.
  - produced water is part of the production stream and that under the OGLs' "general intent," all components of that stream belong to the lessee

Cactus v. COG

- Trial Court: COG owns produced water
- El Paso COA: COG owns produced water
- Holding: COG wins - produced water is "waste" and not "water"
  - TNRC: defines produced water as "oil and gas waste" and "fluid oil and gas waste"
  - TWC: defines "oil and gas waste" as "waste arising out of or incidental to drilling for or producing of oil, gas or geothermal resources."
  - Court: "there is a clear distinction between produced water and groundwater. . . . because the Legislature defines produced water as oil and gas waste, it cannot also be groundwater. . . . [P]roduced water is more accurately classified as a waste byproduct of oil and gas production."

Postproduction Deductions – Never-ending Battle

- Royalty: landowner's share of production, free and clear of the costs of production, but, absent an agreement to the contrary, subject to postproduction costs
- Postproduction Costs (PPCs): the expenses incurred in order to get the oil and gas from the wellhead to market, including gathering, compression, dehydration, processing, fractionation, marketing, treating, handling and transportation



Postproduction Costs, cont.

- Until 1990s, no “no deducts” clauses in OGLs – Producers 88 leases
- Barnett Shale: lots of landowner leverage – increased prevalence of “no deducts” provisions
- “No Deducts” language has become prevalent
- Litigation commenced *Heritage Resources v. NationsBank* in 1996
- 3 parts of a “no deducts” analysis:
  1. What is being valued?
  2. Where is the point of valuation (at the well, downstream, etc.)?
  3. How is value measured (amounts realized v. market value)?

Devon v. Sheppard

- OGL: required payment of royalties on gross proceeds of sale, without deduction of post-production costs. Also contained an "add back" provision:
  - If any disposition, contract or sale of oil or gas shall include any reduction or charge for the expenses or costs of production, treatment, transportation, manufacturing, processing or marketing of the oil or gas, then ***such deduction, expense or costs shall be added to … gross proceeds*** so that Lessor's royalty shall never be chargeable directly or indirectly with any costs or expenses other than its pro rata share of severance or production taxes.

Devon v. Sheppard, cont.

- Devon: selling oil and gas under contracts with a pricing formula that set the price based on an index and then subtracted a certain amount for "gathering and handling, inclusive of rail car transportation."
- Royalties paid on price Devon actually received
- Sheppard: Devon must add back the formulaic deductions pursuant to the "add back" provision
- Devon: the "add back" provision is surplusage – Sheppard shouldn't get paid on a price higher that Devon receives
- TXSC: Sheppard wins – Devon must add back costs when calculating royalties.

Hawkins v. Capitan

- OGL: reserved a royalty of "one-fourth of the gross proceeds received by Lessee," and contained a free-royalty provision:
  - Lessor's royalty ***shall not bear or be charged with, directly or indirectly***, any cost or expense incurred by Lessee, including without limitation, for exploring, drilling, testing, completing, equipping, storing, separating, dehydrating, transporting, compressing, treating, gathering, or otherwise rendering marketable or marketing products, and no such deduction or reduction shall be made from the royalties payable to Lessor hereunder, provided, however, that Lessor's interest shall bear its proportionate share of severance taxes and other taxes assessed against its interest or its share of production.
- Capitan sells its production at or near the wells under contracts that provide that the purchaser will deduct costs of transportation, fractionation and other downstream post-production costs.
- Capitan is paid a price based under that formula by its purchaser.

Hawkins v. Capitan

- Hawkins: postproduction costs that are part of pricing formula under sales contracts must be added back, because those are indirectly charged or incurred by Capitan
- Capitan: we not charging any of the costs to Hawkins; we just receive a price from the purchaser
- Court: Capitan is no obligated to “gross up” the price it receives from its purchaser when calculating Hawkins’ royalty because the post-production costs charged by the purchaser were not “incurred” by Capitan, but by the purchaser.
- LESSON: say what you mean…

Questions?

