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PRIVATE CAPITAL INVESTMENTS IN NORTH AMERICAN ENERGY INFRASTRUCTURE:

AN EVOLVING MARKET LANDSCAPE

SEPTEMBER 2014

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Introduction

Context for writing this report

The North American energy sector has undergone significant changes over the last decade, reshaping the sources and uses of North American energy and driving investment in both new and existing infrastructure. Many institutional investors (or "LPs") have recognized the opportunity created by the change and are committing substantial capital to energy infrastructure (the "Sector") frequently through private, closed end vehicles ("GPs"). The investing landscape itself looks significantly different than it did 5 to 10 years ago as the nature of deals has changed and the amount and sources of capital have dramatically increased. The pace of change is only accelerating as deals continue to take on more complexity, LPs continue allocating capital to the sector and the infrastructure GPs evolve to take advantage of the fluid opportunity set.

Recent conversations with LPs confirm the inherent challenges in targeting this Sector; while LPs seek to increase their allocations, they are confronted with a large number of discrete offerings in an asset class characterized by a lack of robust data on realized returns. The purpose of this report is to provide LPs with an overview of the landscape and insights into how GPs are evolving their strategies together with a perspective on the predictors of successful performance.

In preparing this report we have leaned on our extensive institutional experience working in the energy sector, as well as our work with a broad range of funds and investors. We have supplemented this base of experience with over 30 conversations with thought leading LPs currently active in the sector.

On a final note, we have included an appendix to this report with a Glossary of terms. Where possible we have defined terms in the body of the text but have included the appendix as a reference for the reader.

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Executive Summary

Recent advances in production technologies have unlocked previously untapped energy sources of immense scale, fundamentally changing the North American Energy landscape and driving demand for new infrastructure across the energy value chain. According to the most recent available data, energy infrastructure spending in North America totaled $270 billion in 2012, representing ~40% of total infrastructure spending. The outlook for future spending is robust driven by the ongoing evolution of sources of energy, the continued existence of bottlenecks between the sources of supply and demand and an emerging wave of downstream development centered around LNG and petrochemical development.

This demand for capital combined with attractive historic returns and growing investor appetite for yield have increased the amount of capital and the number of GPs participating in energy infrastructure. At the same time, there has also been a change in the nature of investments: Today's typical infrastructure deals incorporate far more development and deal complexity than their predecessors. More "traditional" infrastructure assets are now harder to come by because of increased competition as well as a reduced willingness of counterparties to sign long term fixed volume/price contracts.

In response, the infrastructure GP landscape has evolved: At the highest level, we see funds becoming increasingly specialized and more active in driving performance after the initial acquisition. We perceive three broad segments of energy infrastructure GPs in the market today:

- **Core Infrastructure**: Traditional infrastructure investors, including large institutional investors who historically looked for large profile, stable projects to hold in their portfolios for an extended period
- **Sector Specialist**: Investors who concentrate on specific subsectors of the energy industry who seek higher returns primarily by identifying growth or arbitrage opportunities
- **Hybrid**: Investors who seek higher returns primarily by identifying growth, arbitrage and value opportunities, buying assets with more operating/development elements in multiple segments of the energy value chain

The three GP segments are growing but specialist and hybrid models are outpacing the industry as funds look for angles to better de-risk and unlock the upside in increasingly complex transactions. While many GPs have immature track records, it appears many hybrid and specialist funds are delivering returns equal, or in many cases, better than core/traditional funds. However, broad strategic choices in investing are no predicator of future GP success. We believe the most successful GPs will clearly articulate their "sweet spot" - the subset of opportunities where they are best positioned to realize target returns - and focus their organization around the associated success factors. This discipline and focus is particularly important given the rapidly evolving dynamics and the multitude of opportunities available to GPs.

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The challenge for LPs evaluating the energy infrastructure sector is significant. Many LPs we interviewed are seeking exposure across multiple segments of the energy and infrastructure sectors and are looking for returns in excess of traditional or core infrastructure. At the same time, their investable universe is rapidly evolving and presents a myriad of increasingly specialized offerings many of which have little track record with which to evaluate performance. Ultimately, LPs will need to collect what data they can on performance and evaluate the fit of the GP's strategy and business model within the evolving landscape. There will continue to be a premium on GPs who have established track records and can identify clear and differentiated strategies linked to the market opportunity together with a clear "sweet spot" that can be applied in the evolving landscape.

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Setting the Market Context

1.1 Infrastructure Backdrop

Infrastructure has traditionally been defined by investors as yield-driven, real asset investments with a long ownership period. These fixed asset investments typically have stable, predictable cash flows from inflation-protected revenue streams (e.g., toll roads, water treatment facilities). Investors are attracted to these types of assets because most projects generate steady cash flows through contracts, user fees or government payments. Because these cash flows are often inflation-adjusted, these investments are seen by investors as an inflation hedge. The investments are often relatively recession resistant, as communities will always need a baseload of water, power, transportation, and energy.

1.2 Energy Infrastructure

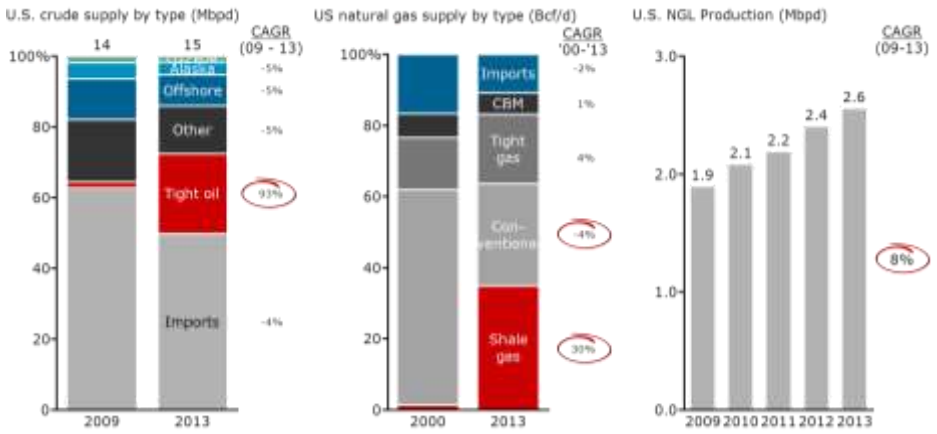
Energy Infrastructure is a sub-set of traditional infrastructure that shares many of its characteristics (e.g., hard assets, high barriers to entry, inflation protected). The North America energy infrastructure sector typically includes assets that enable the underlying flow of energy from where it is produced to where it is ultimately consumed. For the purposes of this paper, the Sector covers the following:

1. **Midstream**: Gathering, processing, transportation and storage of natural gas, crude oil, condensates, natural gas liquids and refined products
2. **Power**: Generation (renewables and fossil fuel); transmission and distribution (including substations) of electricity

