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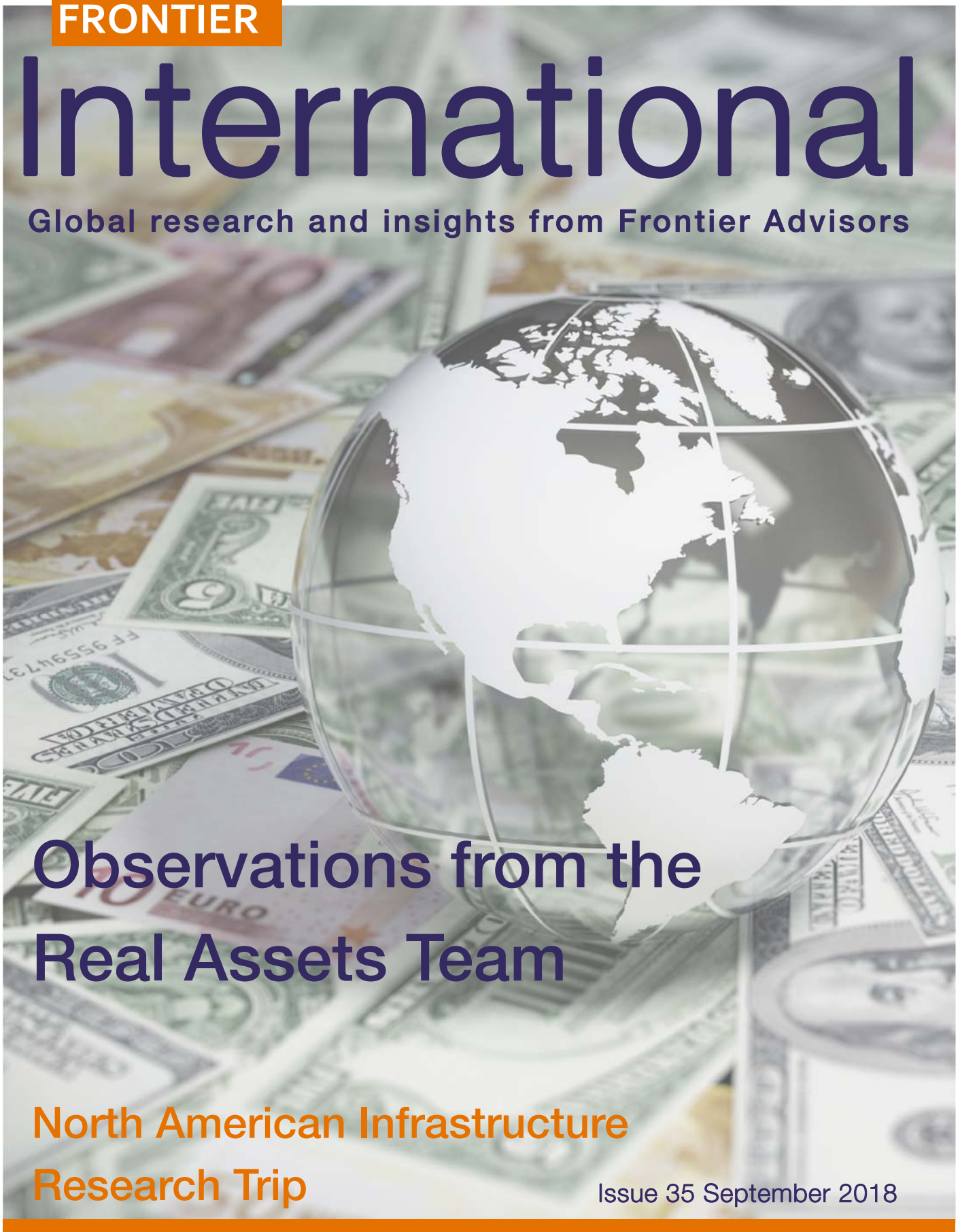

Observations from the Real Assets Team

North American Infrastructure Research Trip

Issue 35 September 2018

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Frontier regularly conducts international research trips to observe and understand more about international trends and to meet and evaluate, first hand, a range of fund managers and products.

In conjunction with insights we share with our Global Investment Research Alliance partners, these observations feed into our extensive international research library.

This report provides a high-level assessment on the key areas and observations unearthed during this recent Real Assets' trip. We would be pleased to meet with you in person to provide further detail on these observations.

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United States - An attractive market for infrastructure investments

In June 2018, Frontier Advisors undertook an infrastructure research trip to North America. The US in particular stands out as a market providing vast infrastructure investment opportunities.

