



# ***ACTIVE* IRON ENERGY**

## **Conventional Permian Investment Proposal**

***ACTIVE IRON ENERGY*** intends to acquire and manage conventional oil and gas assets to generate a stable, long term economic return for our investors

# Executive Summary

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The Permian Basin produced over 20 billion barrels of oil from conventional reservoirs prior to the shale revolution beginning in 2010. Despite the prolific production for almost 90 years developed using elementary completion techniques, these conventional reservoirs still contain a significant amount of recoverable oil.

Most conventional reservoirs have suffered pressure depletion, but many have bypassed oil and gas pay that was overlooked or wasn't economical to pursue with traditional completion technologies.

Unconventional plays often have over-pressure to enhance production rates, but typical completions are mechanically complex and expensive relative to the shallow conventional reservoirs. Artificial lift is less expensive and simpler to prolong the productive life of a shallow well versus a deep horizontal well.

Conventional reservoirs are well defined by decades of seismic and well control. The shallow conventional reservoirs in the Permian are typically carbonates with orders-of-magnitude better reservoir characteristics than the unconventional shale reservoirs. The shallow conventional reservoirs typically produce at a longer and more predictable decline compared to unconventional.

Most conventional plays have been developed and are held by production ("HBP"), so conventional development has a significant additional cost advantage over unconventional, and no corresponding pressure to drill or lose acreage.

Every public company and most large private companies in the Permian are pursuing unconventional plays and neglecting or divesting their legacy conventional fields. Many legacy conventional fields have been sold to smaller companies that have been capital or technology constrained. Competition to purchase and redevelop these legacy conventional fields is limited.

Application of modern completion techniques to these conventional reservoirs has been demonstrated to recover significant reserves and generate economic returns comparable to the deep basin-centered unconventional plays.

**Bottom line: A strategy to acquire legacy conventional producing fields and redevelop them can deliver a low risk, long term cash return to investors. Investment risks include commodity prices, geological variability, and regulatory burdens that increase operating costs.**

# Comparison – Conventional versus Unconventional Development Economics

Identified conventional Permian recompletion/redevelopment opportunities provide a better risk-return trade than unconventional development.

	Conventional Recompletion	5,000' Upper Conventional Zone	5,000' Lower Conventional Zone	10,000' Wolfcamp Lateral HALF CYCLE	10,000' Wolfcamp Lateral FULL CYCLE
<b>Acreage Cost</b>	0	0	0	\$0	\$4,000
<b>Drill and Complete</b>	\$360	\$3,000	\$3,300	\$10,100	\$10,100
<b>Oil EUR, MBO</b>	61	399	543	823	823
<b>Gas EUR, MMCF</b>	235	2,443	1,036	3,317	3,317
<b>NGL, MBBLs</b>	22	0	0	332	332
<b>PV10%, M\$</b>	\$1,369	\$9,231	\$9,873	\$14,465	\$10,465
<b>IRR, %</b>	>1,000%	701%	295%	102%	49%
<b>Undiscounted ROI</b>	6.0	6.0	6.5	3.6	2.6
<b>Discounted 10% ROI</b>	4.8	4.1	4.0	2.4	1.7
<b>Payout, Month.</b>	3	5	8	8	14
	<b>Strip 2/1/22. All acreage HBP. No new facility investment assumed, existing infrastructure assumed to be adequate.</b>			<b>Strip 1/20/22. Assume 8 wells per 1,280 acre DSU at \$25k/acre</b>	

Even with more variable results and marginally lower reserve development assumed, conventional development on HBP acreage has a significant cost and mechanical risk advantage over unconventionals.

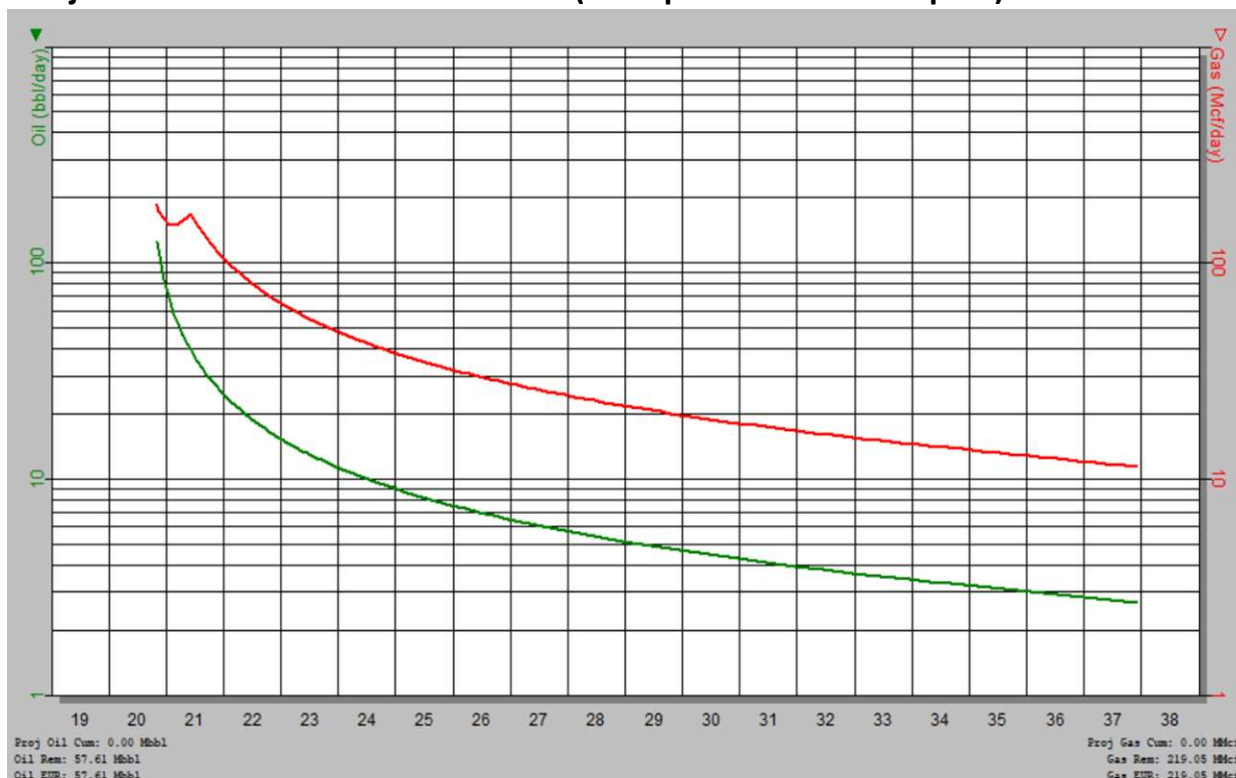
# Example of Recompletion Results

## A low-risk path to free cash flow in six months

- In 2019, *Bear Operating* developed a repeatable, low-cost vertical development strategy using core tenets of *Drummer Company's* completion methods.
- Since many of the reserves which would be developed are technically not proved, we incorporate probable and proved reserves (P50) to analyze the potential results.
- The economics represented in this case are the actual *Bear Operating* results for recompleting from the deeper to the shallower conventional formation. Our strategy would evaluate recompleting multiple zones and commingling, so these results may be conservative.
- Investment return is achieved very quickly.
- The projections assume 4 recompletions per month per acquired asset, using a dedicated workover rig for each.

P50	PV-10
WI	100%
Net Oil Reserves, Mbbbl	43
Net Gas Reserves, MMcf	162
IRR	1499%
NPV, M\$	\$1,363
Undisc. Cash Flow, M\$	\$1,799
MOIC	6.0
Years to Payout	0.3

## Projection: 1499% IRR and 6.0x MOIC (Multiple Of Invested Capital) with 4-MONTH PAYOUT



	Oil	Gas
IP	125 bbl/d	GOR
b-factor	1.15	1,500-4,250
Di	98.3	scf/bbl
Dmin	6	
EUR	58 Mbbbl	219 MMcf

<b>Recompletion Cost, M\$</b>	\$360
<b>Operating Expenses</b>	
Fixed, \$/mo/Well	\$2,550
Variable, \$/BO	\$5.28
Variable, \$/Mcf	\$0.28
Gas T&P, \$/Mcf	\$1.05
NGL Yield	0%
<b>Differentials</b>	
Oil	(\$1.00)
Gas	(\$0.18)
Differentials applied to WTI	
Strip as of 2/1/2022	