1.3 Market Changes in Midstream

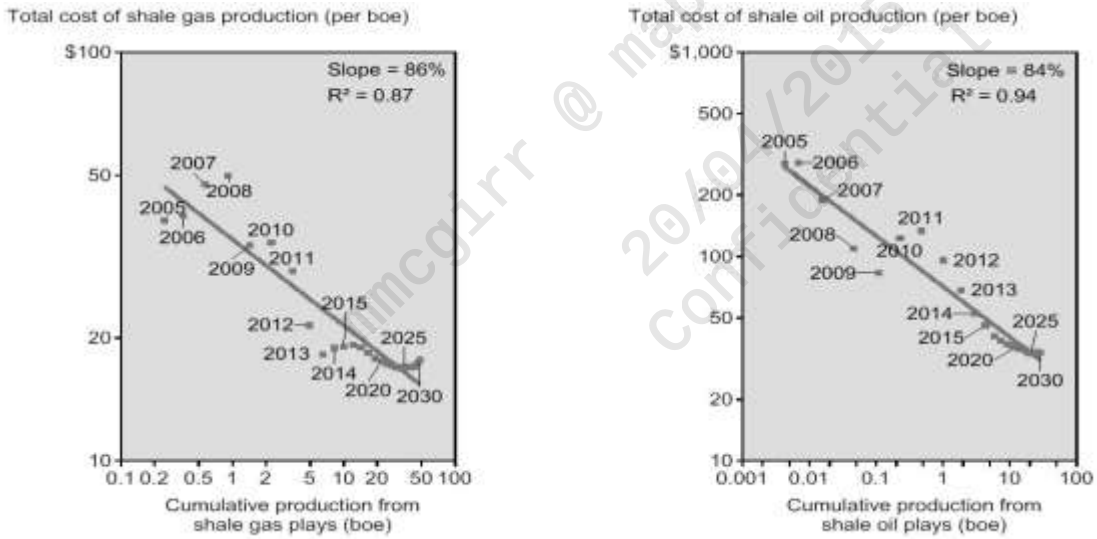
Ten years ago industry news headlines focused on American dependence on foreign oil and the looming shortfall in natural gas. Shale gas and tight oil were barely on the radar for many energy firms. In the period since, the growth and adoption of new production technologies has led to a dramatic increase in North American supplies of oil, gas and natural gas liquids (NGLs). According to the EIA, daily domestic production of natural gas and oil has grown by ~30% since 2000. By 2013, shale gas accounted for more than 25% of the natural gas supply in the US, while tight oil was by far the fastest growing source of oil supply. The rapid growth in domestic production of oil and natural gas has led the EIA to estimate that the US will overtake Saudi Arabia to become the world's largest oil producer by 2020 (see Figure 1).

Figure 1: Supply Shock to Oil, Gas, & NGL Markets
Source: Deutsche Bank; Bentek; Wood Mackenzie; CAPP; Calgary Herald



As shale and tight oil plays evolve, the average cost to produce has continued to decrease. Analysis of reported costs shows substantial experience curve benefits that suggest that with every doubling of cumulative production, costs decline by ~15% (see Figure 2).

Figure 2: Industry Experience Curves for Shale Gas and Oil
Source: Rystad; Bain Analysis



Continued innovation is expected to unlock additional sources of supply and drive additional growth in supply (as an example, by 2025, shale gas is expected to account for 50% of natural gas supply, roughly double current levels). Basins such as the Bakken, Marcellus and Permian as well as targeted shale plays in Canada such as the Montney and Duverany are forecast to expand significantly while new plays are emerging. In addition, the Canadian oil sands are poised to continue to develop, displacing foreign imports of heavy oil. Recent shifts towards reforming the energy market in Mexico can not only provide additional outlets for new US natural gas but also bring additional hydrocarbon supplies into the market.

The abundance of low cost gas, natural gas liquids and, more recently, oil has also created new sources of domestic demand. The availability of low cost natural gas has increased the comparative attractiveness of gas as a fuel for power generation, displacing coal as a source of base load power in many markets. At the same time, the US is experiencing renewed investment in domestic petrochemical processing taking advantage of the abundant natural gas liquids produced alongside gas and oil. Investment will continue to flow downstream as the energy industry looks to close the gap between US and world energy prices. Tudor Pickering, Holt has valued this gap at $200 billion, which is creating significant interest in finding energy infrastructure investments that can increase market flows.

The rise of domestic production is beginning to see an increase in export demand. As domestic production has increased, we have seen a dramatic decrease in imports of both crude oil and natural gas. Instead of building facilities to import liquefied gas, North America is now building facilities to export LNG to Asia, with IHS expecting North American LNG exports to grow to 7.3bcf/day by 2021. Pipeline capacity to Mexico is being constructed in the US with Mexico's ongoing reforms providing a dynamically evolving outlook for future exports. Further, US refineries are exporting record levels of refined products given the availability of cheap feedstock. Recently, the US approved the export of lightly refined products, breaking a four decade long ban, and there is now an active debate about the merits of exporting crude oil.

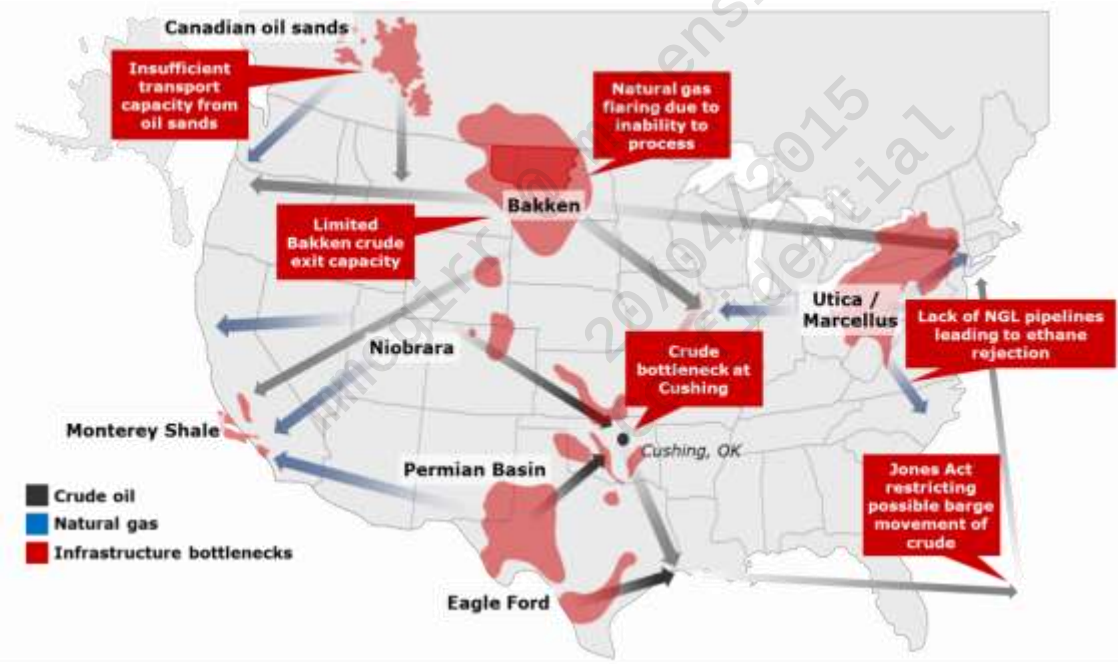
New sources of oil and gas supply and demand have created need for new midstream infrastructure. As of 2005, the dawn of the shale gas revolution, the installed base of midstream pipelines in the US was designed to serve established supply and demand routes. New sources of oil and natural gas supplies are being unlocked in locations without sufficient transportation infrastructure to move those hydrocarbons to end markets. For example, the Marcellus, while located near dense population centers on the US northeast coast, is a thousand miles removed from the epicenter of traditional gas gathering, processing and even transport. Unlocking this growth requires a significant retooling of existing infrastructure and the construction of entirely new paths to market. A portion of this need can and will be addressed by reversals of existing pipelines, but new infrastructure (e.g., processing facilities, lateral lines and even transmission) will also be required to unlock the full potential of the resources.

