Energy Infrastructure: We have previously discussed how low valuations have restrained capex. This month, we study the societal opposition that has also limited new projects. With rising volumes and limited new pipeline construction, does midstream deserve a "scarcity premium"? Maybe not, if you believe a GOP win in November could lead to a wave of new projects. Our study below shows that opposition to new infrastructure (aka "NIMBY") is bipartisan and economically rational. It is unlikely to change no matter who wins the election. NIMBY politics aren't going anywhere, so the energy infrastructure "scarcity premium" should persist.

Click here for our new midstream white paper, which explores midstream's excess (and growing) yield vs. fixed income.

Natural Resources: recent client conversations reflect incremental investor interest in the energy sector, for the first time in many years. With a constructive view toward commodity markets, many investors are focused on US Shale E&Ps. As we predicted in our Q1 2022 white paper, Energy Transition Twilight Becomes New Dawn for Shale, Shale is likely to continue to gain importance in the global oil markets. But will Shale valuations rise commensurately? If the 20-year-old example of high cost, short-cycle natural gas independent power producers (IPPs) is any guide, the short answer is "no".

Click here for our 2022 white paper on Shale's increased strategic importance in a time of ESG

December 2023 Performance Summary and Market Commentaries

Please find below performance and commentary for our strategies – MLP & Infrastructure and Natural Resources. Performance follows at the bottom of the commentary. For additional information, please contact us at (832) 241-6400 or info@recurrentadvisors.com.

MLP & Infrastructure

Performance review

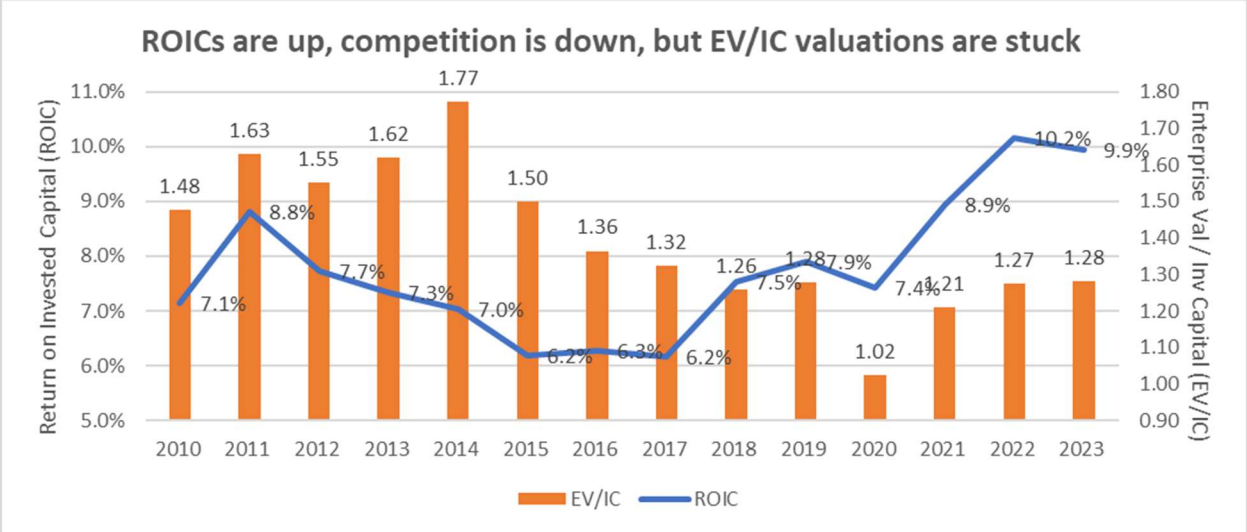
During the month of December 2023, the Recurrent MLP & Infrastructure Strategy generated net returns of -0.11%, outperforming the Alerian MLP Index's (AMZ) -2.17% return by +2.06%. Since the strategy's July 2017 inception, Recurrent's MLP & Infrastructure Strategy has outperformed the AMZ by +24.21% (+2.55% annualized), net of fees. Please see the performance section at bottom for more detail.