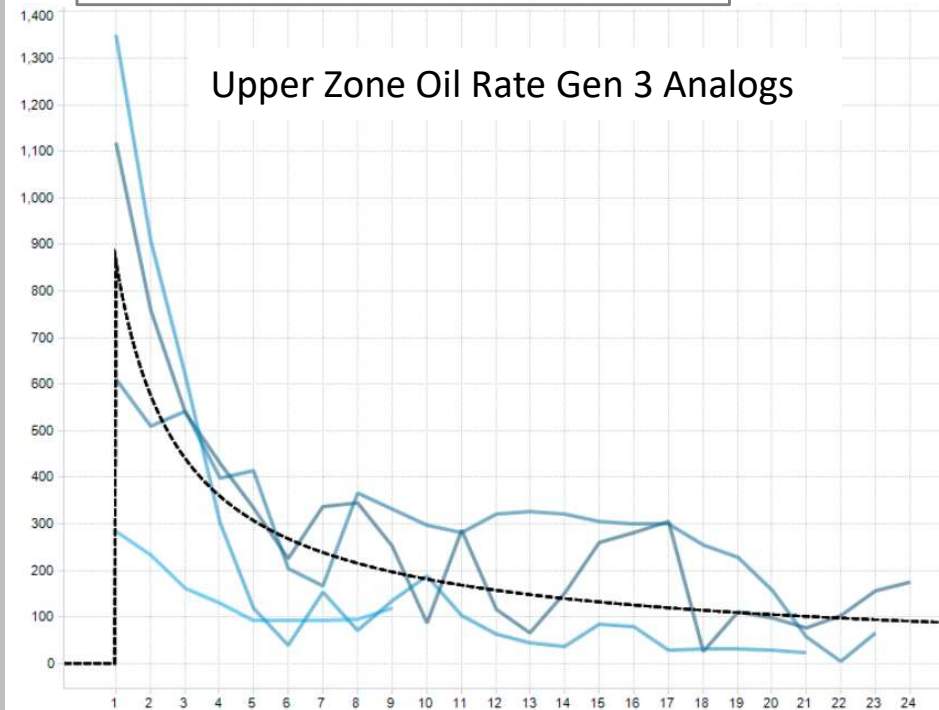
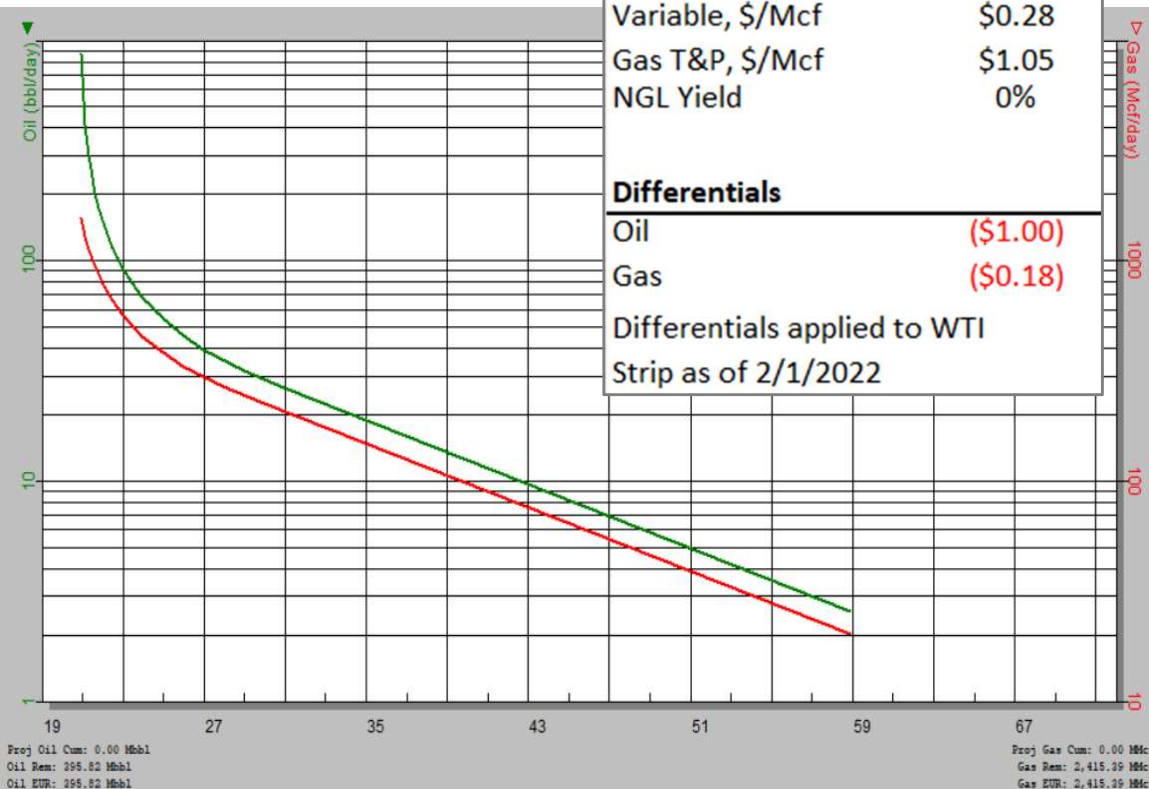
# Conventional Upper Zone Horizontal Type Curve

- The Upper Zone exhibits higher initial rates and a steeper decline, as well as a higher Gas Oil Ratio.
- Used 50% Most Likely Probabilistic Outcome ("P50") decline parameters and 8% terminal decline for a slightly more conservative valuation, normalized to a 5,000' lateral.
- Projection: 643% IRR and 6.1x MOIC with 4 MONTH PAYOUT**

P50	PV-10
WI	100%
Net Oil Reserves, Mbbbl	297
Net Gas Reserves, MMcf	1810
IRR	643%
NPV, M\$	\$9,276
Undisc. Cash Flow, M\$	\$15,204
MOIC	6.1
Years to Payout	0.3

<b>Drilling Costs, M\$</b>	\$ 1,000
<b>Completion Cost, M\$</b>	\$ 2,000
<b>Operating Expenses</b>	
Fixed, \$/mo/Well	\$2,550
Variable, \$/BO	\$5.28
Variable, \$/Mcf	\$0.28
Gas T&P, \$/Mcf	\$1.05
NGL Yield	0%
<b>Differentials</b>	
Oil	(\$1.00)
Gas	(\$0.18)
Differentials applied to WTI	
Strip as of 2/1/2022	

	Oil	Gas
IP	865 bbl/d	1570 Mcf/d
b-factor	1.2	1.4
Di	99.7	66.8
Dmin	8	8
EUR	395 Mbbbl	2,415 MMcf



# Conventional Lower Zone Horizontal Type Curve

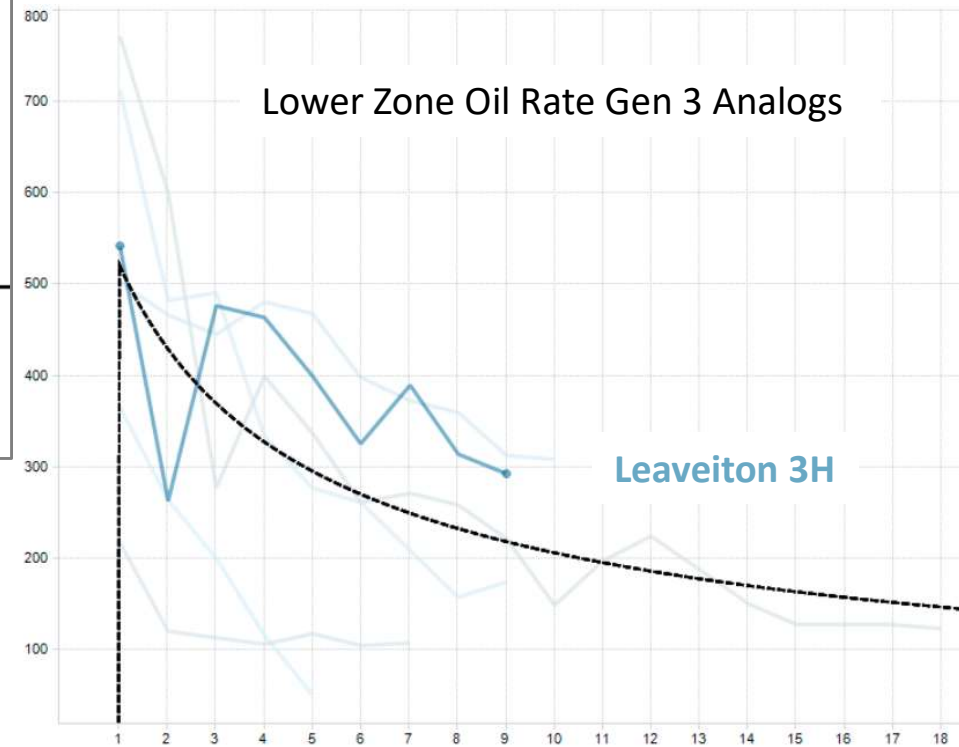
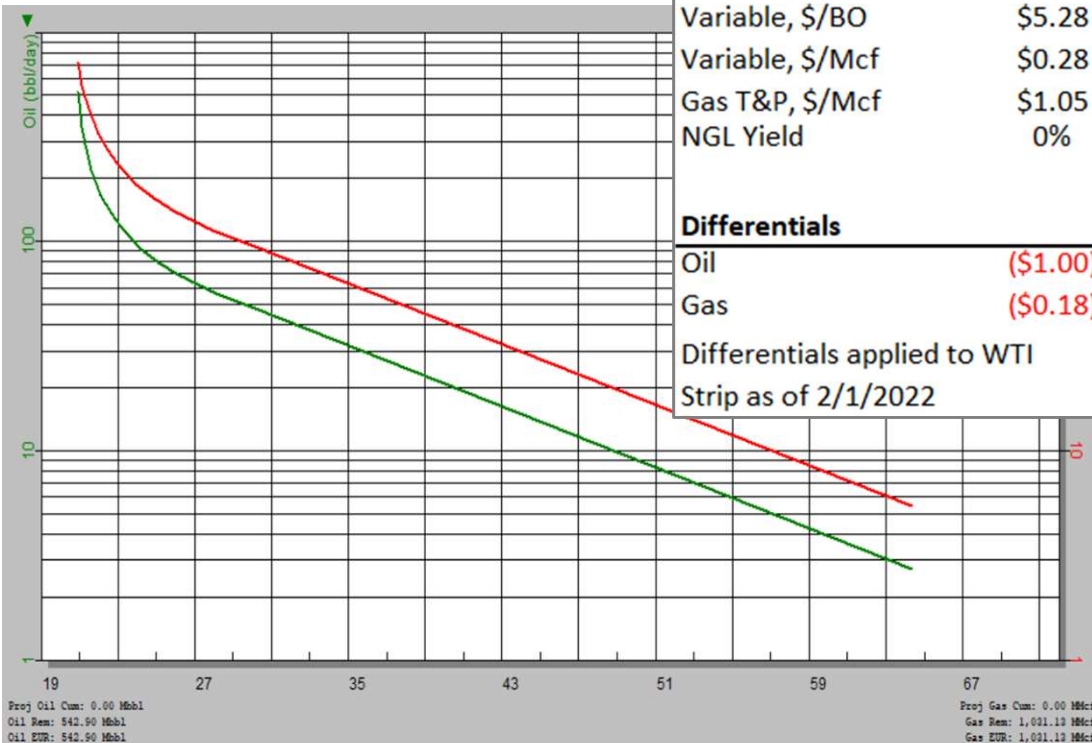
Opportunity to improve returns with free cash flow in less than 1 year and significantly increase residual value

- A large horizontal Proved Undeveloped (“PUD”) inventory provides ongoing development opportunity when prices dictate and to increase the residual asset value at exit.
- Projections assume the scheduling of one dedicated drilling rig per acquired asset, delivering a new well every two months. The Lower Zone is developed prior to Upper Zone horizontals due to higher reserve addition expected from the Lower Zone.
- *Leprechaun LTD’s* Leaveiton 3H Gen 3 completion is outperforming this type curve and validates the attractiveness of this strategy.
- **Projection: 287% IRR and 6.5 MOIC with less than 8-MONTH PAYOUT**