The change in mix of underlying energy resources exacerbates the need for additional infrastructure in downstream markets as well: For example, tight oil is lighter than conventional feedstock used by US refineries, requiring extensive infrastructure investment to properly blend crudes prior to refining them. Moreover, much of the new natural gas is liquids rich, requiring processing near the field and other infrastructure to segregate and capture the value of the natural gas liquids (NGLs) such as ethane, propane and butane. These seemingly subtle differences have added significantly to the overall complexity of the midstream solution and ultimately the need for investment.

Going forward, demand for midstream infrastructure will continue to be robust. Despite investments to-date, we see continued strong demand for midstream infrastructure investment fueled by three factors:

1. **Substantial bottlenecks still exist** at the basin and regional level, which will require field-to-hub and hub-to-hub midstream solutions to address (see Figure 3).
2. **New sources of supply continue to be unlocked in new locations -** Newer basins like the Eagle Ford in Texas and the Montney and Duvernay in Canada are undergoing rapid development and US offshore production has rebounded. These new, burgeoning sources are frequently isolated and need new infrastructure to connect to existing systems.
3. **New sources of demand are expected to continue to drive further investments.** Increased power generation and industrial demand for gas require the construction of additional midstream connection points. Investments in infrastructure will also be needed in downstream markets. Existing and new refining capacity requires new levels of connections to evolving supply sources. Petrochemical, LNG and other exports (including gas to Mexico) will require additional infrastructure to facilitate reliable flows of product.

Figure 3: Bottlenecks Driving Demand for New North American Midstream Infrastructure
Source: HPDI, Texas RRC, North Dakota Department of Mineral Resources, EIA, Bentek Consulting, National Petroleum Council



A diverse set of infrastructure assets is required to serve these new and growing needs. To ensure that energy resources have secure and economically viable paths to market, new pipelines need to be constructed, existing pipelines need to be updated and repurposed, storage and terminaling must be built out and logistics must be improved (e.g., trucks, gathering, storage). Despite the considerable investment made to date to address the impact of the shale gas and tight oil revolution, more remains to be done particularly given the ramp up of the new sources of downstream demand (petrochemicals, LNG and other exports).

1.4 Market Changes in Power

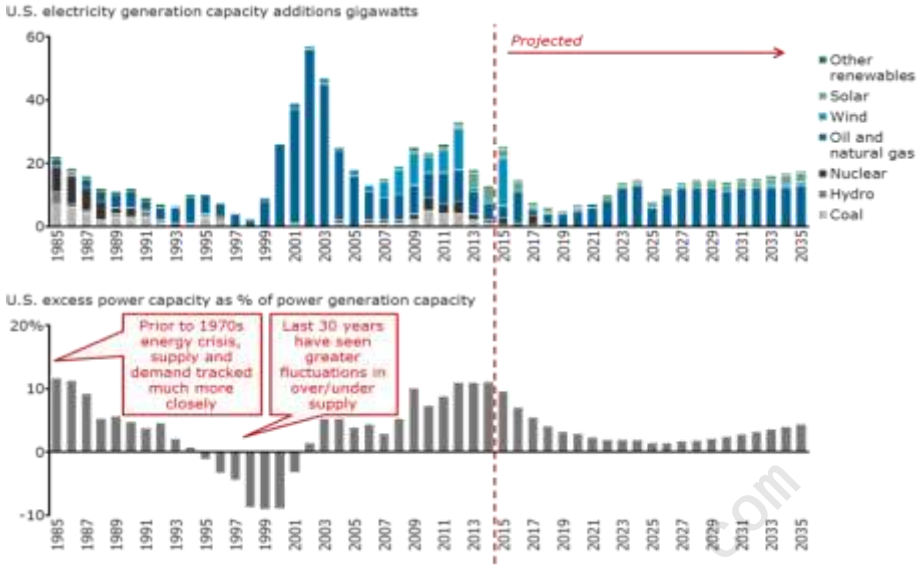
The North American power market continues to evolve. The North American power landscape has changed significantly in the last decade. Prior to the 2008-09 recession, the energy market focused on the construction of additional generation and transmission capacity to meet growing demand for power, and coal represented ~45% of North American electricity generation. The addition of new generation capacity, coupled with demand destruction driven by economic recession and efficiency gains, substantially altered the picture. Most North American markets now enjoy robust reserves and have limited need for scale capacity additions. However, this masks the underlying switch in the generation mix, as abundant new supplies of cheap natural gas have made gas more economic than coal in many markets and unlocked a substantial evolution in the base of North American power generation. The economic argument is exacerbated by environmental regulation: Coal has faced successive waves of regulatory pressure, culminating with the passage of MATS (Mercury and Air Toxins Standards), which becomes effective in 2015. Additional greenhouse gas emission regulations, including the recent Clean Power Plan, are also expected to further impact the market by the end of the decade. At the same time, the initial boost in renewables development driven by federal subsidies has turned into headwind as its profitability became less certain with overall lower energy prices.

1.4.1 Generation

Power demand remains relatively stable, but shifts in feedstock and local market disruptions create opportunity in generation. The overall generation picture is shaped by the intersection of demand/supply balance and the economics of supply sources. At a macro level, the US market continues to enjoy adequate capacity reserves driven by the new generation capacity that was built in anticipation of demand growth prior to the 2008-9 recession. Aggregate demand is unlikely to recover quickly in the near-term due to a combination of demand side management, technological improvements in energy efficiency, continued attention to conservation and tepid economic growth. However, by the end of this decade, markets are projected to tighten up sparking more significant capacity additions across North America. See Figure 4.