Midstream earnings and capital efficiency have been boosted by low capex… capex should stay low as it's nearly impossible to build new energy infrastructure

As noted in our recent white paper, midstream energy infrastructure is far from a dying or obsolescent industry, when viewed through an economic lens. Midstream has seen 5 years of robust earnings growth and improving returns on invested capital (ROIC). This improvement has undoubtedly been helped by the fact that the midstream industry has moved from "growth" to "cash flow harvesting," as we noted in our 2020 white paper, "The Virtues of Slower Growth."

Despite better growth than utilities or REITs, and improving ROICs, midstream enterprise values ("EVs") remain stuck at modest premiums vs. invested capital ("IC"). EV/IC valuations are also much lower than

pre-2015 levels, despite the fact that capital efficiency (measured by ROICs) is significantly higher than pre-2015 levels.



Source: Recurrent Advisors' research, Bloomberg, public filings.

This lack of valuation improvement is noteworthy for 2 reasons:

- **Higher Returns:** first, assets generating 10% unlevered returns (like midstream assets today) should be more valuable than assets generating 6% to 8% returns (as midstream assets did during 2010-2020), not less valuable. It is possible that growth expectations have fallen to offset this higher ROIC, but as we noted above, midstream earnings continue to grow robustly, and oil and gas production continues to climb.
- **Higher newbuild costs:** second, midstream assets have become harder (and more expensive) to build. The depreciated historical cost (reflected in IC) understates the current replacement value of pipeline assets. Opposition to new pipelines should widen the economic moat, and increase the value of existing pipes.

Could this second advantage disappear? In light of the approaching election, we've been asked by investors, **"could a Republican win in November trigger a wave of new pipeline construction?"** As we discuss below, we believe there are economic and demographic reasons that opposition to pipeline construction is secular, and unlikely to subside regardless of who wins in November. We are unlikely to see a surge in capex, and the "scarcity premium" for existing assets should continue to grow.

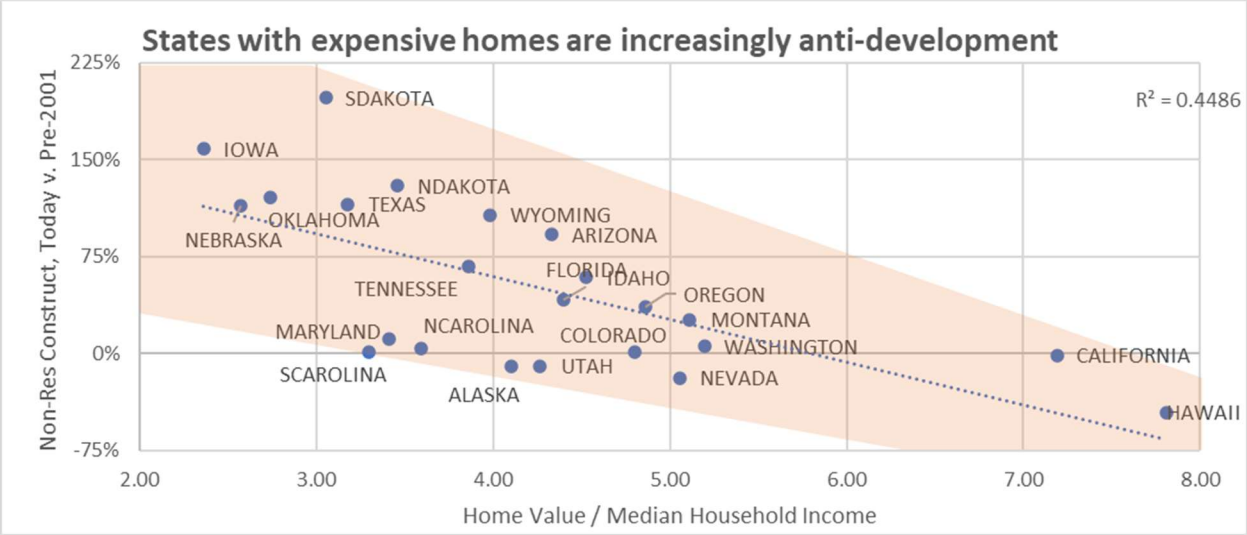
Americans living in high-growth states with expensive homes are increasingly opposed to ALL non-residential development

For over a decade, the anti-development ("NIMBY," or "not in my backyard") movement has galvanized opposition to pipelines (and other types of construction). It is often construed as a partisan, political, or even environmental movement. The reality is actually much simpler: it is rational risk-averse economic behavior.