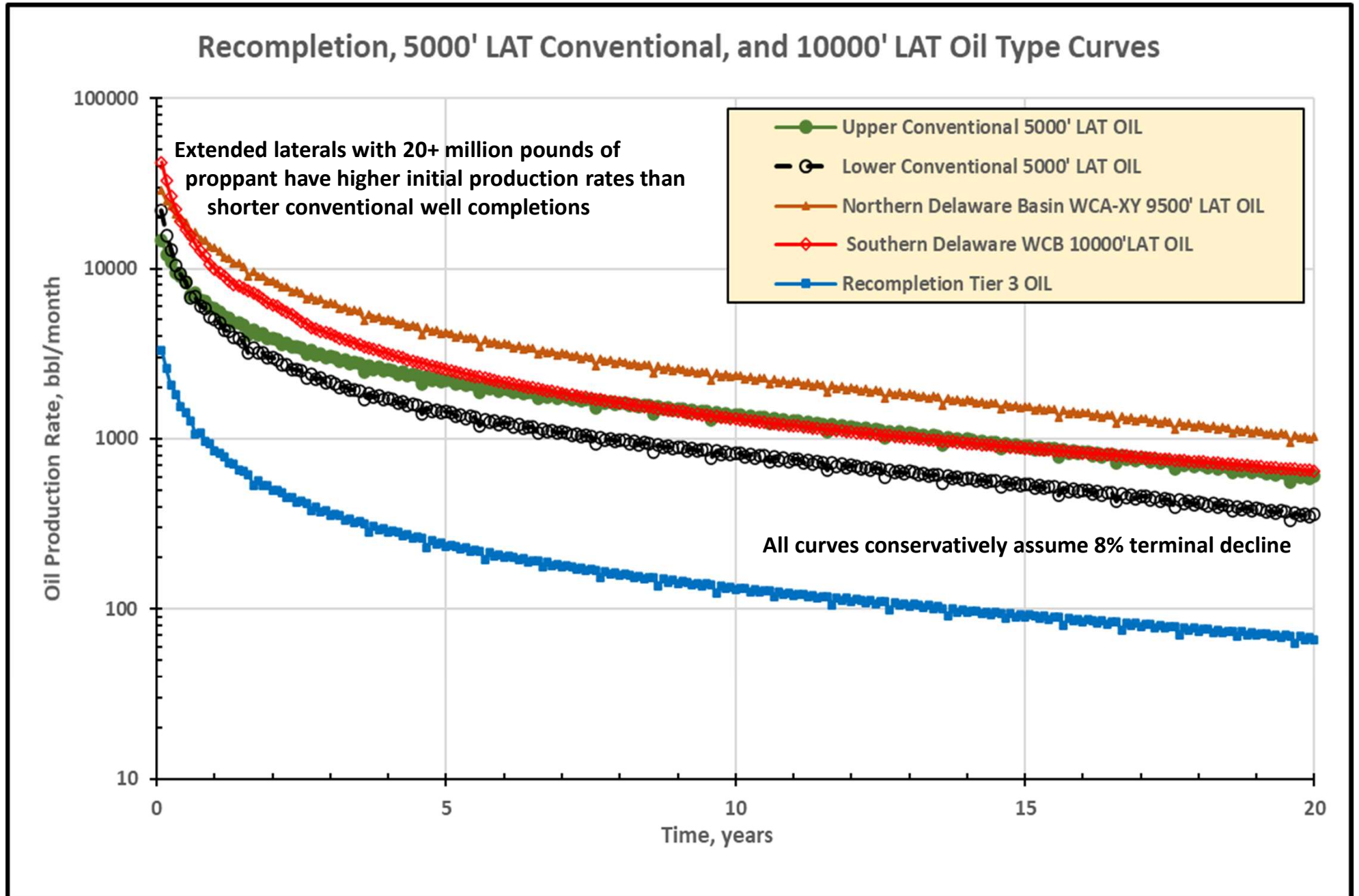
P50	PV-10
WI	100%
Net Oil Reserves, Mbbbl	407
Net Gas Reserves, MMcf	773
IRR	287%
NPV, M\$	\$9,897
Undisc. Cash Flow, M\$	\$18,297
MOIC	6.5
Years to Payout	0.7

	Oil	Gas
IP	521 bbl/d	720 Mcf/d
b-factor	1.5	1.5
Di	91.9	76
Dmin	8	8
EUR	543 Mbbbl	1,031 MMcf

<b>Drilling Costs, M\$</b>	\$ 1,300
<b>Completion Cost, M\$</b>	\$ 2,000
<b>Operating Expenses</b>	
Fixed, \$/mo/Well	\$2,550
Variable, \$/BO	\$5.28
Variable, \$/Mcf	\$0.28
Gas T&P, \$/Mcf	\$1.05
NGL Yield	0%
<b>Differentials</b>	
Oil	(\$1.00)
Gas	(\$0.18)
Differentials applied to WTI Strip as of 2/1/2022	



# Conventional versus Unconventional Reserve Projections



# Conventional versus Unconventional Well Investment

The cost advantage of modern completions in shallow carbonate reservoirs is not just the significant savings on pipe and proppant, but also the much higher day rate of the equipment required to reach the depths and control the pressures in deep basin unconventional plays.

	<b>Conventional Recompletion</b>	<b>5,000' Upper Conventional Zone</b>	<b>5,000' Lower Conventional Zone</b>	<b>10,000' Wolfcamp Lateral HALF CYCLE</b>	<b>10,000' Wolfcamp Lateral FULL CYCLE</b>
<b>Rig Type</b>	Workover rig	750-1,000 HP		1,500 SCR or AC	
<b>Casing</b>					
<b>Surface, ft</b>	none	1,600	1,600	2,600	2,600
<b>Intermdiate, ft</b>	none	0	0	9,400	9,400
<b>Production,ft</b>	none	12,000	12,000	20,100	20,100
<b>Tubing</b>	4,000	6,200	6,200	8,000	8,000
<b>Completion Fluid, bbls</b>	50,000	125,000	125,000	500,000	500,000
<b>Proppant, pounds</b>	500,000	6,000,000	6,000,000	25,000,000	25,000,000
<b>Artificial Lift</b>		rod pump		ESP, then gas lift or later rod pump	
	Depth 3,500' to 7,000'. Normal pressure. Assume 5,000' laterals, 25 bbls and 1,200lbs/ft			Geopressured, target interval ~9,800' deep. 2,500 lbs and 50 bbls/ft.	



# Permian Conventional versus Unconventional Operating Cost

	Conventional		Unconventional
	Private Operator CY 2021	Public Operator 7/20 LTM	Private Operator Reeves County CY 2021
Oil Volume, MBBLS	33	313	4,009
Oil Sales Value, M\$	\$2,182	\$13,871	\$209,093
Average Oil Price, \$/BBL	\$66.75	\$44.32	\$52.15
Gas Volume, MMCF	7.4	848	7,590
Gas Sales Value, M\$	\$68	\$712	\$18,313
Average Gas Price, \$/MCF	\$9.11	\$0.84	\$2.41
NGL Volume, MBBLS	NGL value	185	1,085
NGL Sales Value, M\$	included in gas	\$1,550	\$20,577
Average NGL Price, \$/BBL	value	\$8.39	\$18.96
<b>Gross Production Revenue, M\$</b>	<b>\$2,250</b>	<b>\$16,134</b>	<b>\$247,982</b>
Overhead	404	0	2,560
Chemicals	21	672	16,544
Compression	0	93	3,653
EHS	3	112	0
Labor	108	1,015	5,100
Other	27	180	2,091
Surface	28	505	0
Utilities	85	627	4,724
Water	17	651	16,432
Well work	27	16	850
vacuum/hot oil	75	385	0
vehicles	4	143	491
gas processing	0	759	0
marketing	0	0	13,572
gas lift	0	0	7,948
Severance	192	1,230	11,740
Ad valorem	5	56	3,543
<b>Lifting Cost, M\$</b>	<b>\$995</b>	<b>\$6,445</b>	<b>\$89,248</b>
Remedial work	164	1,420	9,979
<b>Operating Expense, M\$</b>	<b>\$1,159</b>	<b>\$7,865</b>	<b>\$99,227</b>
	<b>Excluding Overhead</b>		
<b>Lifting Cost, \$/BBL</b>	<b>\$18.06</b>	<b>\$20.59</b>	<b>\$21.62</b>
<b>Operating Expense, \$/BBL</b>	<b>\$23.08</b>	<b>\$25.13</b>	<b>\$24.11</b>

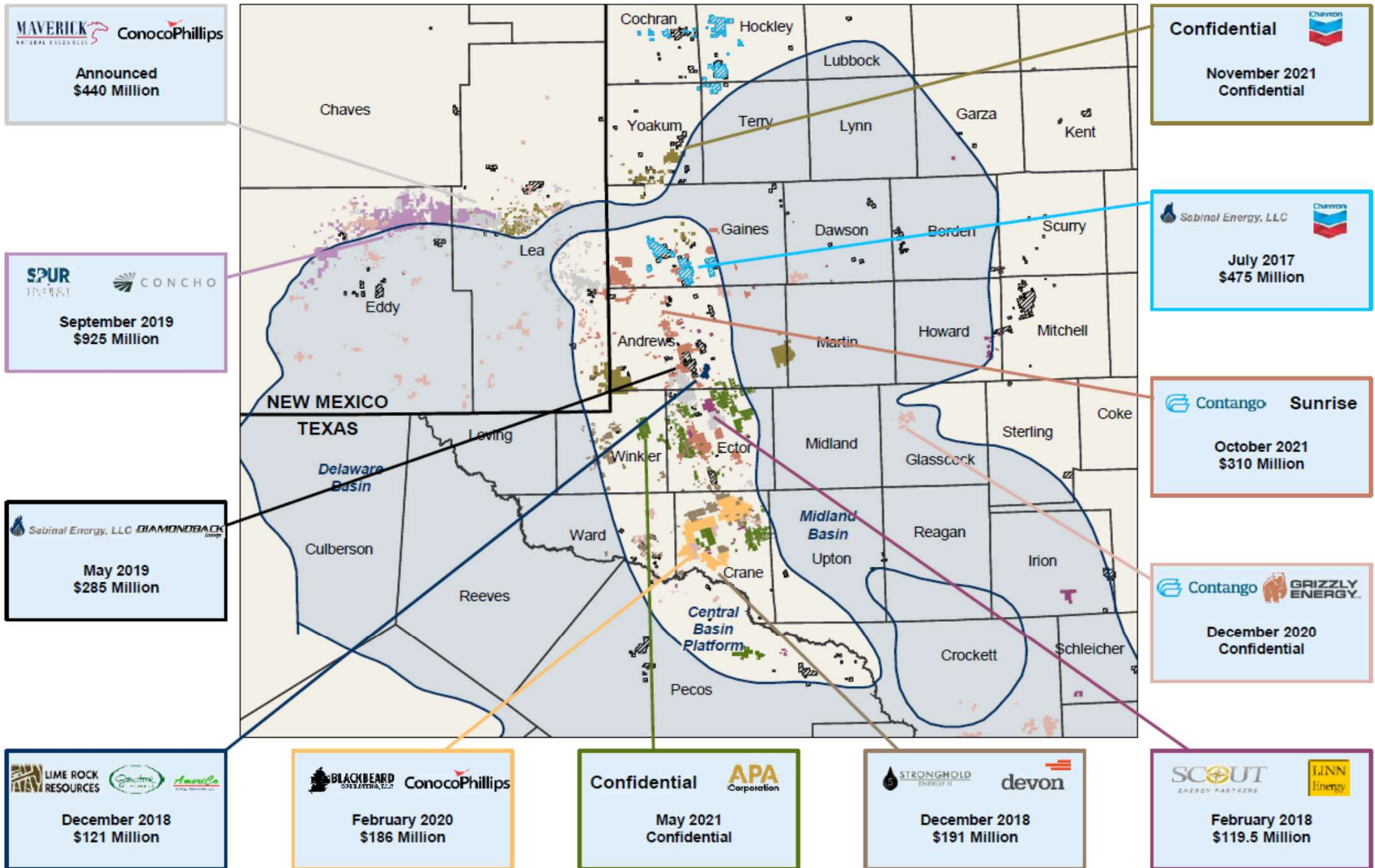
Comparison of operating expenses averaged over a 12-month period demonstrates no appreciable operating cost advantage of the higher volume unconventional wells versus the lower volume conventional wells.