Gas price dislocation and environmental regulations are driving a shift toward gas fired generation plants. Gas now enjoys significant advantages over coal generation in many North American power markets. In addition to a significant pricing advantage, gas has lower emissions including CO_2, lower capital costs, quicker construction and commissioning timeframes and is more modular. EPA regulation and more stringent emissions standards are also driving a continued shift away from coal by raising the cost of compliance and rendering many smaller, older coal plants uneconomical. Across all US coal plants, ~120GW of capacity is at risk of retirement from regulation (MATS and greenhouse gas regulation). Longer-term, the need for new generation capacity additions will be filled primarily by the construction of natural gas-fired plants.

Figure 4: Overcapacity in Power Generation[1]
Source: EIA



The picture for future renewables build out is currently unclear, driven by regulatory uncertainty. Because the underlying economics of renewables remain less attractive than gas fired generation, the outlook for additional capacity additions depends heavily on government action. While the early 2000s saw significant support for renewables and a wave of building, recent uncertainty around the level of continued government support for renewables has led to a dramatic drop off in the amount of proposed new generation. Until there is more certainty about the future of regulation, the outlook will remain market specific.

Generation is by nature a local product. Because the US consists of discrete regional energy markets, with each market having its own dynamics, the relatively benign macro picture masks local turbulence and opportunity. Figure 5 below shows the US Energy markets and highlights IHS' estimates of when each regional market is likely to require additional capacity. Even this view underestimates the true opportunity as markets such as PJM are heavily dependent on older coal plants that will be retired in response to MATS and replaced by new capacity. Similarly, isolated clusters of demand (such as the New York City metro area) remain underserved by modern, low cost generation. Going forward, we believe opportunities for new power generation funded by private capital will continue but will be highly market specific.

[1] Excess power capacity = generation capacity – electricity sales

Figure 5: Market Definitions and new capacity timing (Figures in parenthesis represent the year in which the regional reserve margin is projected to fall below target levels)
Source: IHS

1.4.2 Transmission

Investment in transmission projects will continue, but likely at a lower rate than in recent years. Transmission capital spend has historically demonstrated relatively slow growth masking periods of significant investment. The current spending cycle is winding down as existing projects are completed. Absent a significant wave of renewable or a wholesale replacement of aging infrastructure, it is difficult to see another significant boost in transmission spending. Evidence suggests the former is heavily dependent on government policy, while the latter has been undertaken at a measured pace.

Absent a material increase in funding requirements, it is unclear what role private capital will play in this market. As a result, this is unlikely to be an area of material opportunity for the average LP going forward.

Evolving Investment Opportunities

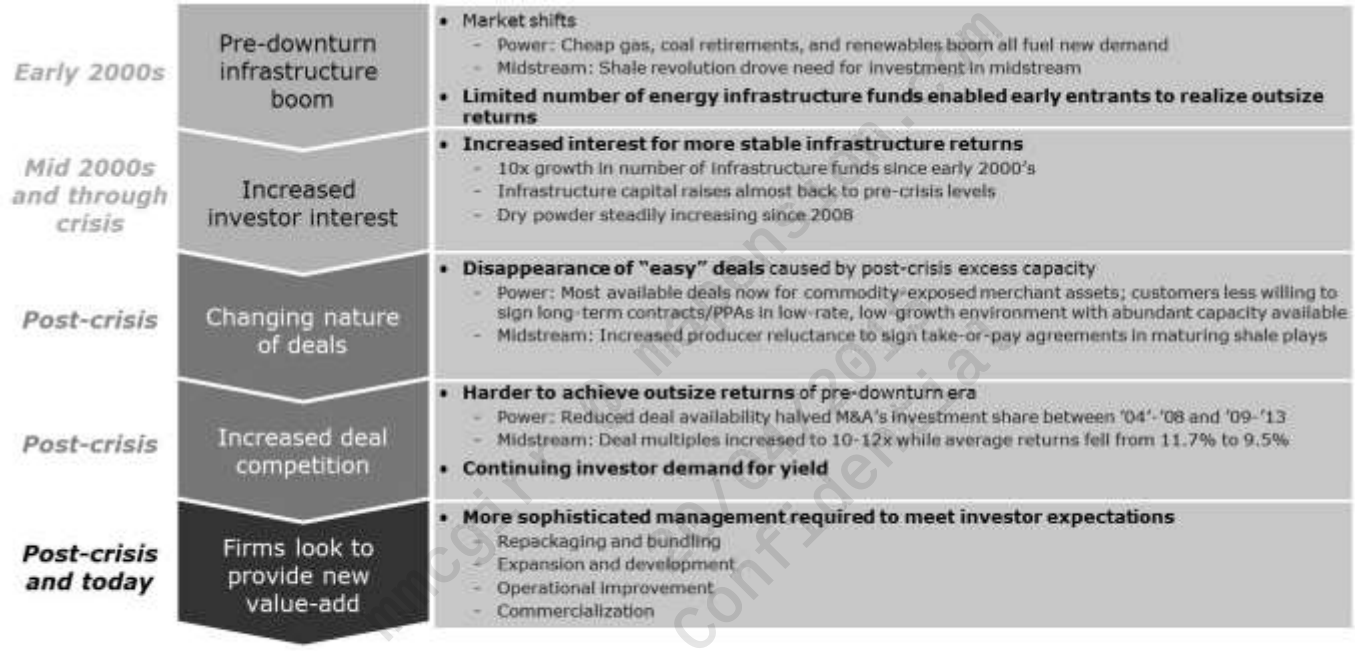
2.1 Evolving Role of Private Capital in Energy Infrastructure Investing

Private capital has always played a substantial role in energy infrastructure investing in North America. While energy makes up ~40% of total infrastructure investment, it represents 90% of all privately-funded infrastructure deals. The capital has been sourced from an evolving mix of players, including active upstream and downstream users of energy (utilities, oil and gas companies), specific infrastructure corporates (merchant generators, independent pipeline owners), public investment vehicles (MLPs) and increasingly GPs.

The composition of today's energy infrastructure deals can be highly variable. While some display the characteristics of a more "traditional" infrastructure deal possessing stable, predictable cash flows (e.g., a contracted power plant with a fixed price/fixed volume long-term contract), others reflect a different risk profile. Many of today's infrastructure investments in energy involve some element of volumetric risk (e.g., level of electricity demand, amount of production in a given basin) or pricing risk (exposure to generation spreads, exposure to some element of energy pricing cyclicality). It is this variability and complexity that makes the sector so attractive to private investors, particularly GPs with specialized, domain expertise.

The last decade has seen tremendous changes on the investment side. Figure 6 attempts to characterize these changes and illustrate how the market is evolving.

Figure 6: Evolution of Energy Infrastructure Landscape
Source: Bain Analysis



Today, we are seeing both new and existing investors moving outside of traditional investments to target newer, frequently more complex deal profiles. While some investors continue to target traditional infrastructure deals, the availability of and competition for assets make this approach challenging. Many portfolios have at least a mix of traditional and more competitive deals in them. In response to the changing nature of the assets and the competitive dynamics, many GPs are adapting strategies and capabilities to address the inherent risks in these assets and unlock their full upside.

