Listed Infrastructure:

A Case for Midstream Energy

*Case Studies* is a Cohen & Steers series that evaluates compelling investment themes in our various sectors of expertise. This infrastructure study is focused on the real assets characteristics of the “midstream” energy sector, which is engaged in the gathering, processing and transportation of crude oil, natural gas and other energy commodities. Often, the business models of these companies are characterized by predictable revenue streams and cash flows. The delivery of this income can be enhanced through the tax-efficient structures of master limited partnerships (MLPs); however, many midstream energy companies are structured as corporations (typically offering lower current income but with generally higher dividend growth potential). Regardless of the structure, we believe these infrastructure companies lie in the “sweet spot” of shifting trends in supply and demand, as new areas of North American production are developed and the drivers of rising global consumption evolve.

**Midstream Energy Services**

Source: Cohen & Steers.
A Case for Midstream Energy

Introduction

Midstream energy companies gather, process and transport natural gas, crude oil and related energy commodities. The U.S. energy transportation network, which transports crude oil, natural gas and natural gas liquids (NGLs), is the largest in the world and spans over 2.5 million miles of pipelines.

Like other businesses in the infrastructure universe, pipelines are long-lived assets with high barriers to entry and relatively inelastic demand. Pipeline businesses tend to have low direct commodity price exposure. Their revenue streams are typically fee-based, and either regulated or tied to long-term contracts that support stable and predictable cash flows. In some cases, such as petroleum product pipelines, the tariffs charged are adjusted annually at a rate linked to inflation.

Although there are opportunities globally, much of the listed universe is concentrated in North America, where fast-growing energy production and secular shifts in supply and demand are creating compelling long-term investment opportunities. Many are associated with the growing need to upgrade outdated systems and build new energy transmission networks. According to a study prepared for the American Petroleum Institute by IHS Global, Inc., about $65–$90 billion of direct capital will be allocated toward oil and gas infrastructure in 2014. The study further projected that annual spending should rise until the end of this decade, and then moderate to about $60 billion per year through 2025.

“The Supply Push”

The North American energy renaissance is in full swing.

The U.S. Energy Information Administration (EIA) expects the United States to achieve energy independence over the next three decades as it boosts production of crude oil, natural gas, natural gas liquids and renewable energy. But, it’s important to point out that energy independence means different things to different people. In our view, it is the point at which total energy produced exceeds total energy consumed. This does not imply that America will be energy self-sufficient; rather, the U.S. will likely have an even greater presence in global energy trade under this scenario as it continues to import commodities that local markets demand (such as heavy crude oil) and export those items which are over-supplied domestically (such as natural gas, propane and butane).

Understanding the Risks: Although energy pipeline companies are not subject to direct commodity price exposure, a significant decrease in the production of natural gas, oil, or other energy commodities, due to a decline in production from existing facilities, import supply disruption, or otherwise, could negatively affect the performance of pipeline companies. Factors that could lead to a decrease in market demand include a recession or other adverse economic conditions, an increase in the market price of the underlying commodity, higher taxes or other regulatory actions that increase costs, or a shift in consumer demand for such products. Demand may also be adversely impacted by consumer sentiment with respect to global warming and/or by any state or federal legislation intended to promote the use of alternative energy sources, such as bio-fuels.

(1) At December 31, 2013.
Much of the production increase over the next decade is happening in previously undeveloped shale formations that have been made more economical by advanced drilling techniques. For instance, natural gas produced from shale resources is expected to increase from just 22% of supply in 2012 to 50% of production by 2040. From a capital investment perspective, these shale basins are often in locations that have not been historical supply centers, such as North Dakota, which means that the required infrastructure demands are even greater.\(^{(1)}\)

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**Exhibit 1: Change in Forecasts For Energy Production**

<table>
<thead>
<tr>
<th>Actual</th>
<th>Current Forecast</th>
<th>2010 Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>50</td>
<td>55</td>
<td>60</td>
</tr>
</tbody>
</table>

Energy commodity production forecasts have been revised upward each year since 2010.

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**Exhibit 2: Shifting Trends for U.S. Natural Gas Supply**

<table>
<thead>
<tr>
<th>Total Natural Gas Production (Tcf)</th>
<th>History</th>
<th>2012</th>
<th>Projections</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>2000</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>2005</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>2010</td>
<td>20</td>
<td>22%</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>2023</td>
<td>25</td>
<td>22%</td>
<td>30</td>
<td>35</td>
</tr>
<tr>
<td>2027</td>
<td>30</td>
<td>50%</td>
<td>35</td>
<td>40</td>
</tr>
<tr>
<td>2031</td>
<td>35</td>
<td>50%</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>2035</td>
<td>40</td>
<td>50%</td>
<td>45</td>
<td>50</td>
</tr>
</tbody>
</table>


There is no assurance that any historical trend illustrated above will be repeated in the future or any way to know in advance when such a trend might begin.