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The Latest Trends in Water Midstream Transactions

Taylor Spalla
Partner

Oil & Gas | Energy
Environmental | Water Law

KELLY HART
Attorneys at Law

Midland, Austin, Fort Worth, Baton Rouge, New Orleans

Today's Topics

Seismic Response Areas

Where is Produced Water Going?

Who is Handling it?

Transactions in the "Water" Patch?

Exchange/Disposal Agreements

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Seismic Response Areas

- Gardendale (Midland-Odessa)
- North Culberson Reeves
- Stanton

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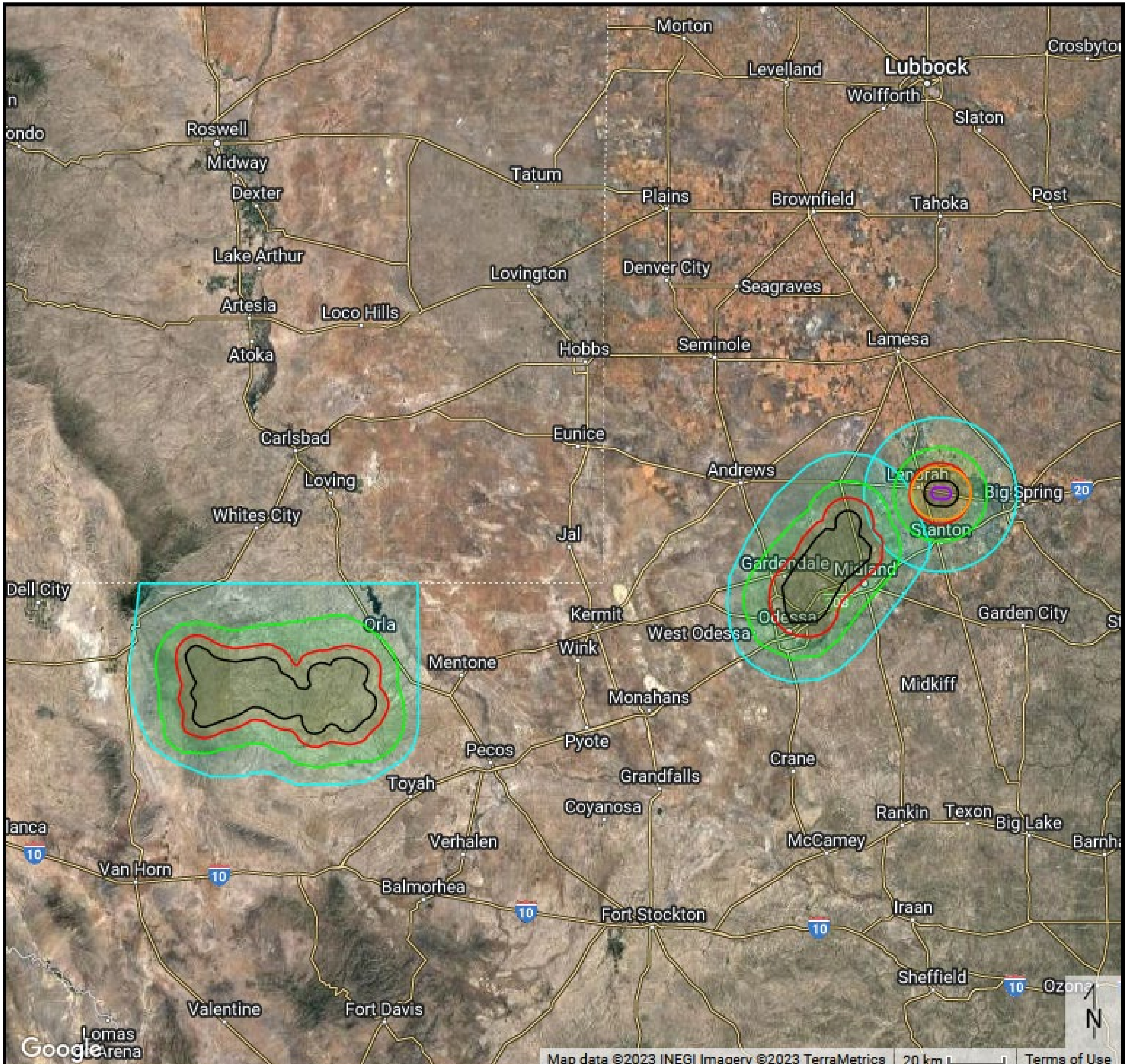
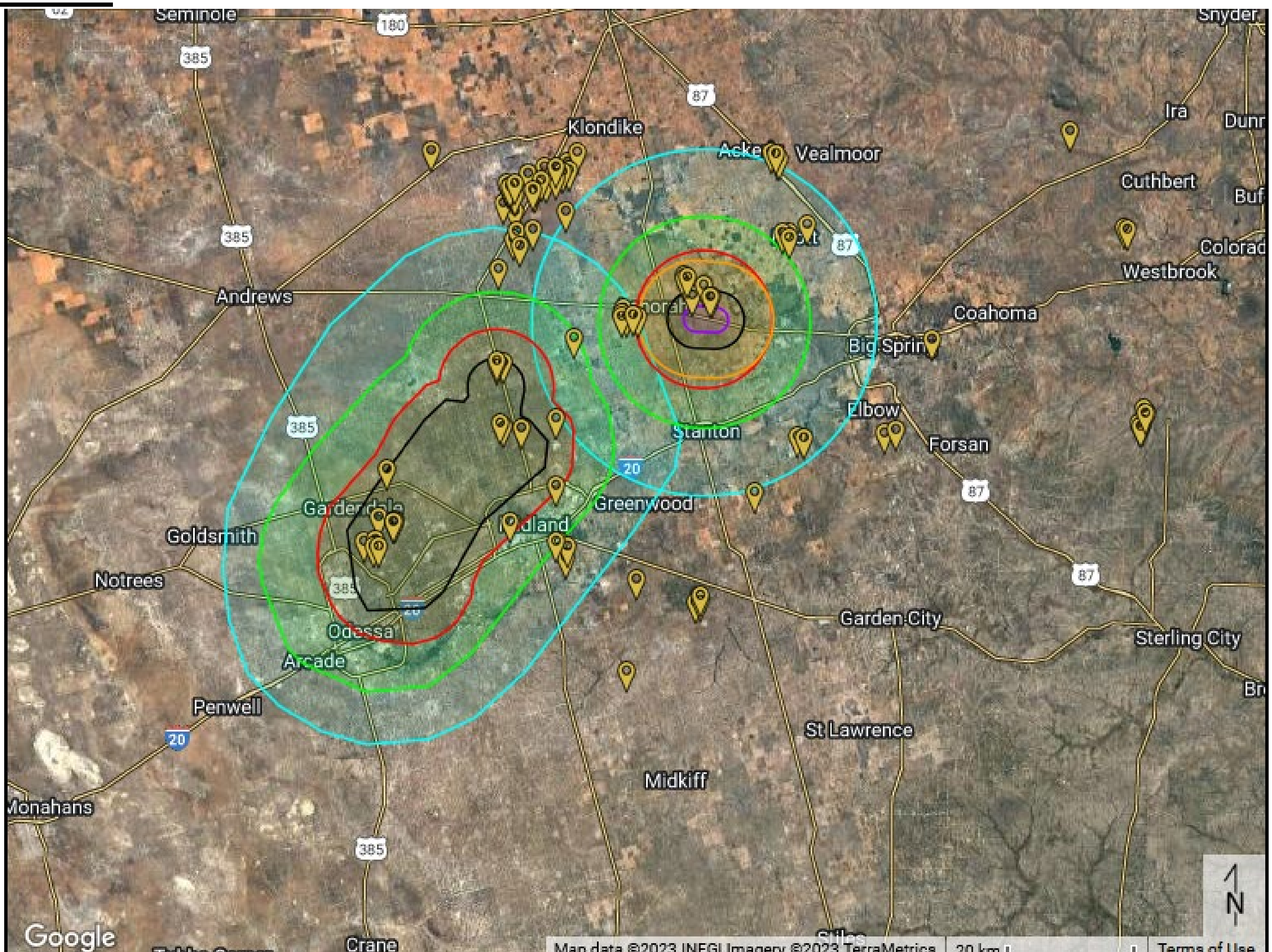