2.2 Increased Capital Flows and Competition for Investment

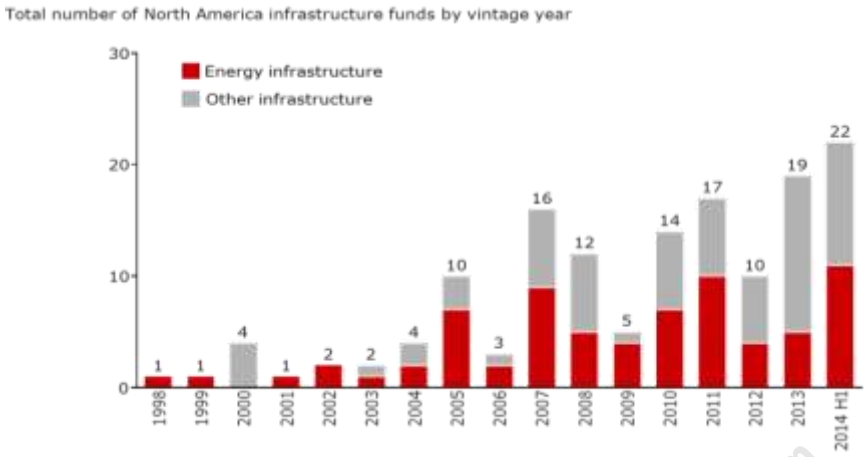
According to Preqin industry data, annual LP commitments to GPs targeting the energy infrastructure sector have increased from an average of $4 billion per year in the early to mid-2000s to approximately $9 billion annually in more recent years. The number of funds in the sector has increased tenfold over the last 10 years (Figure 7 illustrates the trend). Some LPs we spoke with expressed a belief that the true number of new funds could be higher given the heightened interest in energy infrastructure investing right now and the volume of prospectus materials and investment memos crossing their desks.

Additional capital has also come into the sector from MLPs, whose market capitalizations have increased from $1 billion in 1994 to $320 billion in 2014 (with the number of MLPs rising from 9 to 100+ over the same time frame), and from investments by large institutional investors who are scaling up their direct investments in the sector. The larger, more robust MLP market and the growth in large institutional investors' mandates have enabled companies to execute larger transactions. While these sources of capital serve an important role, they have limitations on the type of investments they can target because of either the need to generate increasing, in-year cash returns or the desire for large, very stable long-term investments.

LP interest in the space has been driven by a number of factors including continued demand for cash generating, inflation protected investments in the current low yield environment. Multiple LPs we interviewed highlighted that their energy investments have outperformed almost every other sector over the course of the last decade, generating substantial amounts of return for their portfolios. LPs understand the broader industry story and believe that the turbulence resulting from fundamental dislocations in historical sources of energy in North America will continue to generate opportunities for savvy investors. LPs also have witnessed the significant M&A activity; in the public markets alone since January 2012, there have been 292 MLP M+A transactions for an aggregate disclosed value of $225 billion.

Not all of the capital committed to GPs has yet been invested in assets. While the data are imperfect, there is an overhang of "dry powder" focused on this sector. Data tracked by Preqin suggests that $43 billion of capital committed to infrastructure GPs has yet to be deployed, up from $34 billion in 2007. This overhang of capital contributes to significant competition for assets as investors seek to put their money to work within their defined investment window.

Figure 7: Growth of Infrastructure Funds
Source: Preqin Funds in Market Database

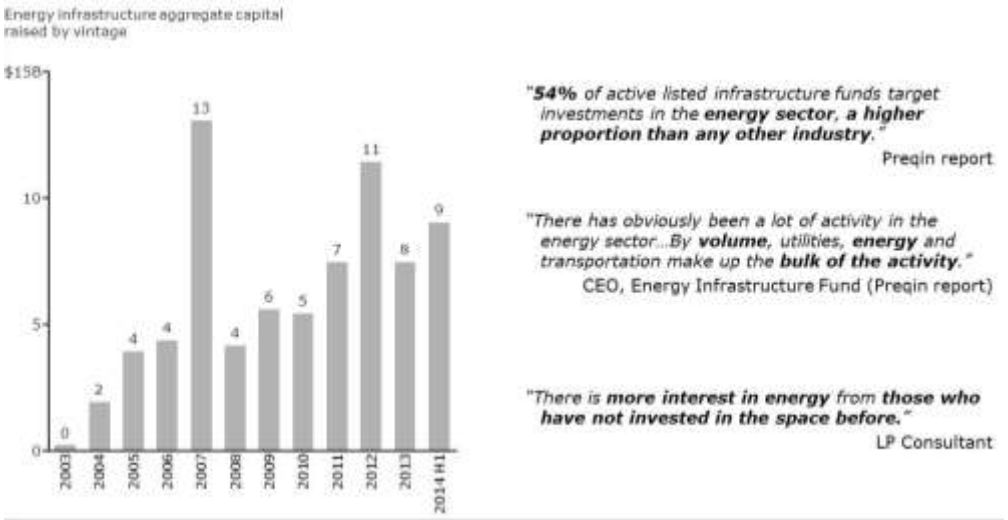


2.3 Future Outlook for the Energy Infrastructure Investing Sector

Significant capital continues to be raised and deployed in energy infrastructure investing. New energy infrastructure capital commitments peaked in 2007 at $13 billion before falling sharply during the downturn. Through the first half of 2014, $9 billion has already been raised suggesting a rapid increase in the rate of new commitments (see Figure 8). Despite the sums raised to-date, conversations with LPs suggest a continued strong interest in this sector driven by a belief that the underlying opportunity set remains dynamic and attractive.

What is likely to change the competitive landscape? With more GPs participating in the market, additional data concerning investment returns and the pace of cash realization will become available. This transparency is likely to accelerate the flight to quality and teams with demonstrated track records and differentiated strategies that promise the ability to drive persistent returns over time.

Figure 8: Increased Investment in Energy Infrastructure
Source: Preqin Funds in Market database; Preqin 2014 Global Infrastructure Report; Industry Participant Interviews



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2.4 Midstream and Power Investment Opportunities

We believe that private capital will continue to play a critical role in the energy infrastructure space, particularly in the growing midstream sector and continued pockets of opportunity in power in the near to medium term. However, and likely due in part to sector's success in attracting capital, we are seeing a significant shift in the type of assets available to investors.

Midstream opportunities for private capital will continue to grow, however the nature of underlying assets is changing. We expect opportunities for private capital to continue to be robust because of the continued midstream capacity expansion driven by the need to correct existing and future imbalances in hydrocarbon supply and demand noted in the previous section. The number of fixed/minimum value commercial contracts has decreased. Today, producers expect pipeline owners to share production risk instead of simply collecting rents. While this change is facilitated by the amount of available capital (a "seller's" market), it also reflects the continued maturation of midstream plays; players with an existing footprint and an ability to offer producers an attractive midstream solution have an advantage relative to newcomers.