Despite the US having developed one of the most sophisticated financial markets globally, its pool of public infrastructure is generally of poor quality and falling into desrepair. Adding to the complication is the fact that the US market is highly fragmented at all levels, with significant public infrastructure being owned by thousands of municipalities and state governments, as well as a lack of centrally regulated framework for infrastructure. The US Federal Government's much anticipated "Rebuild Infrastructure in America" blueprint, aka "The Trump Infrastructure Plan", is unlikely to be the panacea to the problem.

For infrastructure investors, the opportunities are typically in the 'core plus' space and in the established and well-traded privately-owned segments of infrastructure including energy, power generation, telecommunications, water and transport (mainly Public to Private Partnerships opportunities).

Unsurprisingly, the inherent inefficiencies in the US allow high quality managers to earn strong risk-adjusted returns, often higher than that available in other developed markets (such as Europe and Australia) for comparable opportunities.

They are able to do so by developing an investment edge:

- On-the-ground presence and local offices across the US (not just New York);
- A deep network of relationships (from local city and municipality staff to the boardroom, with influential CEOs and founders); and
- Ability to source proprietary investments or seek a "complexity premium" to achieve favourable pricing.

While the opportunities are attractivea and potentially rewarding, they are not without risk:

- The US market is awash with capital; and
- The varying regulatory and political landscape at the federal, state and municipal levels creates complexity and risk.

In summary, the US remains a dynamic and attractive market for infrastructure investments and provides a breadth of opportunities for investors to participate in a secular trend to close the infrastructure deficit.

Frontier Advisors encourages investors to continue to allocate capital towards US infrastructure and has identified a select group of specialised and experienced US-based infrastructure managers capable of leveraging the thematics and delivering attractive risk-adjusted returns.

The poor state of US infrastructure

The vast network of public and critical infrastructure including roads, bridges, power plants, airports, rail and electricity grids was primarily built by US governments in the 1950s and 1960s.

However, the pace of development and, more critically, the maintenance and upkeep of that infrastructure network has rapidly fallen behind. So much so that it has become a real burden to the US economy. It is expected to cost circa US$4.0 trillion of lost US GDP between 2016 and 2025, according to the American Society of Civil Engineers (ASCE).

In fact, ASCE has rated the state of US infrastructure a D+ on an A to F scale with the rating having remained a D average since 1998.

The country is estimated to require US$1.5 trillion in new investment over this period to rectify its infrastructure deficit.

Examples of the poor state of US infrastructure include high congestion in many US airports, around 56,000 bridges (9.1%) considered "structurally deficient", poorly maintained public roads, and 15,000 dams (17%) having a high-hazard potential.

Table 1: Losses to the US economy due to its infrastructure deficit

	Surface Transportation	Water / Wastewater	Electricity	Airports	Inland Waterways & Marine Ports	Aggregate Economic Impact of All Sectors
GDP (US$ billions)						
2016-2025	*1,167*	*508*	*819*	*337*	*784*	***3,955***
Funding Gap to 2025 (US$ billions)						
Total Required	2,042	150	934	157	37	3,320
Funded	941	45	757	115	22	1,880
Funding Gap	*1,101*	*105*	*177*	*42*	*15*	***1,440***
Business Sales Impact (US$ billions)						
2016-2025	2,212	896	1,399	625	1,252	7,038
Jobs						
2016-2025	1,052,000	489,000	102,000	257,000	440,000	2,546,000

Source: "Failure to Act: Closing the infrastructure Gap", American Society of Civil Engineers

Trump infrastructure plan

To address the poor state of US infrastructure, the Trump administration developed and published the "Rebuilding Infrastructure in America" plan (as highlighted in the Frontier quarterly March 2018) in late 2017.

The plan advocated for private ownership of local and state government infrastructure and for the local governments to recycle capital to develop new, essential infrastructure. However, infrastructure investors have expressed cynicism over the plan's ability to deliver a sustainable supply of investment opportunities in the foreseeable future, due to the misalignment of objectives between the Federal Government and the US states and municipalities that own much of the public infrastructure:

- The US market is highly fragmented, with 50 states and over 39,000 local governments, most of which have their own unique regulatory and political frameworks in place;
- The US lacks a federal infrastructure policy and a public privatisation legislation;
- A well-developed municipal bond market, which provides cheap and tax effective financing to state governments and municipalities, deters the local governments' incentive to privatise;
- The proposed incentive scheme is not viewed as sufficient to achieve bipartisan political support for privatisations.

However, it is worth noting that despite the potential implementation difficulties a number of projects have been announced by numerous states, in particular transport projects, many of which are proposed under Public Private Partnership (P3) framework (explored further in the "US Transportation – Opportunities attractive but limited", section of this paper).