Source: B3 Insight (Data Used With Permission from B3 Insight)

2.0+ M 2023 Earthquakes in Midland Basin



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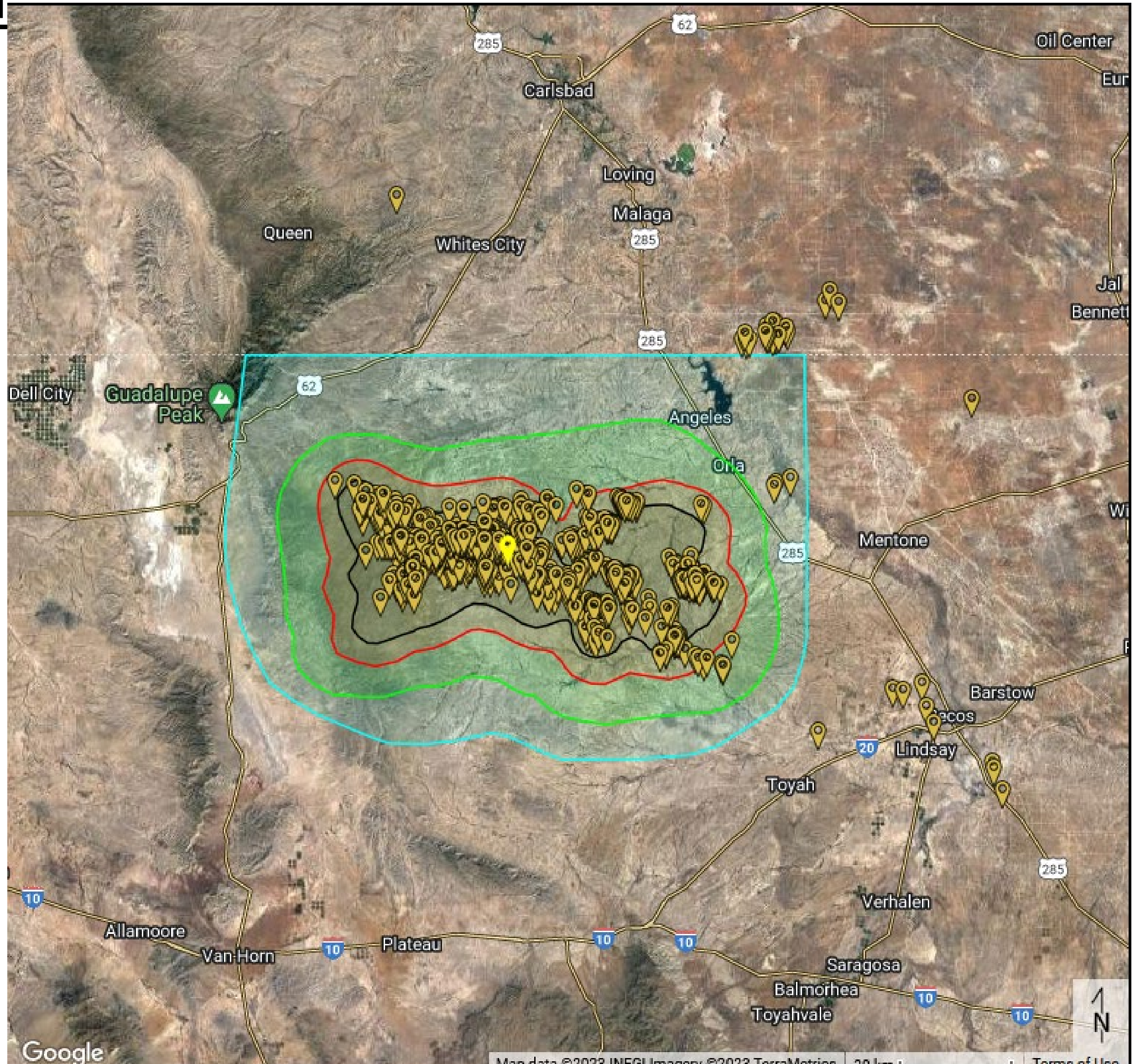
2.0+ M 2023 Earthquakes in Delaware Basin