As homes get more expensive (as a multiple of household income), homeowners are increasingly opposed to any new development which could adversely impact home prices. Unsurprisingly, NIMBY has emerged first in the least affordable states, primarily on the coasts. In the least affordable states, median home price = 5 to 10 years of median pretax household income – perhaps decades of after-tax

savings. In areas where homes are a huge piece of family net worth, opposition to non-residential construction has increased dramatically in the last 10-20 years. The irony, of course, is that opposing new construction all but guarantees future cost-of-living increases – insuring the future of the NIMBY movement.

Below, we see economic data across the 25 fastest-growing state economies. This is where development should be increasing to support GDP growth. Instead, non-residential construction activity has stagnated or even declined in areas where home owners simply have too much to lose (as reflected in high ratios of home value to median household income).

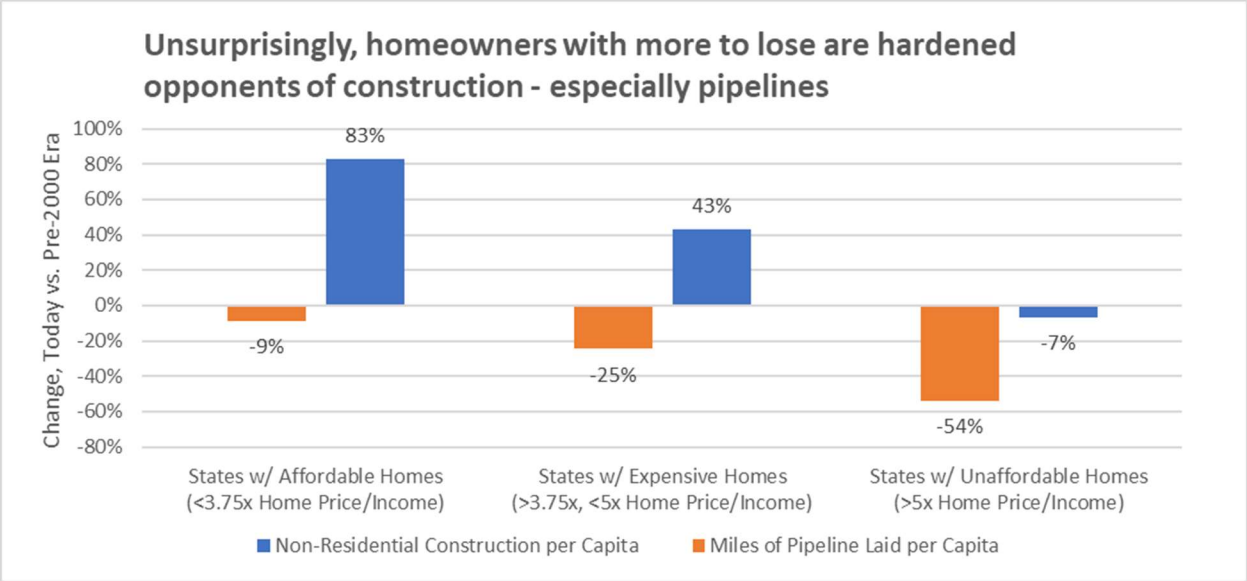


Source: Recurrent Advisors' research, Census Bureau, Zillow, US Bureau of Economic Analysis (BEA), Bloomberg, public filings.

While Americans are increasingly opposed to all construction near their home, pipelines have been met with even more resistance