Attractive investment segments

In the absence of a unilateral Federal policy on privatisations, infrastructure investors expect the majority of the transaction pipeline to come from established and well-traded privately-owned segments of infrastructure, including energy, renewable power generation, telecommunications, water and emerging segments such as waste.

Energy – The mainstay of the US economy

The US energy market is the largest contributor to the US economy at approximately 12% of GDP, with the shale gas boom providing a multitude of opportunities for investors. Investment opportunities most commonly associated with the US energy market are in the midstream sector (transport, storage and processing of crude oil and gas products) and include:

i) oil and gas pipelines (short-haul gathering and long-haul): these are usually contracted on medium to long-term contracts to exploration and production (E&P) counterparties, that are typically structured as Master Limited Partnerships (MLPs) for tax effectiveness[1];

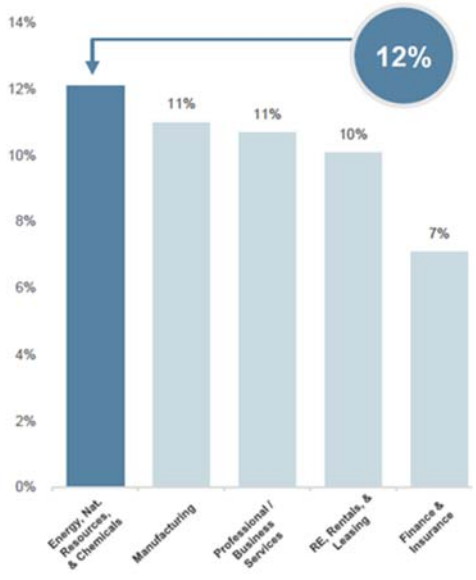
ii) liquid and gas storage facilities: also contracted to E&P or industrial operators; and

iii) LNG terminals: that derive their revenue from long-term tolling contracts with large oil and gas majors.

The opportunity for unlisted infrastructure investors includes either partnering with or acquiring the MLPs. Recent deals include KKR's and Williams' acquisition of Discovery Midstream (gas pipelines and processing plants) in July 2018 for US$1.17 billion, as well as Morgan Stanley owned North Haven Infrastructure Partner II's acquisition of Brazos Midstream (oil and gas pipelines) in the Permian Basin in May 2018 for US$1.75 billion.

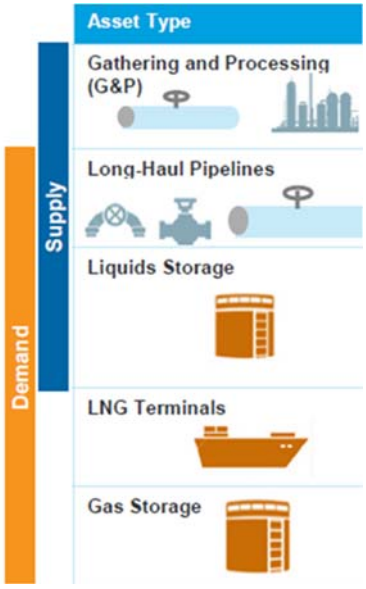
Midstream assets were originally viewed as stable investments with revenue growth from long-term tolling arrangements set to continue. This turned out to be incorrect as E&P companies stopped drilling in high cost shale regions when crude oil prices dropped and diverted their attention to selective opportunities in the lowest cost production shale oil and gas basins in the US.

Chart 1: Largest contributors to US GDP[2]



Source: Energy Capital Partners, Bureau of Economic Analysis, US.

Chart 2: Types of midstream infrastructure



Source: Macquarie Infrastructure and Real Assets.

[1]MLPs status is granted to enterprises that are engaged in natural resources (oil & gas) production, processing or transport activities and derive at least 90% of their income from those activities. MLPs are exempt from corporate and income tax at State and Federal levels.
[2]Source: Energy Capital Partners, Bureau of Economic Analysis, U.S.2010-2015, average GDP by gross output, as of Apr 21, 2017 (includes chemical sector).