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Shallow Disposal

Disposal Intervals

Deep Disposal

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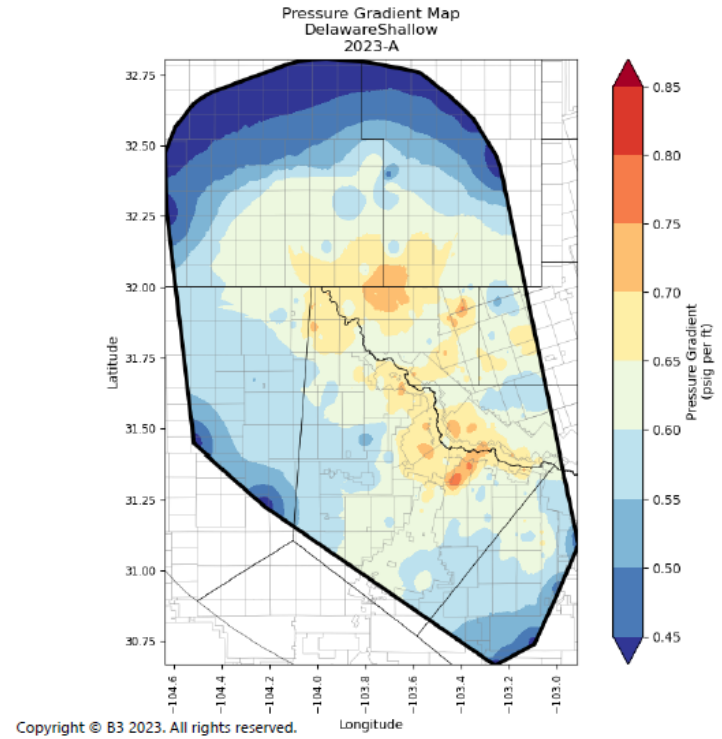
Shift to Shallow Disposal