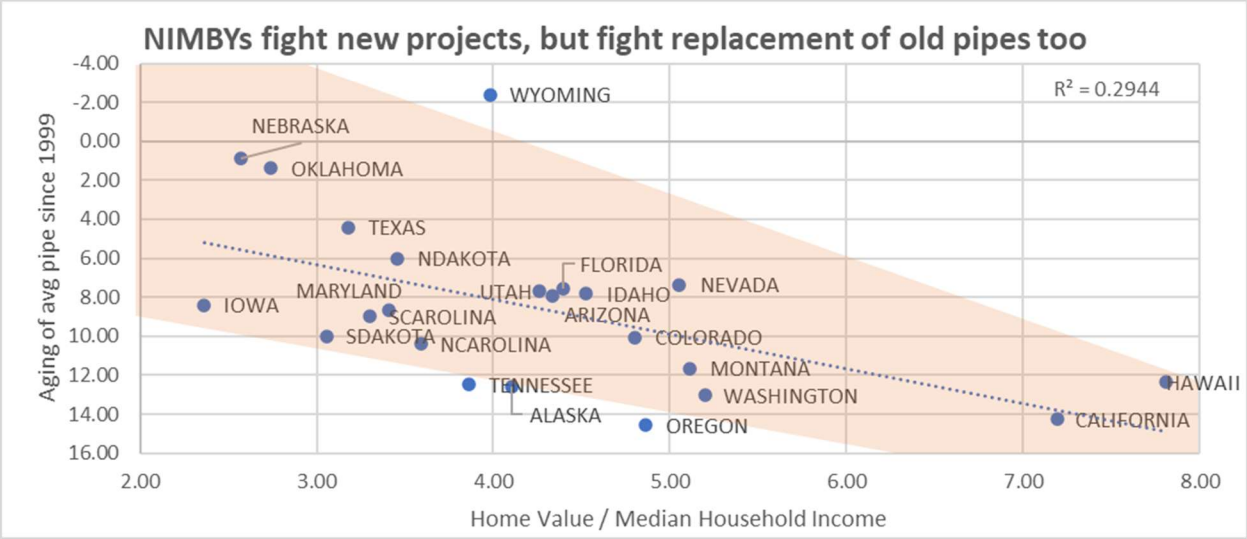
While homeowners are increasingly resistant to new development, pipelines have stood out as a category that has seen exceptional opposition. Pipes are arguably victims of their own success – often operated in silence, out of sight, at low cost to the consumer.

Again, we study the 25 states with the highest GDP growth – areas where we would expect demand for new development to remain elevated. We see that in more affordable areas (where NIMBYism is weaker or absent), non-residential construction is +83% since the late 1990s, and pipeline construction per capita has stayed consistent with levels of 20+ years ago. In less affordable areas (which are hotbeds of NIMBYism), non-residential construction is down slightly (-7%), despite strong GDP growth, and pipeline construction has declined dramatically (-54%) in the last 20+ years.



Source: BEA, PHMSA, Recurrent Advisors' research, Bloomberg, public filings.

In another illustration of the self-perpetuating nature of the NIMBY movement, the opposition to pipelines (including long-distance pipelines, as well as consumer-facing utility distribution lines) means that pipeline replacements are happening more slowly (or not at all) in high-cost jurisdictions. In a cruel irony, the NIMBY advocates who have spread the misinformation that pipelines are dangerous, are in fact, making pipelines more dangerous by preventing their timely replacement.



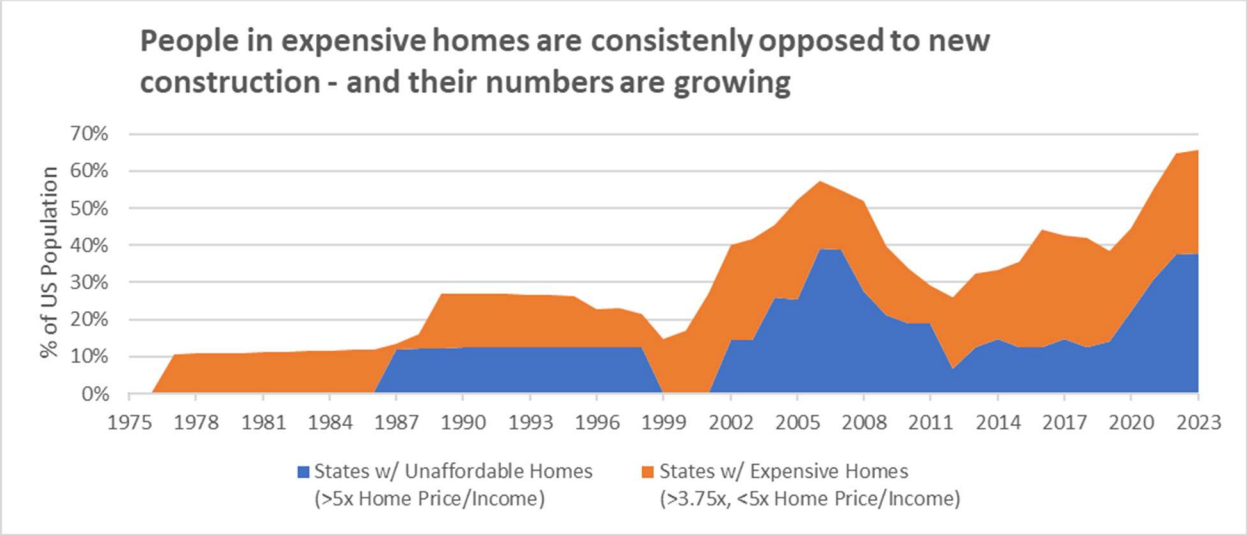
Source: Census Bureau, BEA, PHMSA, Recurrent Advisors' research, Bloomberg, public filings.