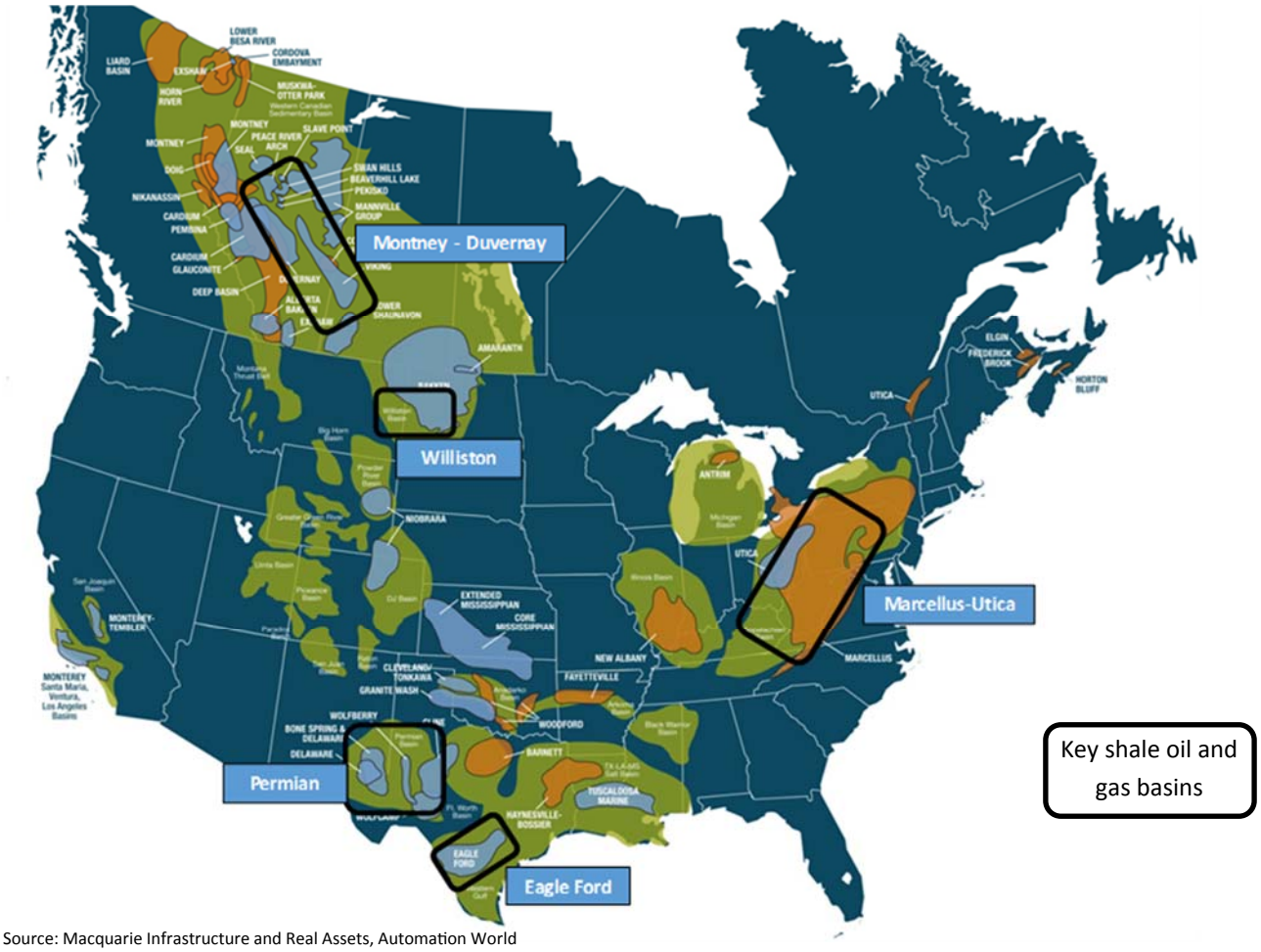
Therefore, it is important for managers to be selective and adequately diligence the projects associated with the ancillary mid-stream energy infrastructure.

The Permian Basin in West Texas is the lowest cost of production shale oil and gas basin in the US today. It produces 3.4 million barrels per day (mbd) of oil, accounting for 45% of US total crude oil production today, and is expected to reach 5.4 mbd of oil production by 2023 making the Permian Basin the largest producer than any single member of OPEC behind Saudi Arabia.

Several investment managers (Stonepeak Infrastructure Partners, I-Squared Capital, Morgan Stanley Infrastructure Partners, KKR) cited their interest and evaluation of infrastructure projects in the Permian Basin, since the lowest production cost provides a level of protection in the event of a commodity price downturn.

The Colorado Basin was also mentioned in this context. Revenue models for midstream infrastructure have also evolved with increases in investor interest and competition for these assets. Vanilla take-or-pay tolling arrangement are being replaced with acreage dedication models[3], which effectively transfer volume risk onto infrastructure investors. This development highlights that investing in midstream infrastructure, in low-cost production shale basins, is critically important to avoid stranded asset risk since volumes will continue to flow even in market downturns. Furthermore, managers are also exploring creative ways to protect their investments such as by investing across the capital structure, with financial instruments (warrants, options) to participate in any upside (asymmetrical returns).