Operating costs were normalized on a barrel of oil basis, as oil revenue constitutes more than 84% of the total revenue for each operator.

# A Dozen \$100MM+ Conventional Deals Completed in the last 4 Years

No Other Firm Has The Technical Depth And Transactional Experience Across The Platform And Shelf

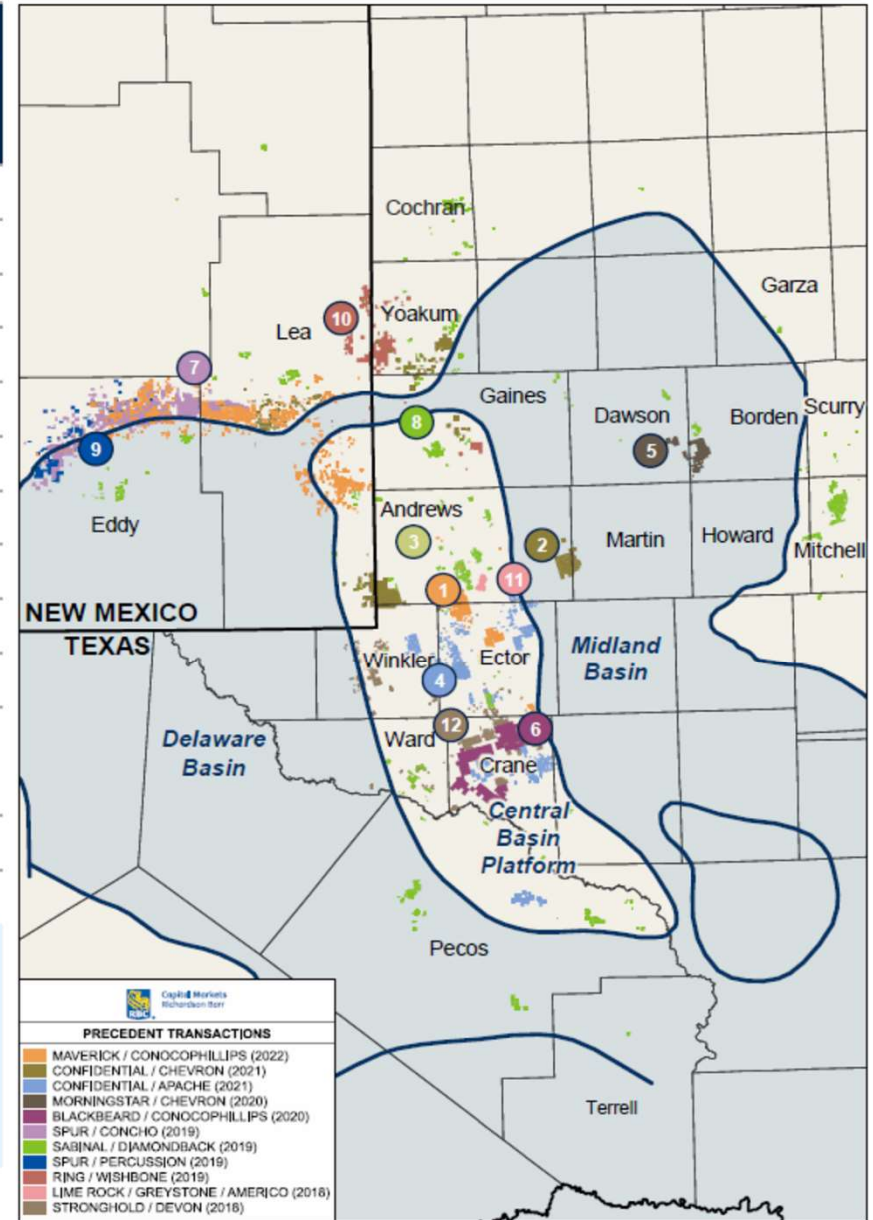
RBC has advised on 66% of \$100 MM+ Conventional Permian deals since 2017



# Conventional Permian Assets Transact at ~5X Cash Flow

	Date	Buyer	Seller	Amount (\$MM)	Prod. Metric (\$/boed)	CF Metric (x)	\$/Acre	% Liquids	FTM Oil Strip (\$/Bbl)
1	Jan-22	Maverick	ConocoPhillips	\$440	\$40,000	3.7x	\$3,956 <sup>(1)</sup>	68%	\$81.35
2	Nov-21	Confidential	Chevron	Conf.	\$51,758	5.4x	-	95%	\$77.27
3	Oct-21	Contango	Sunrise	\$310	\$34,483	2.9x	-	80%	\$78.13
4	May-21	Confidential	Apache	\$185	\$40,893	4.8x	-	86%	\$63.32
5	Sep-20	MorningStar	Chevron	\$73	\$54,034	5.6x	-	96%	\$39.14
6	Feb-20	Blackbeard	ConocoPhillips	\$186	\$40,435	5.5x	\$795	82%	\$50.01
7	Sep-19	Spur	Concho	\$925	\$37,000	5.1x	\$800	78%	\$52.47
8	May-19	Sabinal	Diamondback	\$285	\$46,721	4.5x	-	93%	\$60.61
9	May-19	Spur	Percussion	\$400	\$40,000	3.0x	\$9,091	85%	\$59.57
10	Feb-19	Ring Energy	Wishbone	\$300	\$55,556	4.6x	\$1,674	93%	\$57.01
11	Dec-18	Lime Rock	Greystone / Americo	\$121	\$60,650	5.1x	\$7,562	87%	\$49.12
12	Dec-18	Stronghold	Devon	\$191	\$42,530	6.0x	\$1,822	82%	\$52.90

<b>Minimum</b>				<b>\$34,483</b>	<b>2.9x</b>	<b>\$795</b>
<b>Mean</b>				<b>\$45,338</b>	<b>4.7x</b>	<b>\$3,671</b>
<b>Median</b>				<b>\$41,712</b>	<b>5.0x</b>	<b>\$1,822</b>
<b>Maximum</b>				<b>\$60,650</b>	<b>6.0x</b>	<b>\$9,091</b>



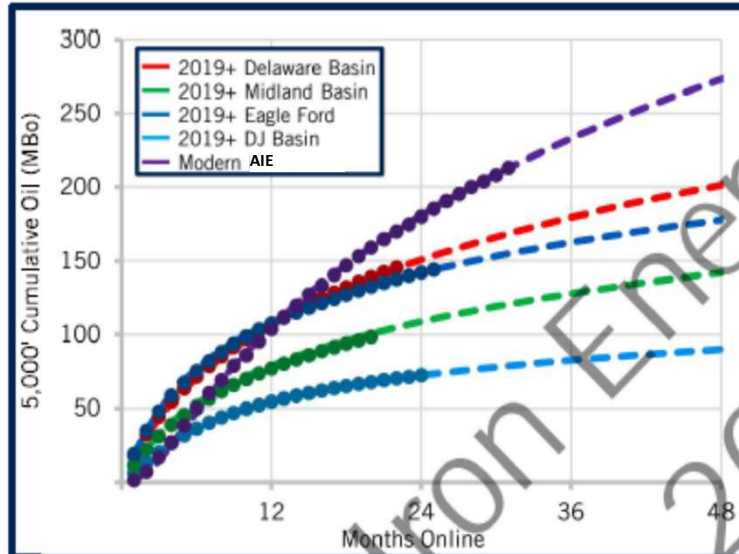
2 Source: RBC Richardson Barr Precedent Transaction Database.  
 Note: Value for existing production used in calculating acreage metrics, ranging from \$20,000 to \$40,000/boe/d, is based on asset characteristics and strip pricing at announcement. | (1) Represents core acreage.