Oil and Gas Interference

Pressure Increases



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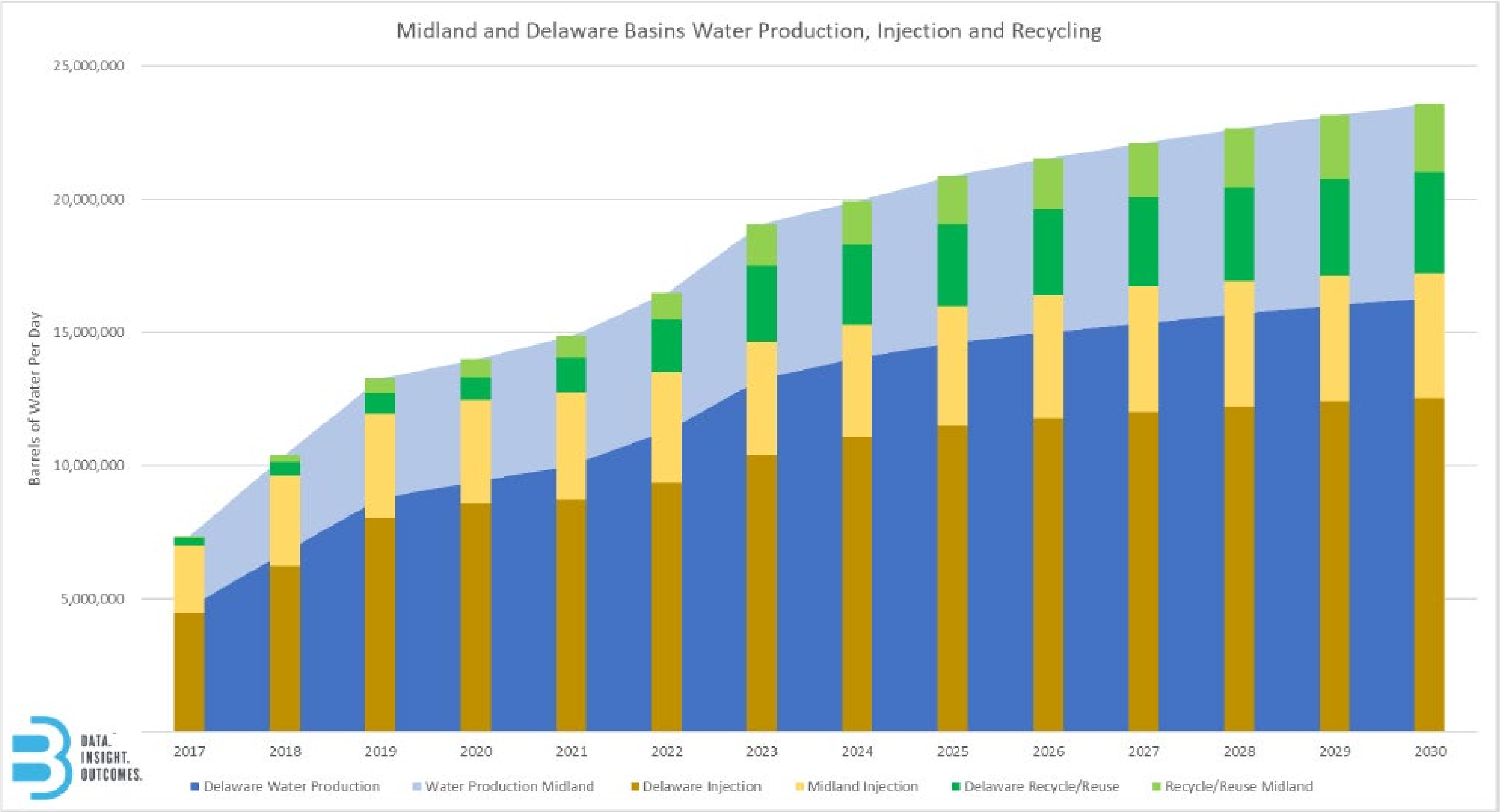
Where is Water Going?

Downhole Injection

Recycling/Reuse

(means less demand for groundwater)