The rise of the NIMBY ("not in my backyard") movement will not die with one election – it is a reflection of long-term economic trends

It's reasonable to ask, "hasn't living on the beach always been expensive? Why did the NIMBY movement emerge now?" The answer is simple: homes have only recently become so expensive that any adverse development – an unsightly cellphone tower, a lower-end apartment, or ***gasp*** a pipeline right-of-way – could be perceived as having a life-changing impact on homeowners' net worth. Of course, the success of anti-infrastructure activism means that any special interest group now has a tried-

and-true playbook to drag once-streamlined environmental reviews into years of expensive review and endless goalpost-shifting.

A little over a decade ago, <10% of the US population lived in an unaffordable home (>5x price/income ratio) and 25% lived in expensive homes (>3.75x). Today, despite the highest mortgage rates in 15+ years, nearly **40%** of Americans live where the median home is unaffordable and **65%** live in states where the median home is >3.75 median household income. An increasing number of American homeowners view any development as a risk that could cause years – or decades – of after-tax income to evaporate.



Source: Recurrent Advisors' research, Bloomberg, public filings.

Opposition to new pipeline construction is likely to increase as long as home values increase – one likely result is that existing pipeline assets will become more valuable

While the future of pipeline approvals and construction is impossible to forecast, there is a strong argument that NIMBYism is likely to grow further, rather than shrink. In many mid-priced states (Texas, Georgia, Carolinas, Tennessee, Florida), population growth is being driven by cities where affordability is low and falling rapidly, and the newest arrivals paying up for homes in rapid-growth cities like Austin, Nashville, Tampa and Miami are unlikely to take a kind view of a pipeline being laid through their high-price neighborhood. In short, this economic reality makes us think that energy infrastructure assets are uniquely positioned to appreciate in value as pipeline demand increases, and society refuses to build.

Natural Resources

Performance Review

During the month of December 2023, the Alma Recurrent Global Natural Resources Fund rose +4.81% net of fees, outpacing the S&P Global Natural Resources Index's +3.81% return. For the entirety of 2023, the ARGNR rose +4.81% net of fees, outpacing the Index's +3.38% return. Since inception, the ARGNR has increased +8.87% on an annualized basis, net of fees, compared to the Index's +6.01% annualized return.