Chart 3: Key oil and gas basins in the US



Source: Macquarie Infrastructure and Real Assets, Automation World

[3]In an acreage dedication revenue model, the E&P company guarantees to pass oil/gas/liquids produced through the infrastructure network at a set price in a geographic area, if it drills & pumps product.

Renewables – Going from strength to strength

A recent report by EY has identified the US as the second most attractive[4] market globally, behind China, for renewable electricity generation.

Renewable electricity generation (wind and photovoltaic solar) and gas-fired generation have gained market share at the expense of coal. As early generation coal power plants are retired, these are increasingly being replaced by clean emission sources such as utility-scale photovoltaic solar and wind turbine plants, which have a minimal energy supply cost, whereas gas-fired plants are dependent on natural gas prices remaining at an economically sustainable level.

But as the US renewable electricity generation market matures, attractive, long-term Power Purchase Agreements (PPAs) are becoming more challenging to source from utilities. However, corporate PPAs are still available from commercial and industrial operators keen on reducing their energy costs and emissions.

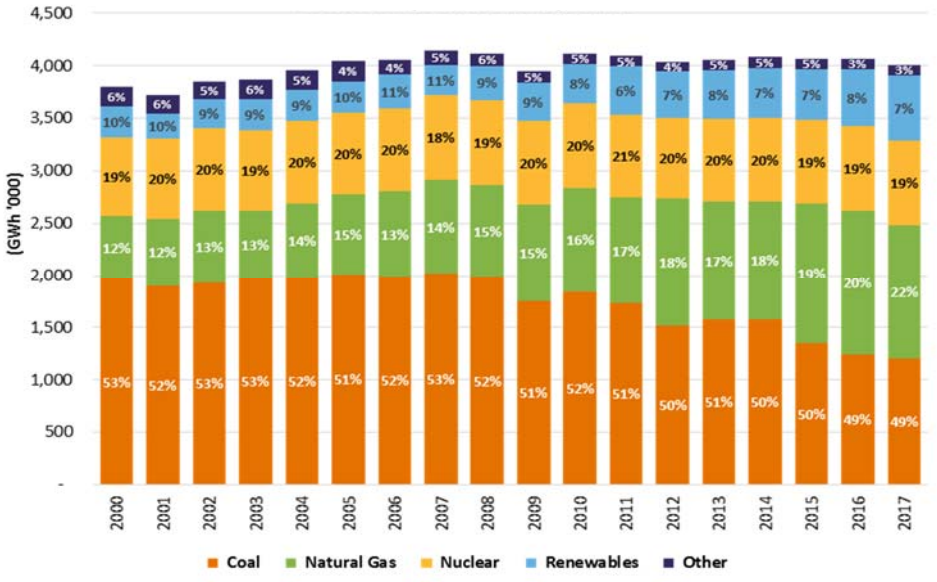
Experienced investors/managers are focussing on credit worthy counterparties and adding value by developing scale in their portfolio and achieving diversity through geography (at a State level).

Moreover, managers are investing across the risk spectrum: (i) at the development stage (to create a portfolio or to sell post commissioning); or (ii) after the commissioning stage to establish a platform of operating assets or add scale to the existing portfolio; or (iii) by acquiring first generation solar and wind projects and repowering the sites to achieve better returns.

The State of California, in particular, offers an attractive investment thesis for renewable electricity generation. It has abundant natural resources (bodies of water, underground steam, wind resource and solar irradiance) and an ambitious target of achieving 50% of electricity generation from renewable sources by 2030.

In fact, Californian legislation requires all electricity retailers to source 33% of retail electricity sales from renewables by 2020 and 50% of sales from renewable sources by 2030. Other attractive renewable markets alongside California include Washington (hydro, wind), Texas (wind, PV solar), Oregon (hydro, wind) and New York (hydro and wind). Managers such as Capital Dynamics and CIM Group are particularly active in several of the above markets.

Chart 4: US electricity generation by source [5]



Source: US Energy Information Administration, US Department of Energy.

[4]EY measures attractiveness via need for renewable energy; favourable policy; pipeline of projects; availability of resources, financing, supporting infrastructure, PPAs; and ease of doing business.
[5]'Other' includes: Petroleum, Other gases, wood and waste. 'Renewables' includes: photovoltaic solar, wind and conventional hydroelectric.