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“The Demand Pull”
A New Leg of Energy Infrastructure Development

1. Rising Natural Gas Utilization in Electric Power Generation
The most significant natural gas demand growth is expected from the power generation sector, as environmental regulations are driving higher utilization of cleaner-burning, cheaper-to-build and more flexible gas plants.


2. Increasing Industrial Usage
One byproduct of rising North American crude oil and natural gas production is the higher production of associated natural gas liquids (NGLs), such as ethane, propane and butane. This has led to significant declines in the price of these commodities (particularly ethane), which are feed stocks in many industrial processes, such as petrochemical production. Exhibit 4 below illustrates the evolving production cost advantage of ethylene in North America, which is derived from relatively low-cost ethane. According to the American Chemistry Council, this type of growing access to petrochemical feed stocks at lower prices is expected to spur substantial capital investment in the U.S. chemical industry, as highlighted in Exhibit 5 below.

As of February 28, 2014 for both Exhibit 4 and Exhibit 5. Source: American Chemistry Council.
3. The Coming Age of Exports

Based on Government estimates, the U.S. will be transformed from a natural gas importer to a net exporter over the next three years, as shale gas supply mounts and demand outside North America rises.\(^1\) In our view, the North American midstream energy industry is becoming a primary beneficiary of these trends, given the significant pricing disparities in global prices for liquefied natural gas, or LNG, as shown in Exhibit 6. Similar dynamics are expected to drive opportunities in the export of propane, butane and condensates.

To put these trends in perspective, today's modest level of LNG export capacity could increase to 2 trillion cubic feet of gas per day by 2020 and 3.5 trillion cubic feet of gas by 2029. But to make meaningful LNG exports a reality, significant infrastructure expansion will be required. The 11 existing LNG import terminals located along the Atlantic and Gulf coasts were originally built to re-gasify imported liquefied natural gas; however, plans are underway to convert many of these facilities to include liquefaction sites. As of January 2014, six approved facilities were in various stages of planning and construction in the U.S., and an additional 27 facilities had been proposed.\(^2\)

The LNG industry also needs to work through a number of environmental, safety and jurisdiction issues, as it navigates a complex regulatory framework. For example, most plants seeking approvals are limited to transporting LNG to the 20 countries holding free-trade agreements with the U.S., and none is a major importer of gas. Only five facilities (Lake Charles, LA; Sabine Pass, LA; Freeport, TX, Cove Point, MD and Cameron, LA) have final or conditional State Department approval to trade with a non-free trade agreement country, however, another 25 applications are under review.\(^3\) The top ten importers, which represent 87% of global LNG imports, are highlighted in Exhibit 7.

The North American energy renaissance is transforming global liquefied natural gas dynamics.

(3) Source: Office of the United States Trade Representative as of January 2014.
Midstream Energy Themes in Action:
How changing energy flow dynamics have given rise to innovative debottlenecking solutions.

Historically, Cushing, Oklahoma has served as the mid-continent hub for the distribution of both crude oil imported to the U.S. Gulf Coast and West Texas crude oil production. Most of the pipelines were originally constructed and configured to move imported crude oil north to Cushing, and then on to refineries throughout the Midwest. However, the substantial growth in domestic production over the past decade led to severe oversupply at the Cushing hub. In May 2012, an innovative solution designed to alleviate this bottleneck was implemented on the Seaway Crude Pipeline, a 500-mile system originally opened in 1995 to carry crude oil northward to Cushing from the Gulf Coast. Joint owners Enterprise and Enbridge embarked on a project to reverse the flow that enabled southbound energy transportation. The pipeline opened in mid-2012 with capacity of about 150,000 bpd, which was increased to 400,000 bpd in January 2013 when further modifications were completed. Now under construction is a parallel, 512-mile pipeline along the same route that could again double capacity by mid-2014.

Further capacity was added in January 2014, when the southern leg of TransCanada Corp.’s Keystone XL pipeline started commercial service to transport crude oil from Cushing to the Gulf Coast. It is anticipated by the company that this new pipeline leg can transport 520,000 barrels a day this year, on average.