Sellers are taking advantage of these dynamics: Upstream companies are selling off midstream assets to raise capital for Exploration & Production ("E&P") programs, and there is a robust market for secondary asset sales among existing infrastructure investors.

In Power, pockets of opportunity will continue to exist, but are harder to come by. While opportunities at a regional level are expected to continue as noted earlier in this paper, we believe it is becoming more challenging to find the "right" investment opportunities. Successful GPs will continue to find high return opportunities, but these will be predicated on a deep knowledge of individual power markets and an ability to structure and source proprietary deals.

Power has also largely shifted away from long-term, fixed volume contracts in parts of the country where deregulation has taken place. In these markets largely characterized by ample supply, there is less pressure to lock up new generating capacity and certainly more capital sources to trade-off against each other. Renewable plants are still typically built under long-term contracts, but they retain more development and subsidy risk than traditional power plants. Thermal generation is being built on a merchant/variable volume basis. But there are exceptions: for example, New England now offers a fixed-price, seven year capacity contract to new generators following a sudden withdrawal of a large nuclear, fully compliant coal plant and a fully depreciated gas asset last summer amounting to around 10% of peak load.

Capital inflows into power and competition for deals have driven asset values higher. GPs who specialize in power only, have had to stretch in order to win power assets sold via auction. Other bidders have pursued large, complex transactions, where the portfolio may contain coal and gas assets across markets, and require price increases and significant value add activities to generate target returns. As power asset values have traded higher, owners of assets have high expectations for exit value, and are holding investments longer until the target value can be achieved.

Today, few guaranteed rate-based projects and assets will find their way to GPs. Given the lack of opportunities and the level of demand both from private investors and alternative sources of capital, including MLPs, relatively few traditional infrastructure assets will flow to GPs. GPs must look for alternative opportunities to create return over and above taking volume risk. Examples

include deep value or contrarian opportunities in out-of-favor basins or generation, funding bespoke solutions for partners who need temporary or permanent capital and targeting opportunities created by the passage of new regulation. Not all GPs are willing to (or have the capabilities to) take on these types of investments, but there is growing acknowledgement that these investments can fall within the real asset definition and increase the range of available opportunities and potential returns in the sector.

2.5 Historical Returns are Harder to Achieve

The combination of increased capital, availability of inexpensive debt and a constraint in the number of take-or-pay contracted deals has driven up prices for traditional, fixed contract assets and pushed down returns. High prices and readily available leverage have also significantly increased refinancing and sale risk for many "core" infrastructure deals and further transformed their risk/return profile. Acquisition multiples for midstream deals have been driven up to historic highs of 11.5x between 2009 and 2012. A subset of the LPs we spoke with recognized this risk and highlighted that many "core" deals were priced to perfection with no room for error or change in market conditions.

While robust return data is hard to come by, the public markets can serve as a proxy for returns: The number of midstream operators generating >15% return has fallen from 20% in the early 2000s to 10% in recent years, putting further pressure on investors ability to achieve historic returns (see Figure 9).

Despite these market challenges, LPs must still find ways to hit their return targets while managing the associated risk. In order to generate acceptable returns, many GPs have gravitated towards deals that accept elements of volume and pricing risk and/or require additional value creating activities in exchange for higher returns. The most successful GPs have also adapted their business models to deliver superior, risk adjusted returns.

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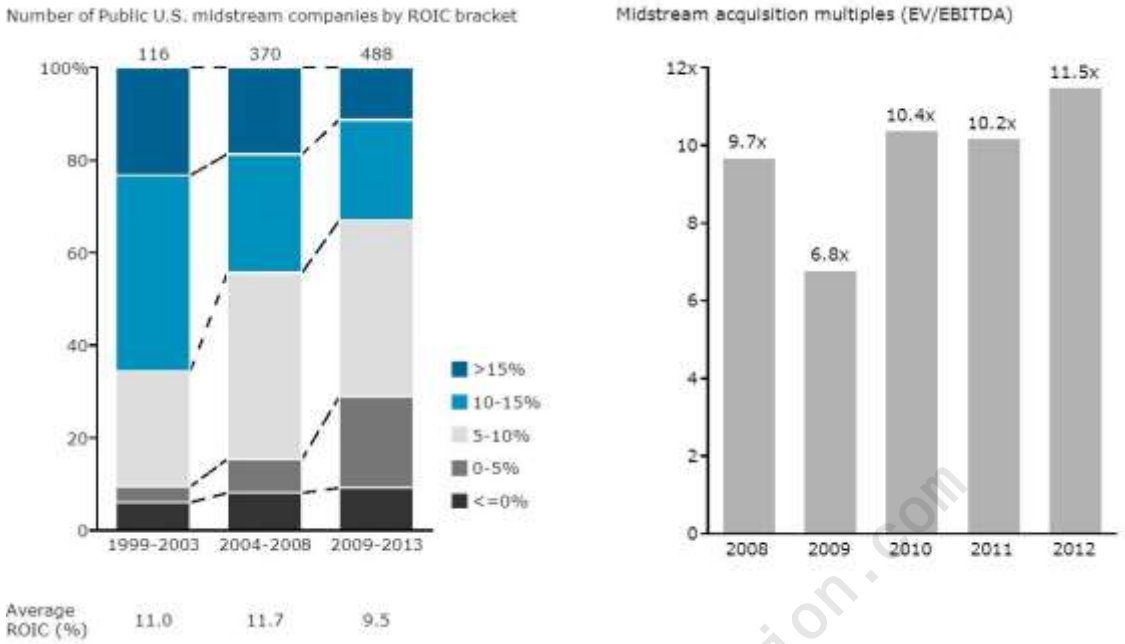
Figure 9: Decreased Returns and Increased Acquisition Multiples

Source: SNL Financial, IHS Herold



2.6 Conventional View of Energy Infrastructure Fund Models

Traditionally, the landscape of opportunities has been separated into categories based on the type of underlying deals being pursued. Most LPs we interviewed recognized the following categories with different return expectations:

- **Core Infrastructure**: investors who focus on assets with regulated or guaranteed cash flows – typically **8 - 10% net return** expectation
- **Infrastructure Plus or Real Assets:** investors who invest in assets with less cash flow certainty either because of development, contract or other factors – typically **14 - 16% net return** expectation
- **Private Equity:** investors, who invest in projects without contracts and/or pure commercial risk – typically **20 - 25% net return** expectation

The distinction between the last two categories can be easy to blur. As a gross simplification, infrastructure plus or real assets typically have an element of contracted or very stable cash flow that provides downside protection to the investment. Private equity investments usually lack this downside protection and have greater risk of capital impairment.