US Transportation – Opportunities attractive but limited

Brownfield

Attractive brownfield public transport infrastructure investment opportunities of meaningful size have been limited across the US, with a handful of transactions in the last five years, primarily secondary toll road and airport sales e.g. Northwest Parkway (US$800 million), Chicago Skyway (US$3 billion) and San Juan Airport (US$430 million)

A number of the announced privatisations have been delayed (e.g. St. Louis Lambert International Airport), however, investors are closely watching any upcoming privatisations that are contemplated following The Trump Infrastructure Plan (e.g. Reagan National and Washington Dulles Airports).

A dearth of opportunities has resulted in large investment managers and sovereign wealth funds (IFM Investors, CPPIB) diverting focus towards Latin America, which has presented numerous transport opportunities, particularly in the toll road space.

Greenfield

In contrast, there is a strong pipeline of greenfield transport infrastructure opportunities.

Since the beginning of 2017, the largest commissioned US greenfield projects are associated with the transport segment primarily dealing with redevelopment, expansion or new roads, bridges, airports and light rail as highlighted in Table 2.

A number of opportunities in Table 2 are structured as P3s since large greenfield opportunities lend themselves well to the P3 framework (due to large capital commitment requirements and construction risk). To date, 36 US states have passed P3 legislation to enable greenfield developments.

We believe there will be investment opportunities involving some form of modernisation or development in airports, related ancillary infrastructure (e.g. terminals, cargo facilities, rental car facilities), roads and bridges in the medium-term, particularly in light of recent global focus around safety of ageing infrastructure.

There is also an increasing trend of airports and airlines seeking to partner with institutional investors and/or developers to redevelop airport terminal facilities. For example LaGuardia's New Terminal B redevelopment (US$4 billion) and JetBlue Airway's terminal expansion at John F. Kennedy Airport in New York (US$2 billion).

Table 2: Largest 20 greenfield transactions in the period Jan 2017 to Aug 2018

Transaction Name	Country	States/provinces	Sector	Sub-Sector	Date	Transaction size USD(m)
Newark Airport Redevelopments	USA	New Jersey	***Transport***	Airports	30 Nov 2017	***27,000***
Hudson River Tunnel Replacement (Gateway Project)	USA	New York	***Transport***	Bridges and Tunnels	2 Jun 2017	***11,100***
John F. Kennedy (JFK) Airport Ring Road/Parking Lot Redevelopments	USA	New York	***Transport***	Airports	4 Jan 2017	***10,000***
Honolulu Rail Transit P3	USA	Hawaii	***Transport***	Rail	23 Mar 2017	***8,200***
I-495/I-95 Capital Beltway and I-270 Congestion Relief Improvements P3	USA	Maryland	***Transport***	Roads	20 Dec 2017	***7,600***
LaGuardia Delta Terminal P3	USA	New York	***Transport***	Airports	5 Jan 2017	***4,500***
Revive 285 Top End	USA	Georgia	***Transport***	Roads	5 May 2017	***4,200***
West Santa Ana Branch LRT P3	USA	California	***Transport***	Light Rail	14 Oct 2016	***4,000***
Strategic Miami Area Rapid Transit (SMART) Plan	USA	Florida	***Transport***	Roads	27 Apr 2018	***3,000***
Sepulveda Pass P3	USA	California	***Transport***	Roads	28 Oct 2016	***2,800***
I-290 Eisenhower Expressway Expansion	USA	Illinois	***Transport***	Roads	28 Jul 2017	***2,700***
Fargo-Moorhead Area Diversion P3	USA	North Dakota	Environment	Water	12 Oct 2016	2,400
I-10 Mobile River Bridge and Bayway Widening P3	USA	Alabama	***Transport***	Bridges and Tunnels	6 Feb 2018	***2,000***
I-75 North Managed Lanes	USA	Georgia	***Transport***	Roads	24 Feb 2016	***2,000***
John F. Kennedy (JFK) Airport Terminals 5,6,7 JetBlue Redevelopment	USA	New York	***Transport***	Airports	26 Mar 2018	***2,000***
San Mateo County District Revitalization of Rail Network	USA	California	***Transport***	Rail	6 Jun 2018	***2,000***
San Francisco Broadband P3	USA	California	Telecommunications	Fixed Line	30 Apr 2018	1,850
I-75 Truck Lanes from SR-155 to I-475	USA	Georgia	***Transport***	Roads	5 May 2017	***1,800***
SR-400 Express Lanes	USA	Georgia	***Transport***	Roads	5 May 2017	***1,800***
Honolulu Transit Center	USA	Hawaii	***Transport***	Other	20 May 2016	***1,600***

Source: Inframation News.