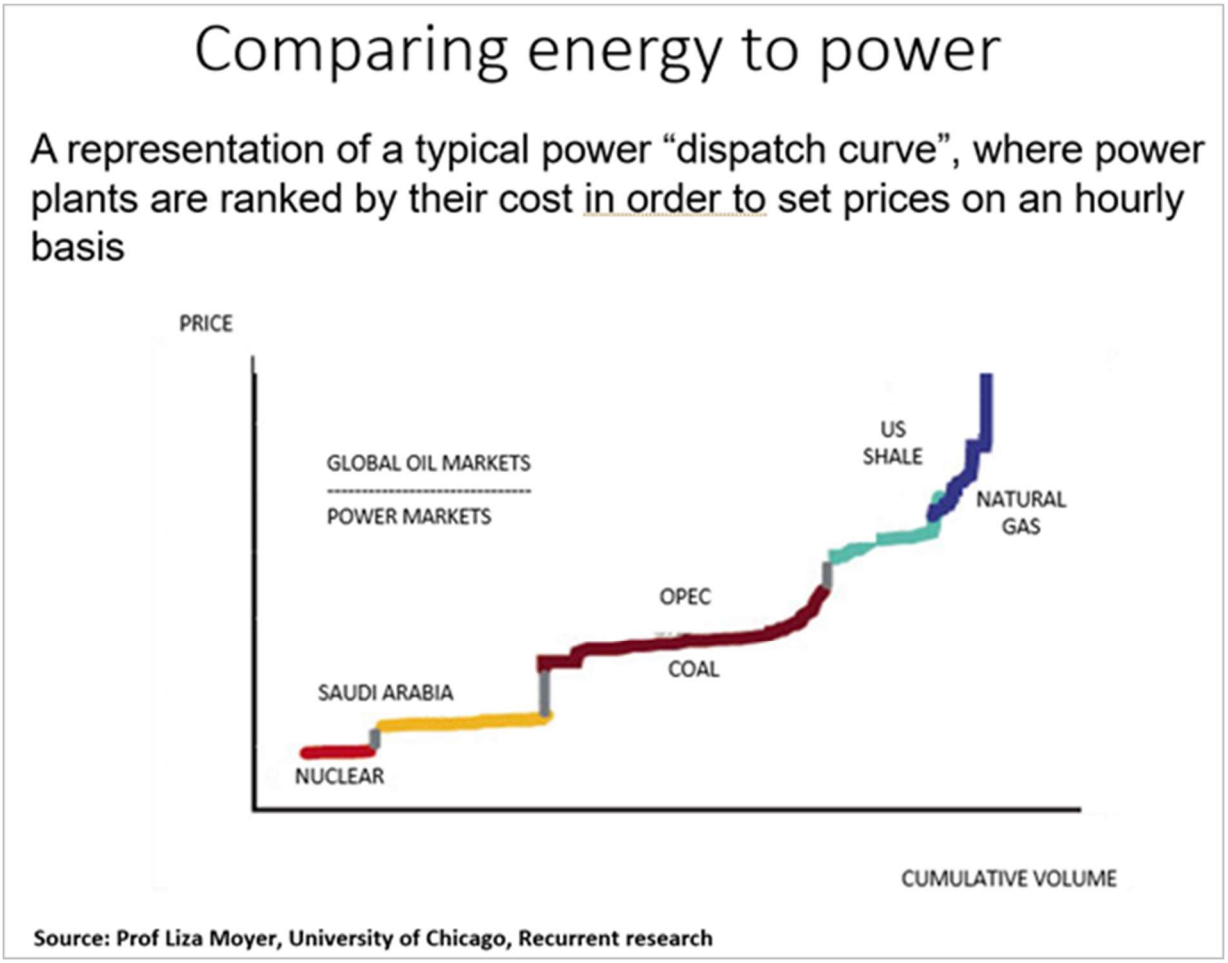
Investment Discussion

Since the beginning of oil shale production in the late 2000s, its unique production characteristics have changed the shape of global energy cycles, as we outlined in a white paper titled "The Changing Shape of Energy Cycles" nearly a decade ago. The high-cost, short-cycle production (i.e. quick to turn on and

steep production decline curves) plays a unique role in the oil market. It is the only type of production which can use free market principles to quickly balance global supply and demand.

While most global oil production consists of multi-decade projects, shale's ability to use market signals to quickly increase or decrease production is similar to the role natural gas power plants play in power markets, as seen in the chart below from our white paper.

In power markets, natural gas power plants represent the high-cost producer, which also turns off and on the most quickly. As a result, its role in power markets is twofold: to set the "clearing price", and to, in order of marginal cost, turn off and on in order to balance supply and demand on an hourly basis.



Source: Bloomberg, Recurrent analysis

The implications of shale's unique production characteristics are not only relevant for the present, but also the future of the oil market. As the potential for an energy transition causes concerns about long term oil demand, identifying which type of oil supply would surrender market share is critical for investors and companies alike.