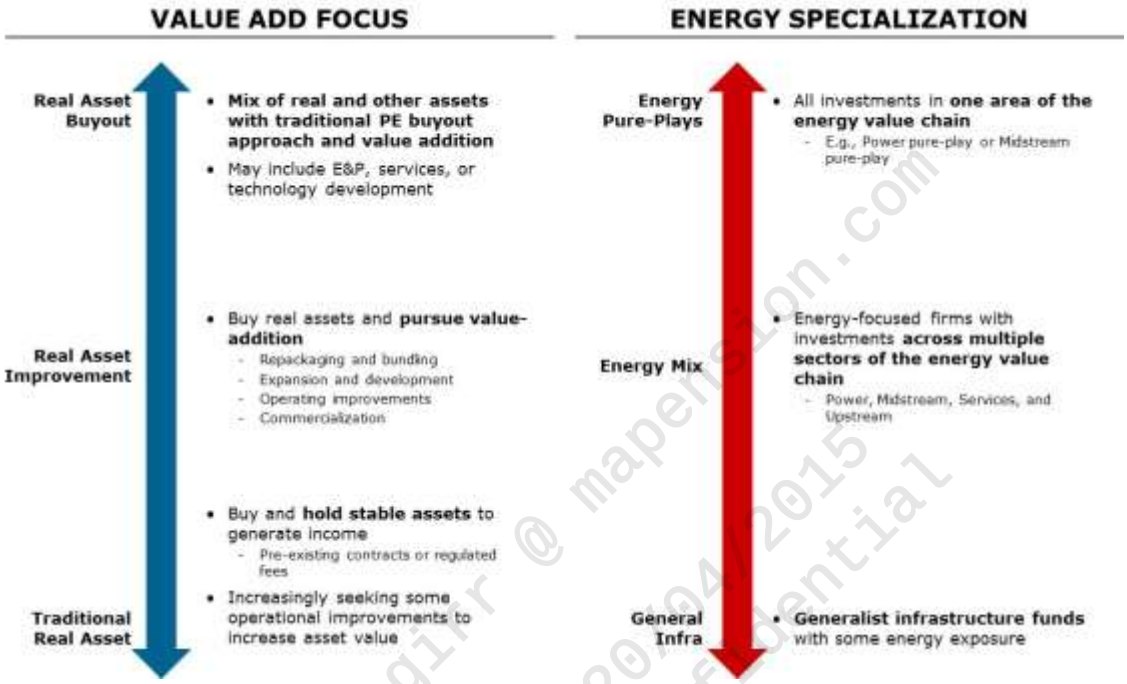
2.7 Evolving Segmentation of Energy Infrastructure Firms We are Observing in the Market

We have observed that this conventional model is increasingly outdated, and the landscape is often more nuanced than the simple framework above would suggest. It is common to see GPs invest across a combination of deal types depending on where they see the greatest value and opportunity for return. GPs are also evolving their models to better match the varied nature and demands of their deal flow. Specifically, we see GPs adding capabilities to help them identify and value very

nuanced market opportunities and unlock value in assets during ownership (through de-risking revenue streams, facilitating growth or other levers). As a result, today's GPs can be segmented across two axis, as detailed in Figure 10:

- **Value Add Focus**: the degree to which funds seek to add value to their investments
- **Specialization**: the degree to which funds seek to focus their efforts on one particular segment of the energy value chain (e.g., power only)

Figure 10: Two Key Dimensions for Fund Differentiation
Source: Bain Analysis



When viewed across both of these dimensions (asset strategy and energy specialization), three key segments of energy infrastructure funds have emerged (see Figure 11)**:**

- **Core Infrastructure**: traditional infrastructure investors including large institutional investors who look for large, stable projects to hold in their portfolios for an extended period – typically **8 to 10% net** return expectation
- **Sector Specialist**: industry players that use their specialized industry knowledge in either power or midstream to identify opportunities for capital and assets (e.g., emerging demand, areas for arbitrage and the like) and deploy these capabilities to execute acquisitions – typically **14-16% net return** expectation
- **Hybrid**: PE/infrastructure players who invest in assets with more operating/development elements in multiple segments of the energy value chain – typically **14-16% net return** expectation

The following frameworks lay out the landscape.

Figure 11: Example Funds by Category
Source: Institutional Investor Interviews

Funds with high degrees of **energy specialization** focus on sub-segments of the energy value chain. Focus allows deeper industry relationships, a more focused set of investment professionals and better understanding of market dynamics reflecting their greater level of experience (albeit while restricting the available investment set to a specific sector). Funds seeking differentiation on this dimension aim to drive better access and improved assessments of frequently nuanced opportunities:

1. **Advantaged Sourcing of Deals:** *Identifying opportunities to create favorable access and pricing.* While truly proprietary assets are becoming rarer as the market is more intermediated and competitive, GPs differentiate themselves based on familiarity with the asset, micro-backdrop or management team. This knowledge provides an edge in triaging opportunities – identifying which deals may have merit and where a differentiated angle exists – and in winning the process, as sellers will frequently gravitate towards buyers with unique angles.

2. **Robust Diligence Focused on Upside/Downside Risks:** While always a critical component of the investment process, the nature of diligence is increasingly important as the nature of deals and the inherent risks change. Demands for a more thorough knowledge of the assets coupled with vetting of the upside and downside risks require a different and occasionally more holistic approach to diligence on both the asset and the management team prior to acquisition. Specialized market knowledge can help identify the right questions to ask and contribute to better outcomes.

The more a fund is focused on value add improvement, the greater we see them actively engage in activities to increase the value of investments. These activities typically include:

1. **Expansion and Development:** *the development of assets to expand capacity.* This has become a frequent lever in the midstream sector as companies add gathering, transport or storage capacity to take advantage of growth and boost returns. Other strategies include expanding the scope of activity around existing assets; for example, adding complementary assets such as liquefaction capabilities to an existing storage terminal.

2. **Commercialization**: *the negotiation and/or renegotiation of contracts can improve profitability and/or create long-term stability.* GPs are enhancing assets by identifying more effective pricing terms and/or arbitrage opportunities that improve an asset's revenue profile. Securing larger and/or longer-term contracts can provide EBITDA growth and longer-term cash flow stability.

3. **Operating Improvements**: *operational modifications that increase efficiency and/or lead to revenue growth.* Firms are looking to improve plant efficiency and labor productivity to drive down costs and increase revenue. These efficiencies have knock on benefits from reducing downtime which increases customer satisfaction and frequently a company's negotiating position.

4. **Repackaging and Bundling**: *the combining of multiple businesses to achieve synergies or financial advantages.* For example, tax-efficient structures such as MLPs can repackage assets into lower yield vehicles or multiple similar companies can be rolled up to achieve cost or revenue synergies. Assets can also be bundled into packages designed to attract the attention of strategic acquirers; a frequent example is the acquisition and bundling of individual generating assets into a scale regional play that could attract the attention of an independent power generator.

Value add improvement capabilities are arguably more important in addressing the types of deals frequently seen in today's deal environment. GPs with a solid understanding of commercialization can help de-risk or drive upside in assets with less contracted revenue. Similarly investors who understand new development will find themselves better able to evaluate many opportunities and potentially increase the odds of project completion on time and on budget.