# Conventional Permian Productivity is Superior to Unconventional Oil Plays

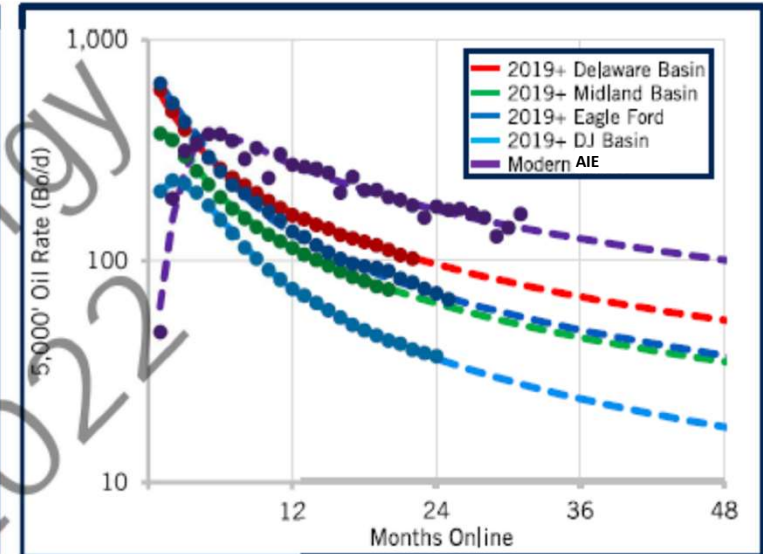
## Key Points

- AIE play outperforms major US oil basins due to shallow depths and low base declines
- AIE significantly outperforms all basins after 24 months due to shallow decline characteristics
- Low AIE D&C costs driven by shallow depths lead to robust single well economics

## Cumulative Oil (MBo)



## Oil Rate (Bo/d)

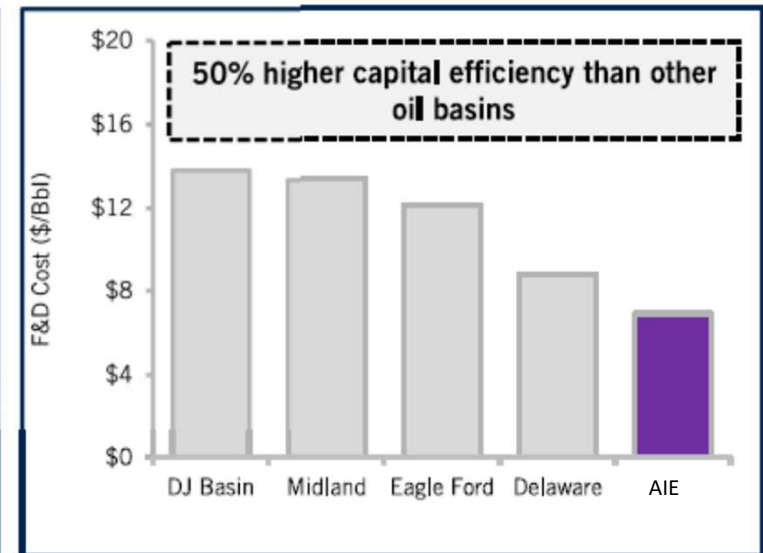


## Performance Benchmarking – 5,000' Lateral Adjusted

Basin	Depth TVD (ft)	Proppant (lb/ft)	Fluid (gal/ft)	24 Mo Oil (MBo)	Oil EUR (Bo/ft)
DJ Basin	7,107	1,128	1,260	73	29
Midland	8,609	1,980	2,016	109	54
Eagle Ford	11,576	2,493	2,058	142	62
Delaware	10,785	2,312	2,058	151	80
AIE	3,124	1,744	2,119	180	135

4,000+ feet shallower with highest EUR of oil weighted basins

## F&D Cost Benchmarking (\$/Bbl)



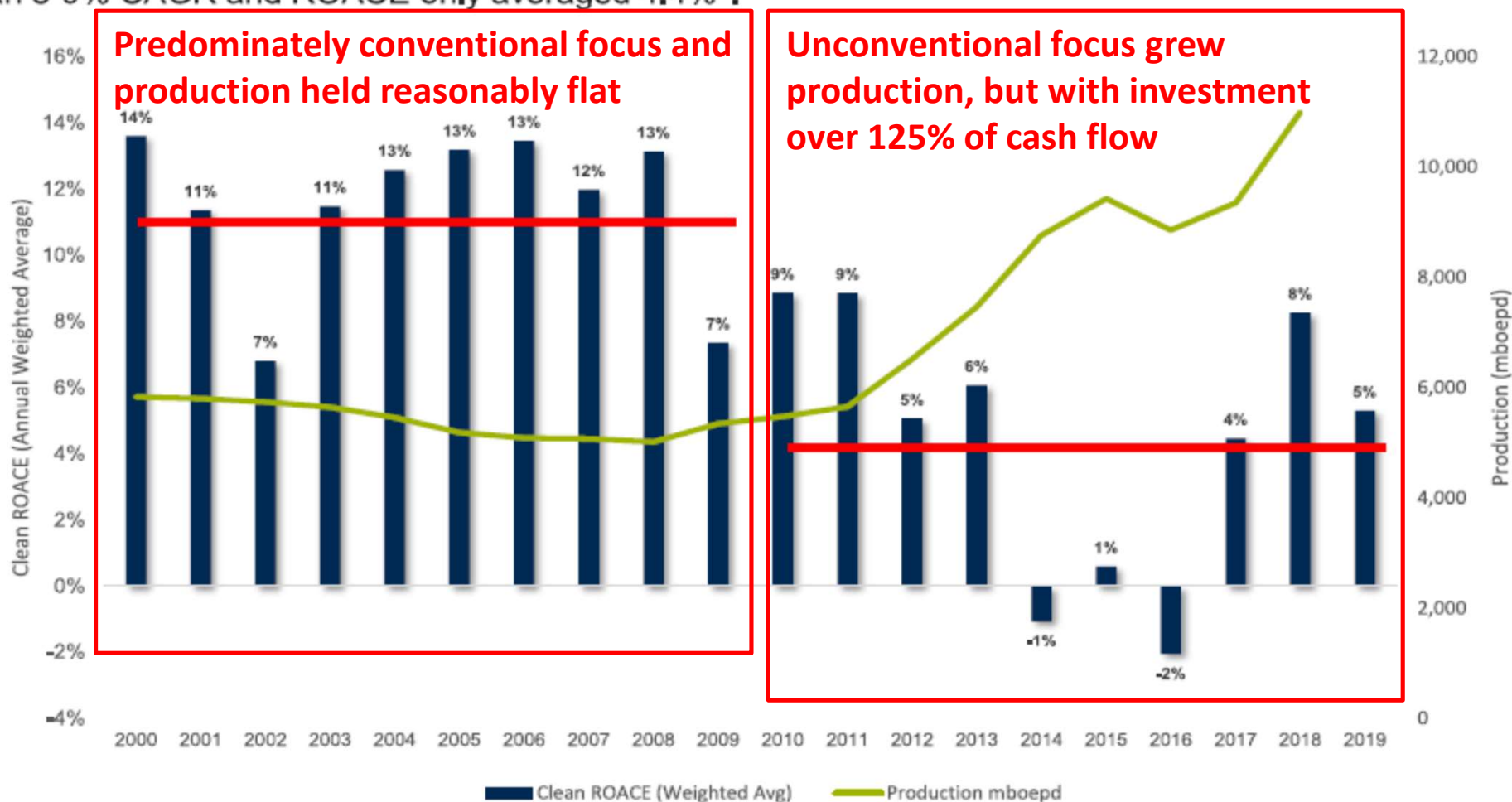
Slide information is from a recent conventional Permian sale process conducted by a major energy investment bank

# Conventional Industry Returns were more than Double Unconventional Returns

## The Growth Misnomer



Investor sentiment eroded as E&Ps pursued growth at the expense of returns. From 2000-2009, US production slightly declined while clean ROACE averaged ~11.5%. From 2010-2019, production grew at an 8-9% CAGR and ROACE only averaged 4.4%\*.



Source: Kimmeridge internal database including financial and operating results for approximately 80 publicly-listed US E&P companies (Kimmeridge Model). 2019 ROACE estimate is sourced from external data on a subset of 20 E&P companies with some overlap to the Kimmeridge Model. Additional details may be provided upon request.

# Action Plan

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1. Secure an equity sponsor to pursue acquisition of \_\_\_\_\_.
2. Subscribe to TGS, GeoGraphix and other “Big Data” tools to build a regional model to identify bypassed pay and horizontal infill opportunities using available public data.
3. Negotiate and close with equity capital, no debt.
4. Construct a rolling quarterly commodity hedge program for downside price protection on the PDP volumes for 3-5 years.
5. Build a return-to-production, recompletion, and redevelopment strategy that can be funded from free cash flow.
6. Secure a commercial bank revolver for working capital and small bolt-on acquisitions.
7. Once the initial acquisition is digested, expand evaluations to analogous formations in other parts of the basin.
8. Pay 8% quarterly distributions and redeem equity shares with free cash flow as soon as possible.
9. Once the production rate is enhanced and well-established, structure an asset securitization to raise long term capital (single digit interest rate) to fund additional acquisitions or super dividends to the equity sponsor.

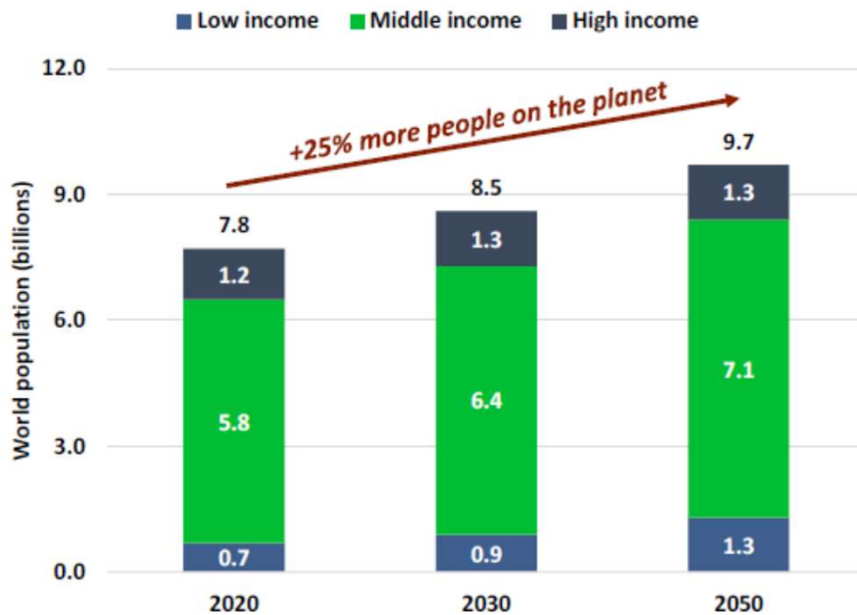
Why consider an investment in the fossil fuel industry?