Permian Basin



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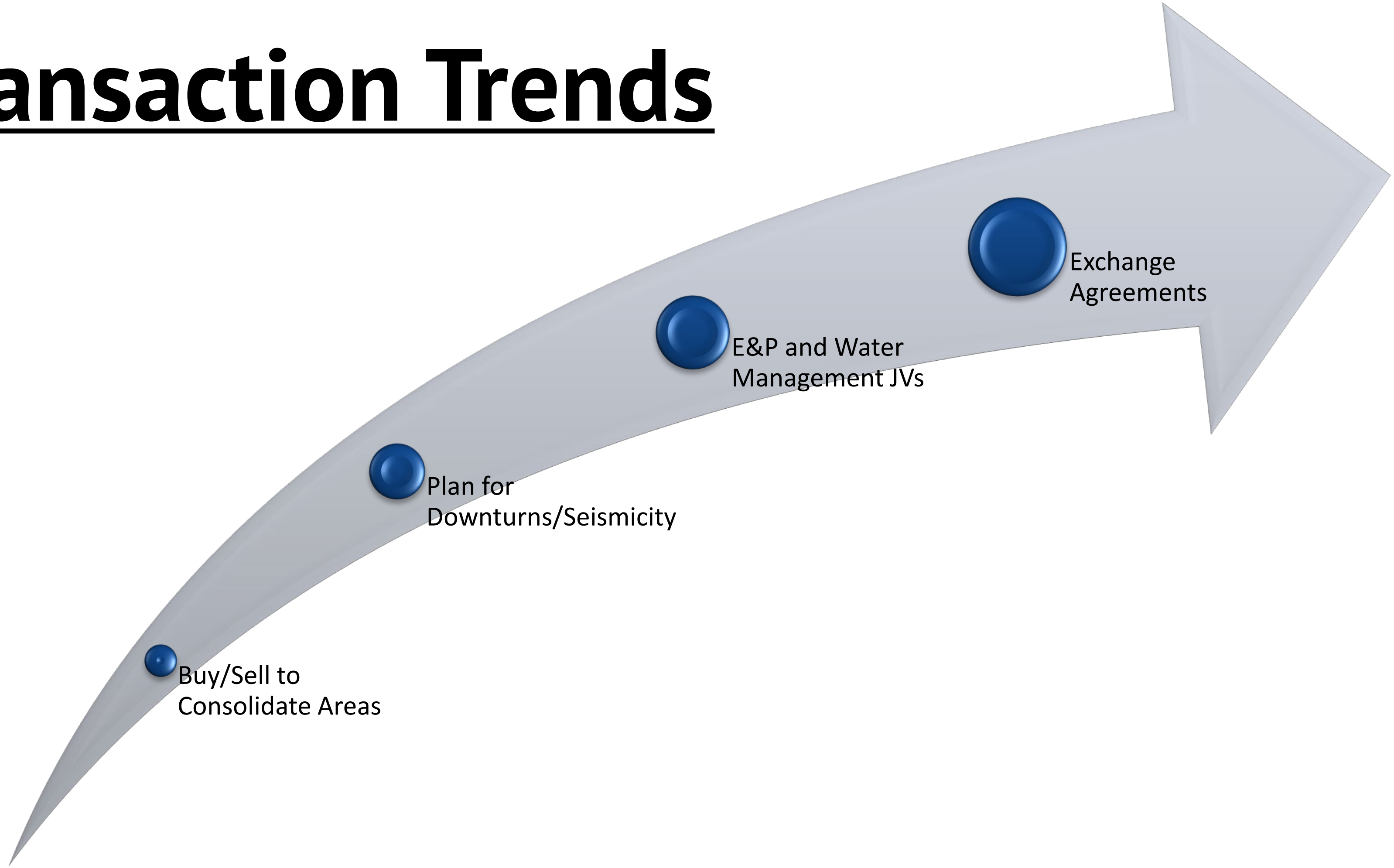
Who is Handling it?

Traditional E&Ps

Water Midstream Companies

Transaction Trends



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Exchange Agreements

Disposal Agreements

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Important Terms

- Obligation to Deliver
- Obligation to Take
- Term
- Specifications
- Delivery Point
- Replacement Damages
- Indemnities

How Committed is the E&P?

E&P Commitment

"Dedication"