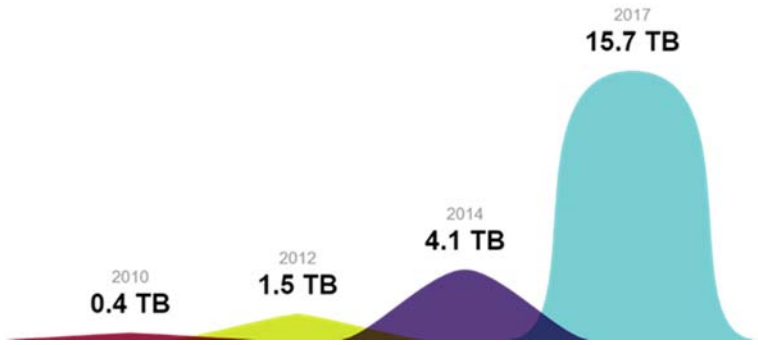
Telecommunications – Gaining traction with investors

The US telecommunications sector is fully de-regulated, competitive and an efficient private market. It is experiencing strong growth and is expected to remain buoyant for investments given the current data boom from streaming services and the expected growth in data consumption from mobile broadband evolution to 5G standard. In fact, wireless data consumption increased by nearly four times between 2014 and 2017 (Chart 5).

While investments in cell towers have been prevalent in the US with the presence of specialist cell tower REIT managers, data centres and fibre network investments are emerging as a recent thematic.

Infrastructure managers currently invested in the sector are generally focused on investing in data centres close to dense metropolitan centres (e.g. Brookfield Infrastructure Fund III's acquisition of AT&T's data centre portfolio in June 2018 for US$1.1 billion) or fibre networks serving real time computing to long-term contracted wholesale clients, while others have a focus on shorter contract retail data centres for greater revenue and returns generation.

Chart 5: Wireless data consumption in US



Source: Cellular Telecommunications Industry Association.

Water - Promising but fragmented segment

The US water sector remains an attractive segment. However, its relatively small scale and fragmented nature make it challenging to deploy significant capital since US water utilities are typically owned and managed by the thousands of small local municipalities.

Notable transactions in the sector include Bayonne Water concession sale to KKR Infrastructure in November 2017 for US$200 million and Macquarie Infrastructure Partners I's sale of its equity stake in Aquarion Water in June 2017 for US$880 million.

Some investors have employed successful models for investing in this space through consolidation of smaller water utilities (JP Morgan Infrastructure Investments Fund) and innovative structuring (water banks in dry states). Additionally, potential new opportunities are likely to be structured as P3s, going forward.

Other emerging sectors

Investors, facing strong competition for core infrastructure assets and pressure to deploy capital, are beginning to turn to sectors that do not fall into the traditional infrastructure categories. These include solid waste collection and processing, cold storage warehouses, trailer leasing businesses, or low-level radioactive waste storage.

The common theme that binds these new sectors is that they all exhibit stable and/or contracted (short to long) cashflows. However, it can be argued that the definition of infrastructure is being stretched to be able to source deals in less competitive sectors.

Capital overhang

While the supply side is challenged, the investment climate is further complicated by increasing demand from investors who are continuing to dedicate significant capital to North American infrastructure.

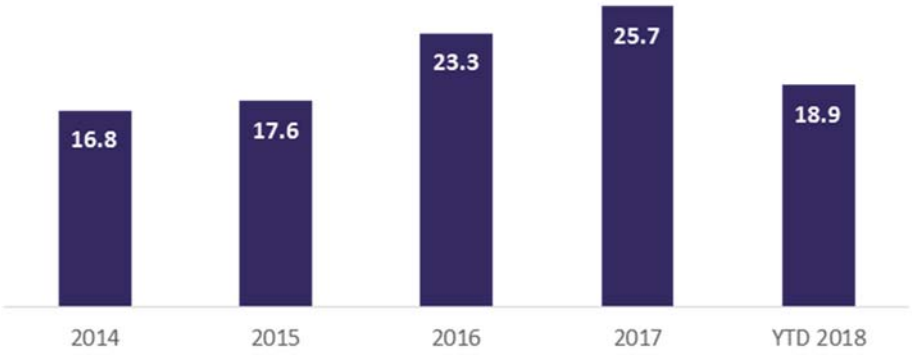
In 2016, Global Infrastructure Partners and Brookfield Asset Management both raised very large infrastructure funds of US$16 billion and US$14 billion, respectively, after having raised smaller funds (US$8.3 billion and US$7.0 billion, respectively) previously. Both managers are targeting to deploy over 40% and 50% of the capital from the latest funds, respectively, in the US.