Select graphics adapted from Wil VanLoh, Quantum Energy Partners: *The Challenges and Opportunities of the Sustainable Energy Transition*, October 19, 2021

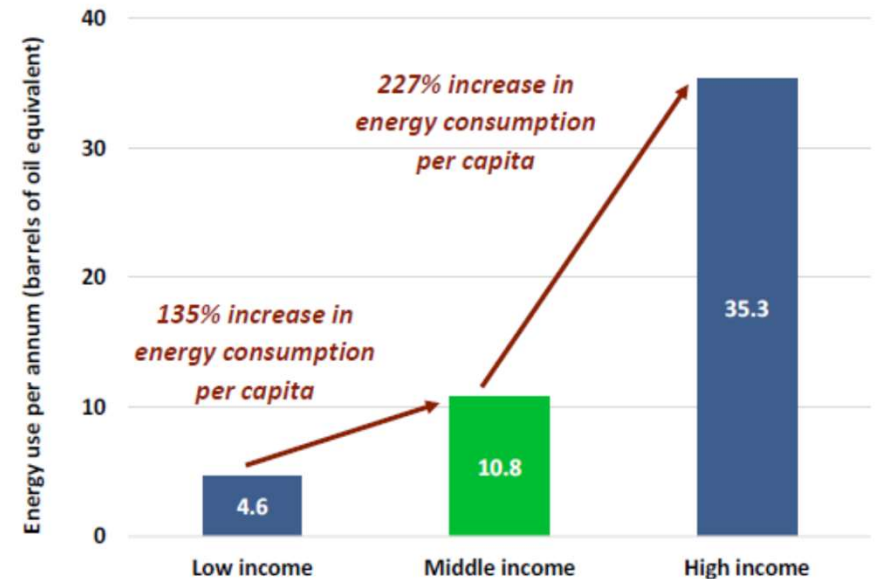
# Investment Context for a Sustainable Energy Transition (“SET”)

1. Energy demand will continue to grow with global population and developing countries pursuing a better quality of life, achievable only with available and inexpensive energy.
2. Renewable energy will require tremendous investment and significant environmental impact to source the rare earth minerals and other scarce commodities necessary. Developing the necessary resources for a SET will require significant energy input - only feasible with fossil fuel-powered vehicles and equipment.
3. Even the most optimistic projections of renewable and low carbon energy adoption demonstrate that global oil demand in 2050 will exceed 90 million barrels per day (current demand is ~100 MMBOPD). Without a very significant price signal, the fossil fuel industry will be mightily challenged to replace production decline and meet that 90 MMBOPD demand 28 years from today.
4. For entities prioritizing ESG factors in their investment decisions, there is not a more favorable ESG audience than the US upstream sector. No other energy producing industry/country on the planet respects ESG goals more than domestic producers.

The world’s population is continuing to grow ...



... and billions seek to use more energy to improve their quality of life



*Through 2050, the world’s population will grow by ~2 billion, with ~98% of the growth occurring in developing regions (e.g., Asia, Africa)*

*~87% of the world’s population in 2050 will be categorized as low/middle income, and these people want, and have a right to, the modern luxuries afforded by energy consumption*

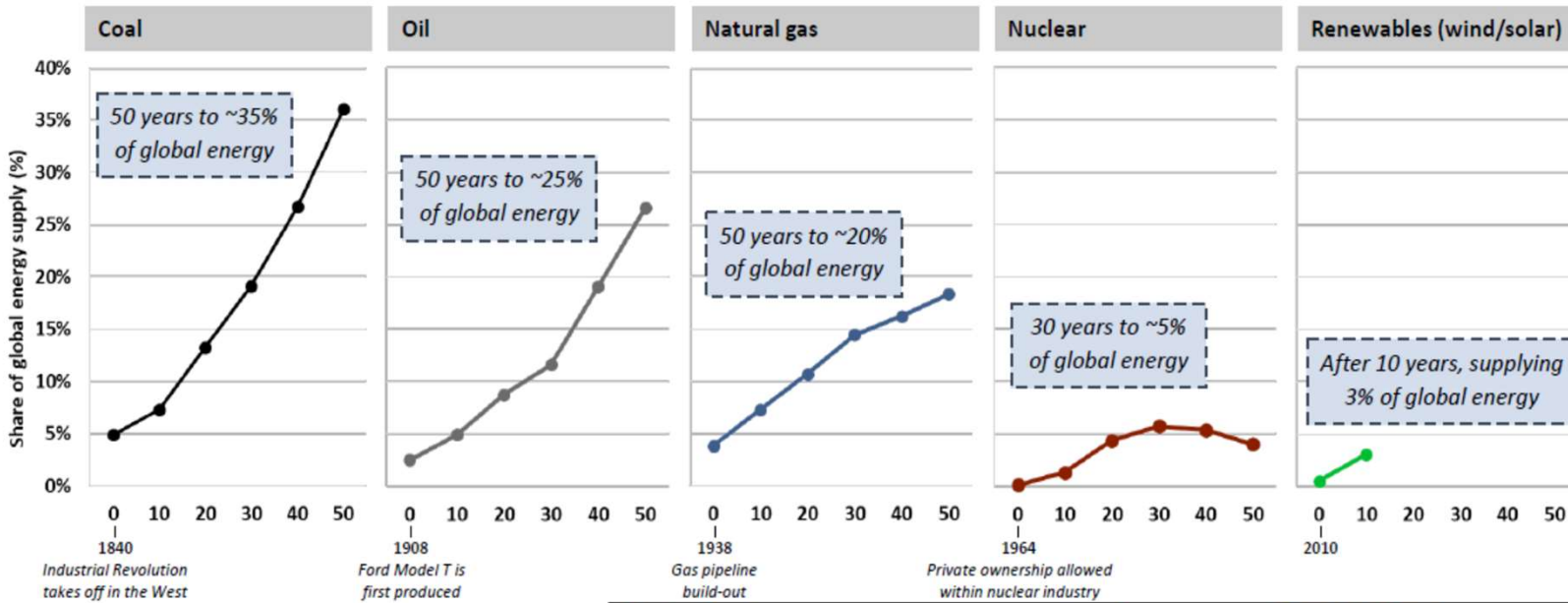
Source: The World Bank DataBank.

Note: Low income, Middle income and High income designations based on World Bank country classifications as of July 2020.



# Mankind has been in an Energy Transition since the Industrial Age

Share of global energy supply by energy source since initial adoption

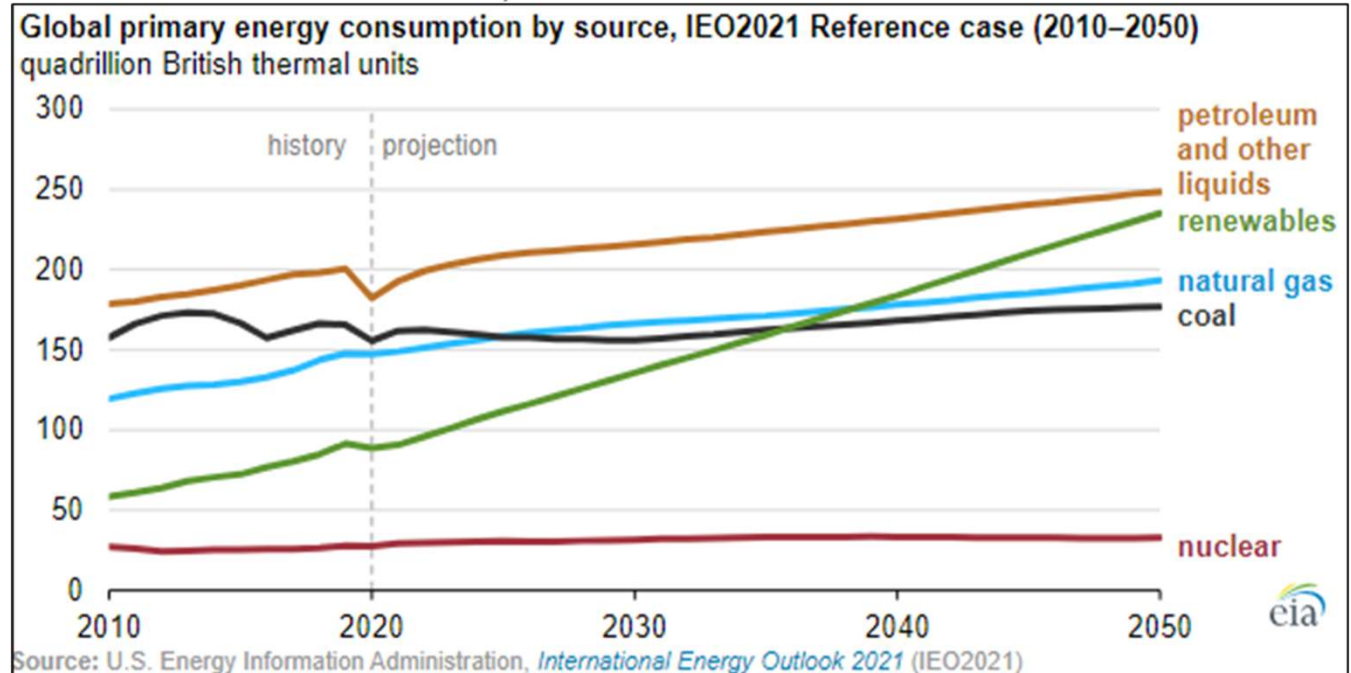


Each historical energy transition has taken longer than the one preceding it.

The SET may or may not proceed faster - in which case dependence on fossil fuels will be with us for decades.

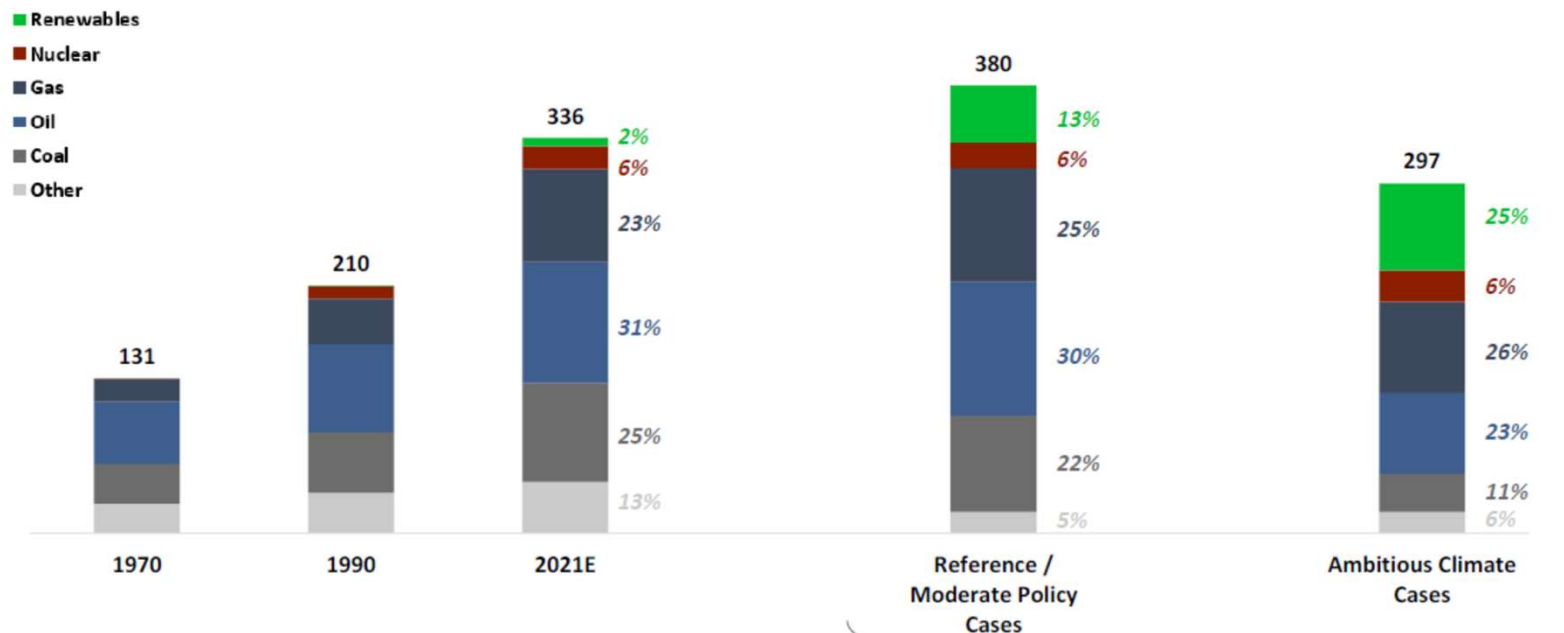
Renewables are increasing rapidly from a very low base driven by technology advancements and government subsidies.