Stepping back, GPs in these segments seek competitive advantage in targeting the growing number of complex and nuanced deals in the market. As outlined earlier, these deals can involve greater risk (both volume and price), but GPs are developing capabilities to help them better evaluate, price and mitigate these risks.

The sample set is small, but historical returns and interviews suggest specialist and hybrid players are living up to the promise of higher delivered returns. In assessing past fund performance relative to a traditional Preqin PE buyout benchmark, we have found that hybrid and specialist infrastructure funds have outperformed median PE performance by 220 basis points on average across 2002-2009 vintages.

Our conversations with LPs highlighted the challenge of assessing the risk/return profiles of the segments. Established track records of consistent, realized returns may offer the best insight into the future outlook. For the majority of capital and opportunities, however, LPs must look for proxies or leading indicators, such as the profile of deal outcomes, focus on systematic and comprehensive risk management (identification and management), track record of cash realization and consistency of strategy. LPs recognize that these are imperfect measures but, in the absence of better data, all inputs are collected and evaluated.

2.8 Developing a Repeatable Model

Strategy alone is not sufficient to drive superior, repeatable performance. GPs must be very clear about where and how they make their money. Practically speaking, this means the following:

- **"Sweet spot" understanding** - Clearly understanding their "sweet spot". What are the characteristics of their best deals, what are the investable themes that underpin these deals (the key elements of the hypothesis).
- **Focusing investments in the "sweet spot"** - Focusing their investment activities and priorities on this "sweet spot." We would expect to see 80% + of a given fund's deals fall squarely within their "sweet spot," with the remaining 20% allowing for continued evolution to ensure the firm stays ahead of the game.
- **Specialized capabilities enhancing investments** - Aligning processes, capabilities and resources to reinforce the "sweet spot". Layering the "sweet spot" and supporting themes into the diligence process and investing in resources that increase the odds of successful outcomes.

Properly defining a "sweet spot" requires leg work. GPs need to be clear about where they generate performance across types of deals (e.g., which sectors, geographies and assets). The important part is for GPs to define how their deals are able to deliver target returns - is it about growth, about limiting underperforming deals, consistently drive better multiples at exit – and diving deep to understand what themes they are consistently good at spotting and executing.

GPs must also recognize the common characteristics of underperforming deals. What are the value destroying themes that have resulted in bad outcomes. Identifying and adapting from past mistakes can reduce the likelihood of negative surprises in the future.

To firmly embed a "sweet spot" and supporting themes, a GP needs to ensure it adopts disciplined, robust processes and control the resources necessary for success. We have seen clients embed themes into their diligence and Investment Committee checklists to ensure the deal fits neatly within the GP's "sweet spot". While many GPs are adding resources or asset management groups to their teams, the successful ones ensure that their capabilities align with the firm's drivers of value.

Conclusion

Historically, the energy infrastructure asset class has generated strong returns in comparison with other infrastructure asset classes. A number of GPs in this space, primarily those who are pursuing hybrid and sector specialist strategies, appear to have outperformed even traditional buyout funds. Core funds have seen lower returns more in line with classic infrastructure expectations. Some energy infrastructure funds have limited cash realizations, which means returns are still estimated based on managers' mark-to-market, complicating their return picture. Today's typical infrastructure deals incorporate far more development and deal complexity than their predecessors. More "traditional" infrastructure assets are harder to come by because of both increased competition as well as changing demands by counterparties. In response, energy infrastructure funds are becoming increasingly specialized and more active in driving performance after the initial deal.

Going forward, the investment opportunities in the North American energy infrastructure space will continue to be enormous. The underlying, continued evolution of the supply/demand environment in both midstream and power will continue to create investment opportunity. Meanwhile, several plays in North America are in the early stages of development with compelling economics. The premier shale plays in the US and Canada are moving to resource extension and manufacturing mode, ramping production and requiring significant midstream infrastructure. Downstream markets are also in the early stages of responding to the new sources of supply with new infrastructure requirements emerging in refining, export terminals, and LNG facilities creating demand for new infrastructure ecosystems (midstream, storage, etc.) Future investment opportunities in the space will be increasingly complex and capital intensive, requiring GPs with specialized capabilities.

As the market evolves and goes through further disruption, we anticipate significant opportunities for seasoned GPs to take advantage of existing and growing assets in attractive sub-segments (including plays) of the energy infrastructure landscape. Undoubtedly, there will be new opportunities, rewarding GPs who successfully take contrarian views or pursue emerging basins which require well developed capabilities in sourcing and underwriting, as well as value add activities post acquisition.

Similarly, we expect LP capital allocations to the Sector to continue to grow. We believe this continued investor interest along with organic growth in North American energy infrastructure needs will continue to drive attractive deal activity in the Sector.

As an LP, there will be many models to choose from and many strategies to evaluate. We believe that the best outcomes will be derived from backing those players who have a clear strategy and a repeatable model anchored around an understanding of their "sweet spot" and investments in the levers that support it.

Appendix – Glossary of Terms

Coalbed Methane (CBM) – gas produced from coal seams (also known as coal seam gas, or CSG)

Hydraulic Fracturing – the process of injecting fluid and proppants under high pressure through a [horizontal] well into a shale gas, tight oil or other formulation to stimulate production.

Horizontal Drilling – the practice of drilling a horizontal section in a well (used primarily in a shale or tight oil well), typically thousands of feet long

Master Limited Partnership (MLP) – limited partnership investment vehicle that is traded on a securities exchange. MLPs are limited by United States federal law to only apply to enterprises that engage in certain businesses, mostly pertaining to the use of natural resources, such as petroleum and natural gas extraction and transportation. To qualify for MLP status, a partnership must generate at least 90 percent of its income from what the Internal Revenue Service (IRS) deems "qualifying" sources. For many MLPs, these include all manner of activities related to the production, processing and transportation of oil, natural gas and coal

Natural Gas Liquids (NGL) – components of natural gas in gaseous form in the reservoir, but can be separated from the natural gas at the wellhead or in a gas processing plant in liquid form. NGLs include ethane, propane, butane and pentane

Oil and Gas Value chain:

> **Upstream Oil and Gas Activities** – all activities and expenditures relating to oil and gas extraction, including exploration, leasing, permitting, site preparation, drilling, completion, and long term well operation
>
> **Midstream Oil and Gas Activities** – activities and expenditures related to the flow of oil and gas and derivative products, including gathering, gas and liquids processing, and pipeline transportation.
>
> **Downstream Oil and Gas Activities** – activities and expenditure in the areas of refining, distribution and retailing of oil and gas products

Unconventional Gas resources – low permeability deposits more continuous across a broad area. The main categories are shale gas, coalbed methane, and tight gas, although other categories exist, including methane hydrates and coal gasification

Shale gas and tight oil – gas, condensate, and crude oil produced from shale plays. Tight oil plays are those shale plays dominated by oil and associated gas, such as the Bakken in North Dakota.

Tight gas – gas and condensate produced from very low permeability sandstones

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