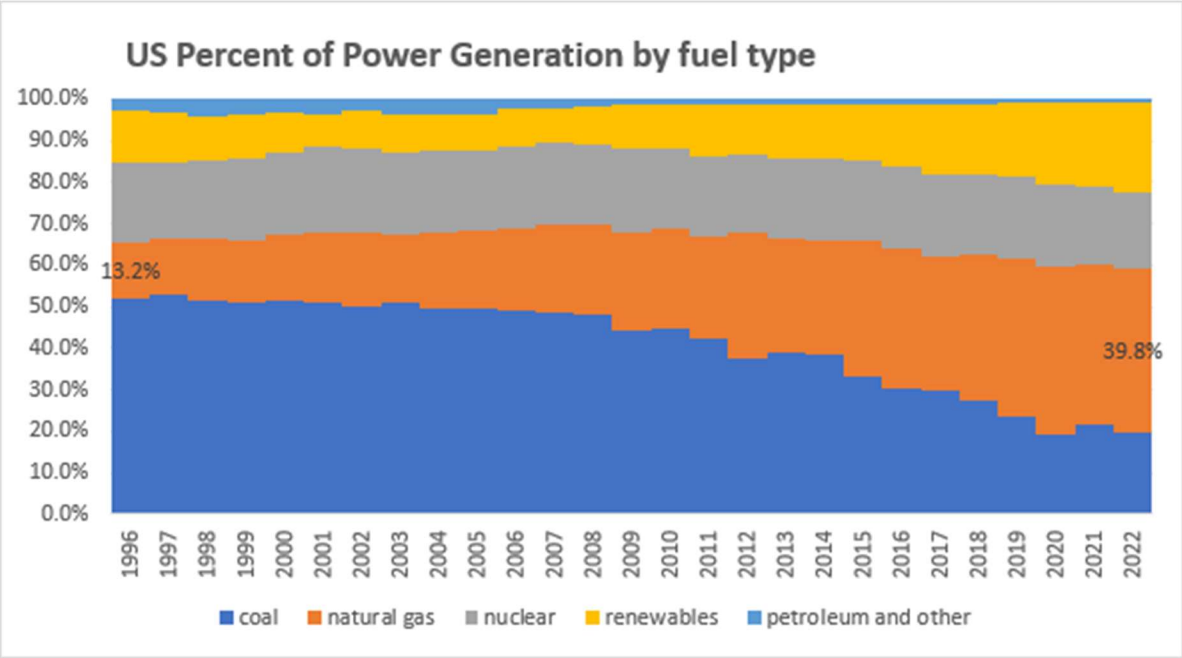
In the commonly held market construct, falling demand would generally be considered to most impact the highest cost type of oil production, i.e. shale. However, our 1Q 2022 white paper titled "Energy Transition Twilight Becomes New Dawn for Shale" highlights that in an energy transition scenario, cost is only one consideration to determine market share shifts. Importantly, "time to market" needs to similarly be considered. As a result, shale, as the only "short-cycle" type of production, will see its

importance to the oil market increase, rather than disproportionately decrease. The less the market is certain (whether those concerns are appropriate or not) about long term demand, the more the market will be willing to pay incrementally more in costs for the relative certainty of "duration". The value of shale to the oil market's operations increase, counter to our assessment of common market perception.

While shale's importance to the oil market increases, will the market value similarly increase?

Given our framing of the similarities between the shale in the global oil market to natural gas power producers the US power market, looking at the history of natural gas power producers could provide context for the potential for US shale oil producers.

Within the power market, natural gas fired power plants have consistently grown in market share as a percent of the total power market, as seen orange in the chart below. After comprising merely 13% of the power market in 1996, in 2022 natural gas power grew to approximately 40% of power produced.



Source: Bloomberg data, Recurrent Research

While the importance to the market clearly grew over the course of 25 years, the associated market value of the independent natural gas companies clearly grew, right? Unfortunately not.

As the marginal power producer, natural gas power plants earn very limited marginal profits, by definition. The optionality to turn off and on to earn small marginal profits has value, particularly to a large diversified company. Any marginal costs an individual plant earns can contribute to the greater whole, with little regard to amortizing "corporate overhead". However, as an independent power producer, there are additional costs which need to be overcome in order to remain consistently profitable, with enterprise value exceeding debt value to create equity value.

From an equity perspective, the case of natural gas power producers can provide some insight as to how the market might evolve for US shale producers. In the late 1990s and early 2000s, many independent power producers such as Dynegy, Calpine, Mirant, Reliant, NRG, and Edison Mission Energy gained in market relevance, growing as power markets strengthened and then falling to bankruptcy through the course of the 2000s and early 2010s.

The charts below show the share prices of Dynegy and Calpine, companies which peaked at market capitalizations of more than $18 Bln and $17 Bln, respectively, before filing bankruptcy a few years later.