Despite renewable growth, significant increases in oil and natural gas demand are expected for decades to come.



Source: U.S. Energy Information Administration, *International Energy Outlook 2021* (IEO2021)

# Most Forecasts Predict Oil will be Flat While Gas Demand Increases

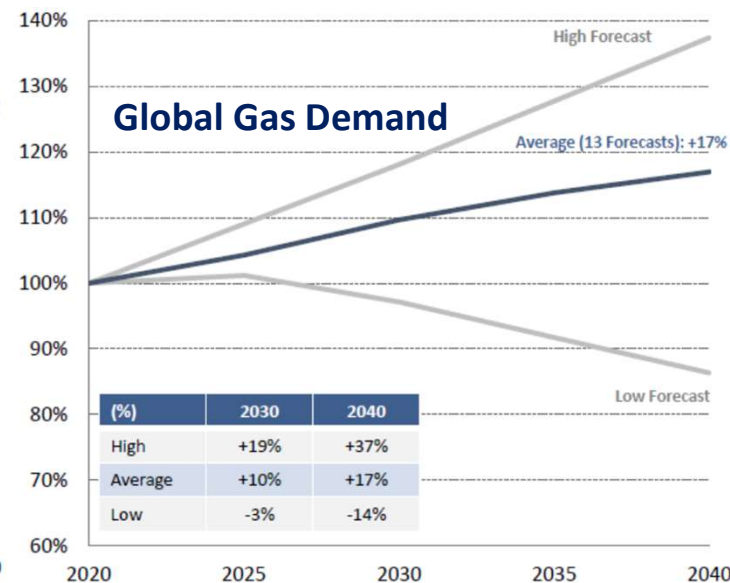
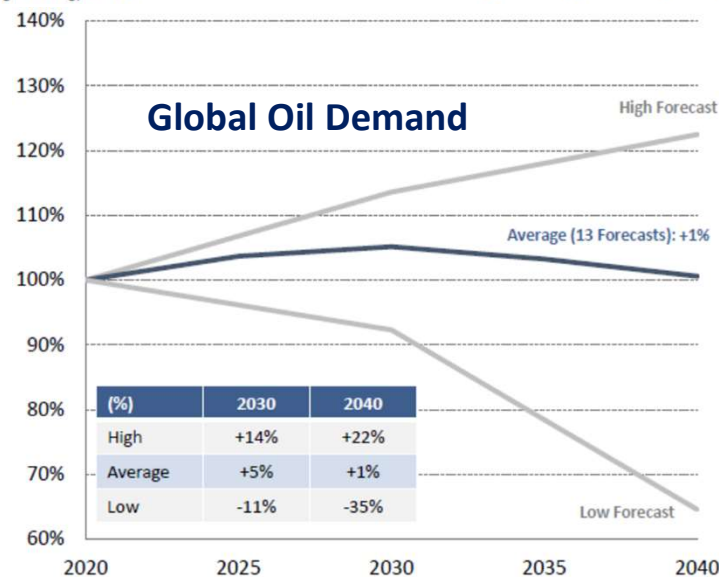


Oil demand remains flat while gas and renewables displace coal and other sources.

Note that the "Ambitious Climate Cases" forecast a 12% decrease in energy demand over 20 years...a very unlikely event with 25% growth in global population.

Source: Resources for the Future Global Energy Outlook, RBC Capital Markets.  
 (1) Energy consumption forecasts reflect average data from 13 different projection cases. Projection cases include 2020 BP (BAU), 2020 BP (Rapid Transition), 2020 Equinor (Reform), 2020 Equinor (Rebalance), 2020 Equinor (Rivalry), 2019 ExxonMobil, 2020 IEA (SDS), 2020 IEA (Stated Policies), 2020 OPEC, 2019 EIA, WoodMackenzie, Bloomberg New Energy Finance.

Average energy consumption forecasts in 2040 (1)

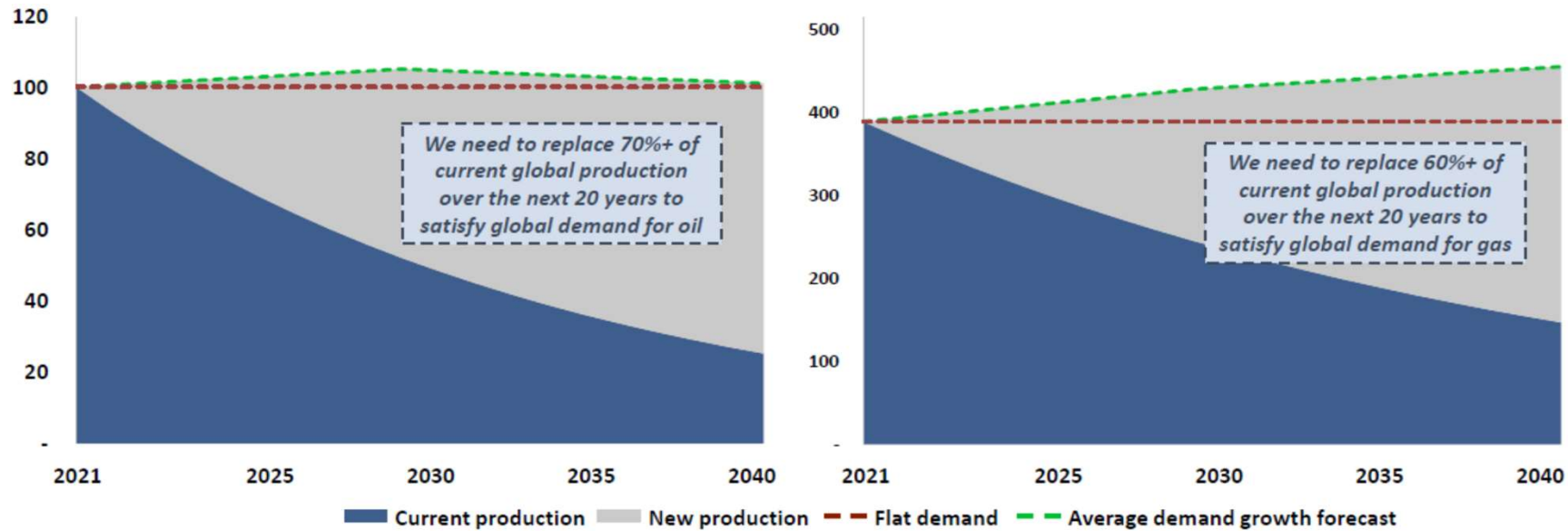


Average of 13 forecasts expect oil demand to remain flat over the next 20 years.

These same forecasts predict gas demand will increase over 17%.

Source: Resources for the Future Global Energy Outlook, RBC Capital Markets.  
 Note: Forecasts include 2020 BP (BAU), 2020 BP (Rapid Transition), 2020 Equinor (Reform), 2020 Equinor (Rebalance), 2020 Equinor (Rivalry), 2019 ExxonMobil, 2020 IEA (SDS), 2020 IEA (Stated Policies), 2019 IEEJ (Reference), 2020 OPEC, 2019 EIA, WoodMackenzie, Bloomberg New Energy Finance.

# Fossil Fuels are a Depleting Resource that Require Significant Capital to Maintain



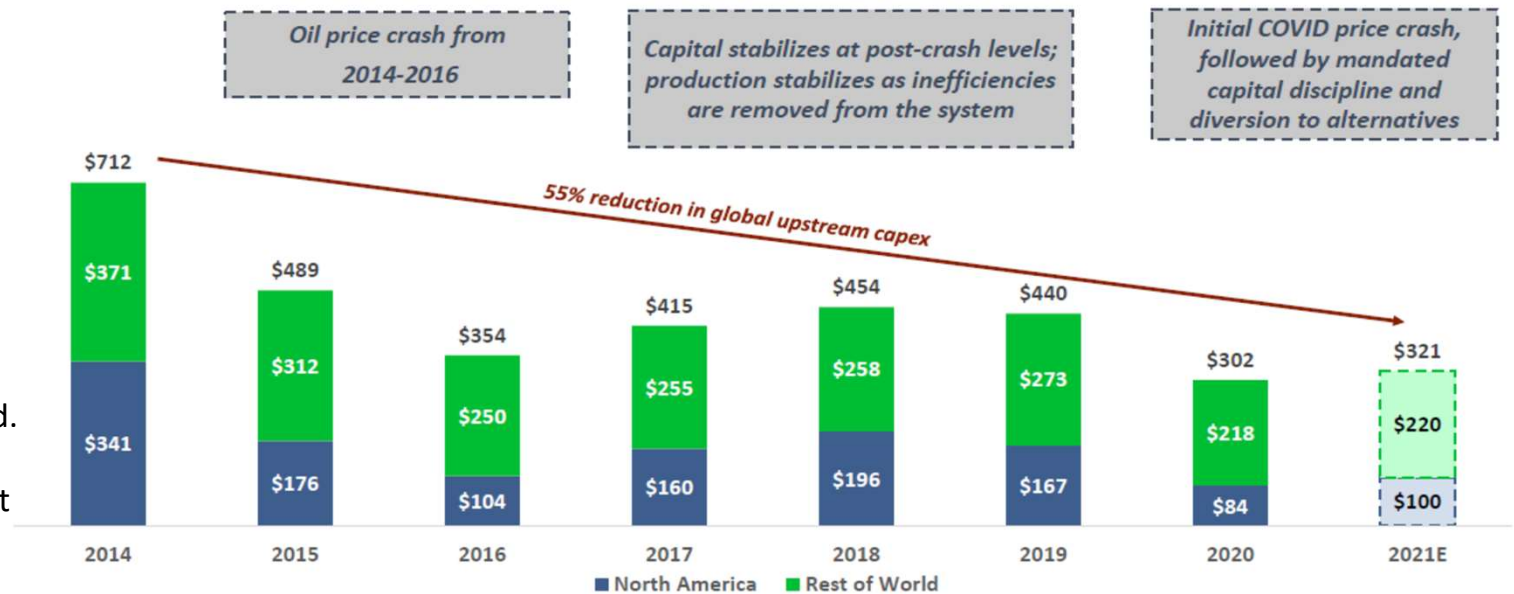
Energy demand will not remain flat with growing population and developing countries aspiring to a modern lifestyle

>\$11 trillion of capital will be required to replace current oil and gas production at projected demand needs over the next 20 years – flexibility afforded by short-cycle time projects (i.e., shale) will command premium value versus longer-lead time conventional and offshore projects

Source: ExxonMobil, Jefferies and IEA estimates.