Following the trend of increasing fund sizes, in 2018, several US mid-market investment managers have raised significant amounts of capital for their latest generation of funds. KKR Infrastructure (US$7.0 billion for Fund III), I-Squared Capital (US$6.5 billion for Fund II) and Stonepeak Infrastructure Partners (US$7.2 billion for Fund II) are prime examples who were managing small platforms less than ten years ago and again are targeting significant allocations to North America.

Additionally, the market, globally, is awash with capital for infrastructure. There is an estimated US$150 billion of dry powder[6] held by infrastructure managers with the recent influx heightened by investors rotating out of global equities and bonds but still seeking alpha or a premium over bonds.

In fact, a recent survey of 65 sovereign wealth funds (SWFs) suggested that there is a further US$65 billion of dry powder from SWFs needing to be deployed over the next two years[7] with a significant allocation to North America. This is creating extraordinary pressure for managers to deploy capital outside of the traditional auction and sale processes to maintain return expectations.

Chart 6: US Infrastructure Fundraising (US$bn)[8]



Source: Inframation.

[6]Source: Preqin, as at 30 Jun 2017.
[7]Source: Infrastructure Investor, July 2018.
[8]2018 data to May 2018 year to date.

Seeking an investment edge

Given the significant capital looking for investment opportunities, infrastructure managers are distinguishing their investment capability on the basis of their relationships and network to source quality investment ideas.

Reputable infrastructure managers are well connected and have access to a large and influential network of relationships across the spectrum (e.g. from local city and municipality staff to the boardroom, with oil company CEOs and airline founders). A number of managers mentioned the 'local' and 'state focussed' nature of the energy market in particular, highlighting the importance of having local teams and expertise on the ground. For example, in the clique Houston energy market where deals are done through local connections without the need for marketing in New York.

This dynamic also means that quality, US-focussed managers operating across a large geographic area need to have multiple offices with deep connections in each region (e.g. KKR Infrastructure, I-Squared Capital and Energy Capital Partners have dedicated offices and local staff across the US).

The US infrastructure market is fragmented but sufficiently deep to accommodate infrastructure strategies focussed at different stages of an investment lifecycle (greenfield, late-stage development, brownfield). Another angle pursued by some managers to enhance returns is to seek a "complexity premium" (e.g. take privates, carve-outs, turn-arounds, developments, platform plays, failed process acquisitions), with the goal of reducing bid competition and achieving favourable pricing.

These managers tend to have a high proportion of staff with investment banking backgrounds, experienced in complex transaction execution.

Other value enhancing strategies focus on operational improvements and asset management. In order to successfully deliver on this, investment managers are focussing on building teams with operational experience and industry backgrounds (e.g. former airline CEOs or engineers) or drawing on the expertise of their underlying portfolio companies (e.g. when undertaking due diligence on similar assets). While these approaches are not novel, we observed that they were applied successfully by managers with scale and a long operating history. These managers were best able to create "partnerships" with operators/developers or establish platforms (e.g. renewables platform to consolidate smaller assets). Having sufficient scale and expertise also allows managers to realise efficiencies (e.g. centralised group insurance at lower cost), undertake operations and maintenance in-house, which leads to cost savings and incremental returns.

However, the overarching comment is that "buying well" is most critical and asset management efficiencies are unlikely to make up for an overpriced investment.

The final word...

We believe the US infrastructure market continues to be a pivotal and attractive market for investors, yet it is one of many contradictions. Despite recent efforts by the US Federal Government to stimulate supply of infrastructure investment opportunities through the Trump Infrastructure Plan, investment managers have focussed their efforts on well-functioning private market segments such as energy, renewable generation, transport and telecommunications in an effort to source proprietary opportunities. Experienced investment managers with a track record of performance, deep networks and relationships (with strategic stakeholders to gain a deal sourcing edge) and in-house operational and asset management expertise, are positioned to do well despite the large amount of capital that is pursuing investments in US infrastructure.
We encourage investors to continue to allocate capital to US infrastructure but with caution in assessing managers' capabilities. Frontier Advisors is in a strong position to assist clients with increasing their exposure to the US market.

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About Frontier Advisors: Frontier Advisors is one of Australia's leading asset consultants. We offer a range of services and solutions to some of the nation's largest institutional investors including superannuation funds, charities, government / sovereign wealth funds and universities. Our services range from asset allocation and portfolio configuration advice, through to fund manager research and rating, investment auditing and assurance, quantitative modelling and analysis and general investment consulting advice. We have been providing investment advice to clients since 1994. Our advice is fully independent of product, manager, or broker conflicts which means our focus is firmly on tailoring optimal solutions and opportunities for our clients.

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