Dynegy Stock History

Source: Bloomberg data, Recurrent Research

Calpine Stock History

Source: Bloomberg data, Recurrent Research

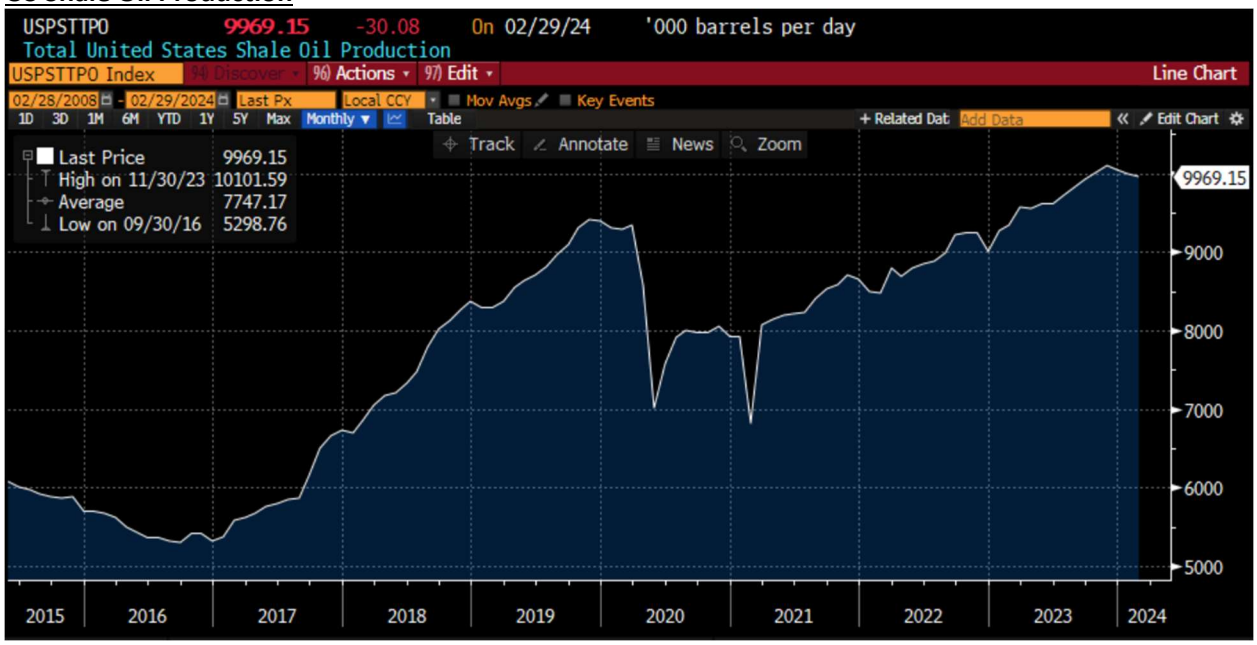
As was commonly the case for independent public companies, the weight of onerous costs left limited cushion for operational weakness, causing punitive equity value destruction.

In the case of other companies, such as Reliant and Mirant, the companies merged in 2010 to form GenOn, providing greater scale which further amortized non-COGS operating costs. The company endured for only two more years before being acquired by NRG in 2012.

It is important to note that the majority of public IPPs owned high-cost marginal power plants – either natural gas or high cost coal – which did not generate substantive through-the-cycle profitability. While NRG owned similarly disadvantaged plants, its ownership of a nuclear power plant which generated significant operating profits and helped sustain the company through cycles.

In sum, as we've outlined in white papers for nearly a decade, the attributes of natural gas power plants and shale oil are similar in their respective markets. As high-cost producers in markets which earn limited marginal profits, remaining an independent producer offers limited equity value. The role of shale oil remains ever-important to the global oil market. Production continues to grow, especially when considered in the context of a relatively flat demand environment since the beginning of COVID. But many investors are mixing operational strength with increased equity value.

US Shale Oil Production



Source: Bloomberg data, Recurrent Research

In the case of natural gas independent power producers, operational strength did not correlate to strong investment returns. In fact, in today's S&P 500, the IPP category only includes one company. While many more shale oil companies exist today than in the heyday of IPPs, the trend of weakening equity value looms large. Recent merger activity highlights the growing realization of Shale's standalone valuation challenges, as Shale's absorption into larger diversified businesses is mirrored in the early 2000s M&A boom, which effectively saw IPPs subsumed into integrated utility business models.

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