Global upstream capital expenditures have been declining over the most recent extended down cycle.

Unless global upstream investment increases to arrest natural depletion, oil and gas supply will fall short of demand. Green advocates hope that renewables and EVs bridge that shortfall.



Source: IHS Markit.

# Energy/Upstream are an Attractive Opportunity in the Public Markets (pre-Ukraine)

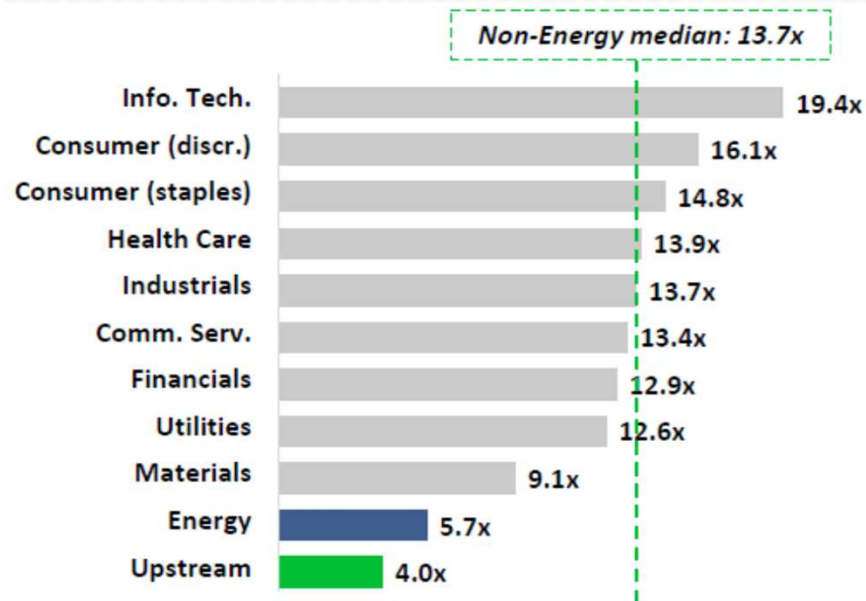
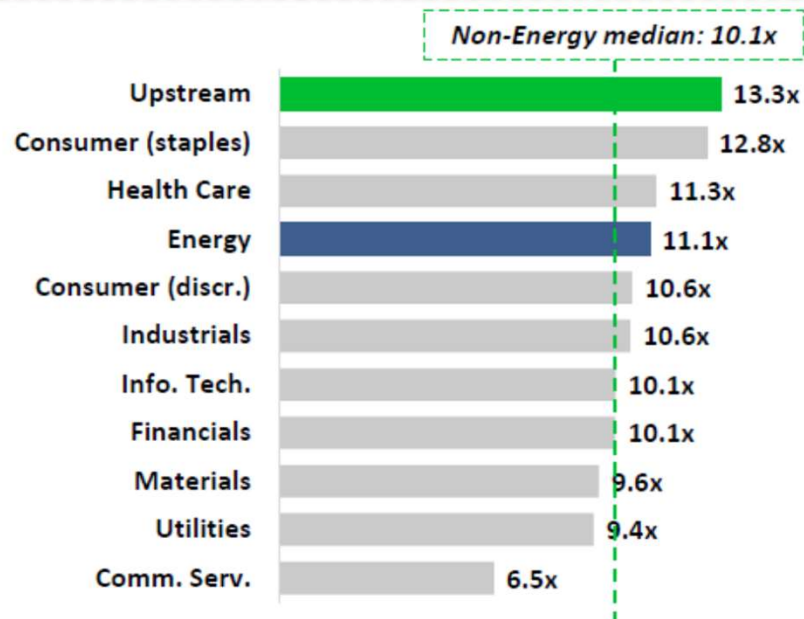
## S&P 1500 NTM EBITDA multiples

Upstream peak (April 2016) <sup>(1)</sup>

Current as of September 15, 2021

Upstream 3.2x greater than median

Upstream 9.7x lower than median



Source: Capital IQ.

Note: Sector groupings based on S&P Composite 1500 sector designations. Upstream reflects S&P Composite 1500 Oil & Gas Exploration & Production Sub-Industry.

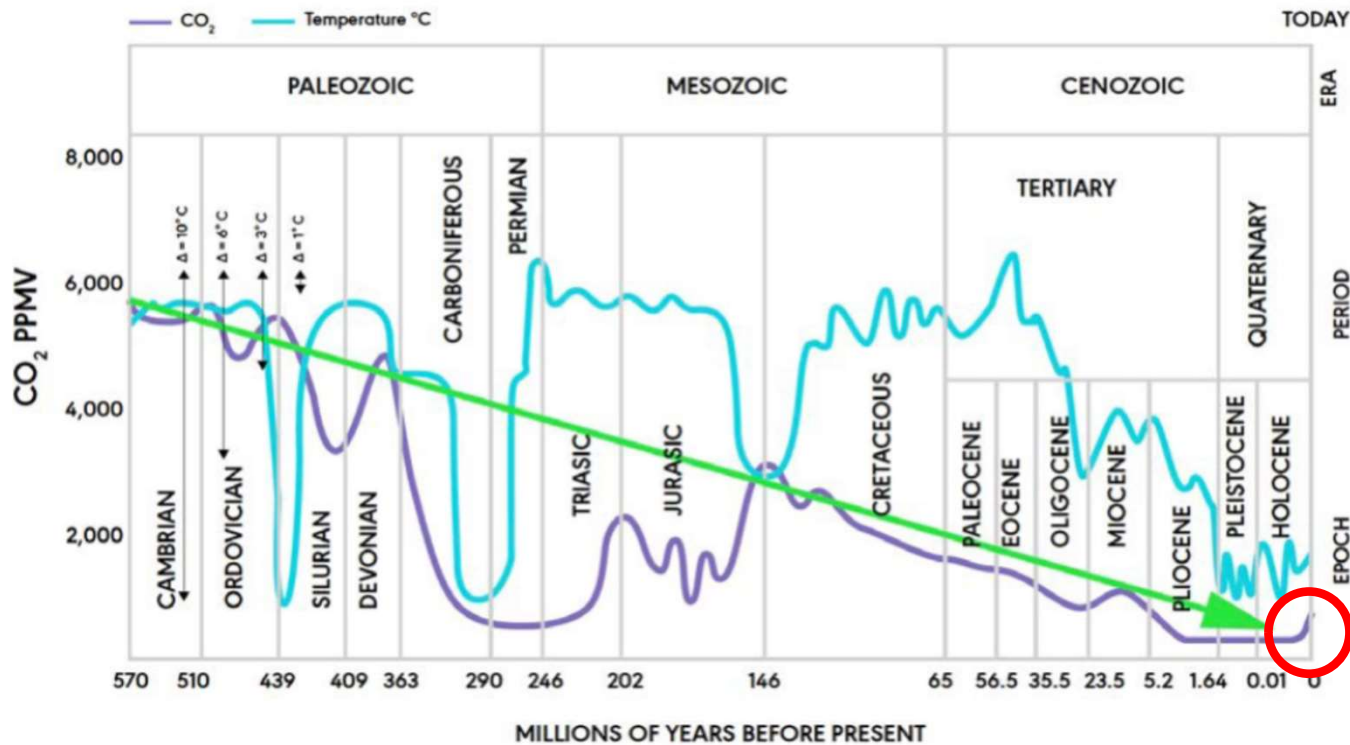
(1) Financials sector ratio analysis for historical periods based upon current sector constituents as reported by Capital IQ.

Pre-Russian oil embargo, the upstream sector was significantly undervalued relative to other sectors. Inflationary pressure historically has buoyed commodities including oil and gas, so that tailwind should propel upstream valuations higher. All but two OPEC members have been unable to meet their recently increased quotas, signaling that underinvestment/depletion has reduced their ability to meet global demand.

**The upstream sector will be an attractive investment opportunity for decades to come. The recent surge due to the Russian oil embargo will pass, but the world's demand for energy is expected to grow. For decades to come, fossil fuels must meet global demand until the transition to renewables has time to mature.**

# Demonization of CO2 and Fossil Fuels will ultimately be exposed

Geological Timescale: Concentration of CO<sub>2</sub> and Temperature Fluctuations



Does this look like an "existential crisis"?

- CO<sub>2</sub> is an invisible, odorless gas exhaled by every animal and person on the planet and is necessary for plant growth
- Current CO<sub>2</sub> concentration of 400 ppm is near historic low levels and the minimum to support life on earth
- Clouds (water vapor) account for ~90% of earth warming - clouds cannot be regulated, so CO<sub>2</sub> became the target
- Climate extremists believe a crisis is imminent because climate models predict temperature change within tenths of a degree in 50-100 years, but the same models cannot predict the temperature next week within a few degrees!
- No data exists that supports an increase in forest fires, hurricanes, droughts, or tornados in the 20th century due to rising CO<sub>2</sub> levels
- Globalists and politicians' lust for an invisible, unquantifiable cause to regulate and tax wealthy societies to increase their power and/or redistribute wealth. As long as "scientists" are paid large grants to study the "climate crisis", it is likely to remain a front-page issue.
- The planet does not have sufficient rare earth minerals to achieve half of the climate extremists' "Net Zero" fantasy
- Developing countries in "energy poverty" will continue to demand cheap plentiful energy to improve their quality of life, regardless of the impact on the earth's climate