Our Closing Perspective:
Investing in the Midstream Energy Sector

Companies in the midstream portion of the energy sector tend to generate predictable revenue streams, cash flows and distributions, derived from the gathering, processing and transportation of crude oil, natural gas and other energy commodities. At the same time, they offer the “real asset” characteristics typically found in other infrastructure categories: long-lived assets, typically with high barriers to entry and monopolistic structures supported by the resilient demand for essential services.

As highlighted in this case study, the dynamics of the North American energy industry are shifting, with unconventional drilling techniques opening up new areas of production once deemed too uneconomic to tap (e.g., the Canadian oil sands). At the same time, global consumption is on the rise. Over the next decade and beyond, an unprecedented infrastructure build out will likely be required to accommodate this growing supply and shifting demand. Through this process, the U.S. could evolve over time into a net exporter of natural gas, and with far less dependence on foreign oil imports.
Securities in the midstream energy sector can be structured as corporations or MLPs, which can enhance the delivery of income through their tax-efficient pass-through structures. Compared with the dividend payouts of corporations, MLP distributions tend to be higher (often in the range of 4–6% annually) and their cost of equity capital is generally lower (since they are not taxable entities).\(^1\) Over time, we expect more assets to move into this structure, which provides efficient income delivery and facilitates capital formation.

Below we highlight key companies in the North American midstream sector. This list includes the largest MLP, Enterprise Products Partners LP, as well as Enbridge, Inc. and The Williams Companies, Inc., which are structured as traditional corporations.

<table>
<thead>
<tr>
<th>Company Profiles—Major North American Pipeline Companies</th>
<th>Market Capitalization:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprise Products Partners LP (EPD)</td>
<td>$62.3 billion—Master Limited Partnership (MLP)</td>
</tr>
<tr>
<td></td>
<td>An integrated provider of natural gas pipeline and processing services and natural gas liquids (NGL) fractionation, storage, transportation and terminalling services, primarily in the Continental United States, Canada and the Gulf of Mexico.</td>
</tr>
<tr>
<td>Enbridge, Inc. (ENB CN)</td>
<td>$36.7 billion</td>
</tr>
<tr>
<td></td>
<td>Operates one of the largest crude oil and liquids pipeline systems in North America, with a significant and growing presence in natural gas pipeline and midstream businesses.</td>
</tr>
<tr>
<td>The Williams Companies, Inc. (WMB)</td>
<td>$29.2 billion</td>
</tr>
<tr>
<td></td>
<td>An integrated provider of natural gas pipeline that produces, gathers, processes and transports natural gas and natural gas liquids; broad exposure across the U.S. and Canada, with a growing presence in the Marcellus shale region.</td>
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</tbody>
</table>


In closing, we believe the operating characteristics of these businesses, combined with strong industry fundamentals and the tailwinds of shifting global trends, make a strong investment case for broad exposure across the midstream portion of the energy value chain.

The mention of specific securities is not a recommendation or solicitation for any person to buy, sell or hold any particular security and should not be relied upon as investment advice.

\(^1\) Risks: Investments in securities of MLPs involve risks that differ from an investment in common stock. Holders of units of MLPs have more limited control rights and limited rights to vote on matters affecting the MLP as compared to holders of stock of a corporation. For example, MLP unit holders may not elect the general partner or the directors of the general partner and the MLP unit holders have limited ability to remove an MLP’s general partner. The amount of cash that each individual MLP can distribute to its partners will depend on the amount of cash it generates from operations, which will vary from quarter to quarter depending on factors affecting the energy infrastructure market generally and on factors affecting the particular business lines of the MLP. Available cash will also depend on the MLP’s level of operating costs (including incentive distributions to the general partner), level of capital expenditures, debt service requirements, acquisition costs (if any), fluctuations in working capital needs, and other factors.
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Risks of Investing in Global Infrastructure Securities:
Energy pipeline companies are not subject to direct commodity price exposure because they do not own the underlying energy commodity. However, a significant decrease in the production of natural gas, oil, or other energy commodities, due to a decline in production from existing facilities, import supply disruption, or otherwise, could negatively affect the performance of pipeline companies. Factors that could lead to a decrease in market demand include a recession or other adverse economic conditions, an increase in the market price of the underlying commodity, higher taxes or other regulatory actions that increase costs, or a shift in consumer demand for such products. Demand may also be adversely impacted by consumer sentiment with respect to global warming and/or by any state or federal legislation intended to promote the use of alternative energy sources, such as bio-fuels.

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