Minimum Volume Commitment

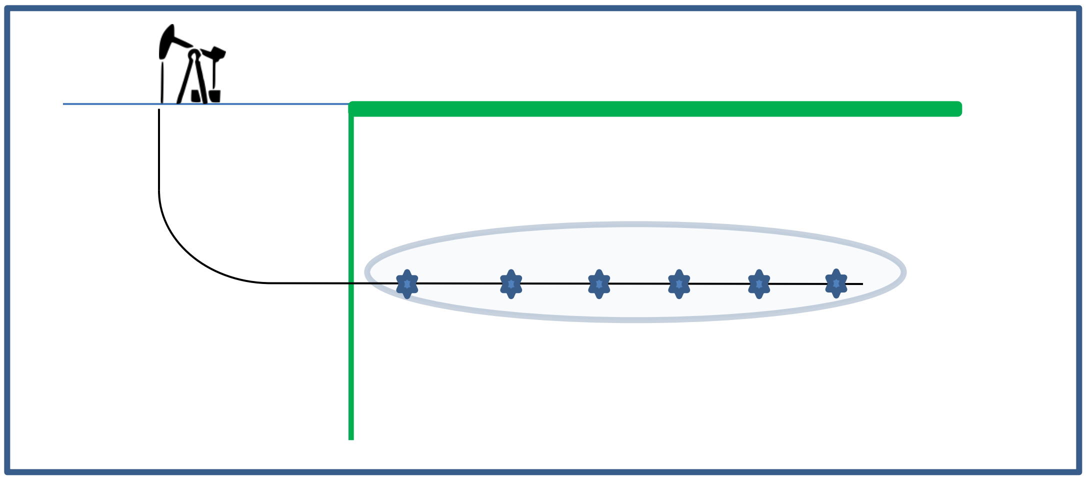
As Needed

Off-Tract Horizontal Wellbores

Don't Gut Your Dedication

Surface Location: Outside Area of Operations

Take Points: Within Area of Operations



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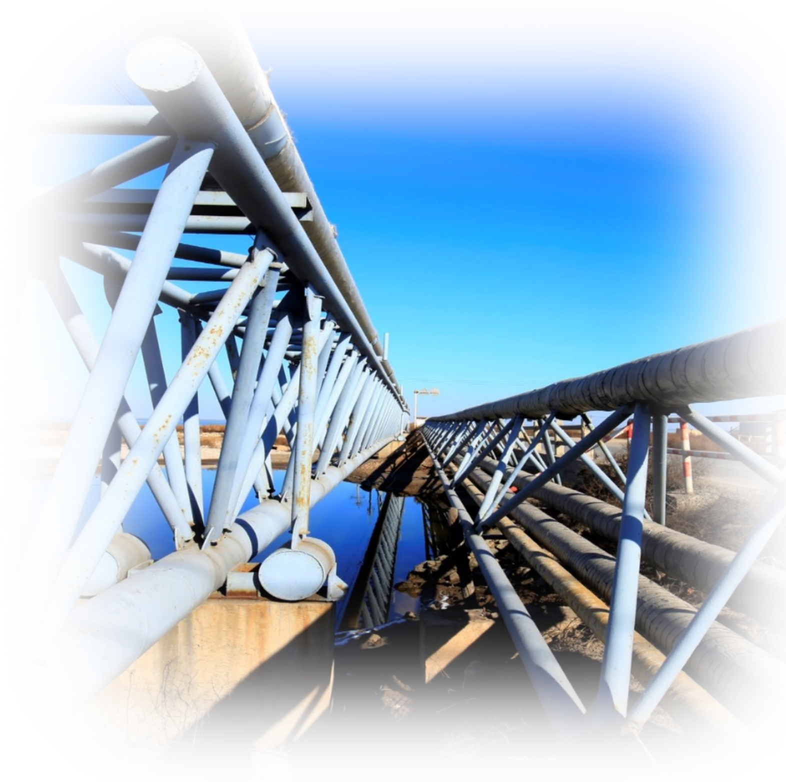
How Committed is the Operator?



- Firm Service
- Priority Service
- Interruptible Service
- Firm/Interruptible Service

Term

Interruptible Type: A year to a few years with evergreen

Dedication Type: 5-15 years

JV Type: 10-15 years

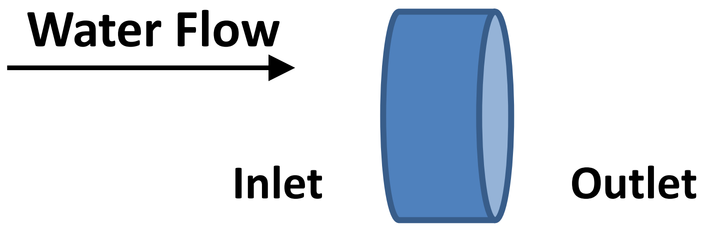
Specifications

Broad Language (e.g., can be disposed in Class II Disposal)

Specific Requirements

Points of Sale/Delivery Points

- Points of Sale/Transfer of Title
- Meter:
  - Inlet
  - Outlet



Replacement Damages

Indemnities

Off-Spec Water (E&P)

Reps/Warranties/Cove nants

(Mutual)

Before Delivery Point (E&P)

After Delivery Point (WM)

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