

# The Case for Global Listed Infrastructure

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Allocations to listed infrastructure have been on the rise in recent years amid growing demand for real assets offering relatively predictable cash flows and the potential for attractive real returns. We examine the asset class's historical investment characteristics and the secular themes driving significant capital formation in infrastructure globally.

## Highlights

- **Compelling investment characteristics.** Many infrastructure companies have monopolistic businesses that often have regulated or concession-based revenues, features that can help potentially reduce financial risk, generate attractive risk-adjusted returns and provide downside protection.
- **Policy imperatives driving long-term opportunities.** Governments in the U.S. and elsewhere have been intent on using infrastructure spending to boost economic growth while making much needed modernizations. As plans proceed there will be growing incentives for increased private investment in infrastructure and privatization of key assets.
- **Growing recognition of the asset class.** Leading investment research firms have recently created standalone listed infrastructure universe categories, which should draw further attention to the group and enhance investors' decision-making process.
- **Strong secular themes.** The global infrastructure investment opportunity is driven primarily by two distinct trends: the need to upgrade aging infrastructure systems in developed economies after decades of neglect, and the demographically fueled growth in new infrastructure associated with bringing higher standards of living to emerging regions.
- **Innovative investment security structures.** As cash-strapped governments increasingly turn to private markets to fill a capital void, new security structures have been introduced globally, including those focused on income delivery.

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Introduction

**Listed Infrastructure: A Growing Asset Class With a Compelling Track Record**

Over the past decade, investor interest in having an infrastructure allocation has surged amid a growing emphasis on real assets and the desire for broader diversification. The listed market offers an increasingly popular way to access infrastructure assets, combining key investment attributes of private infrastructure with the benefits of liquidity and daily pricing.

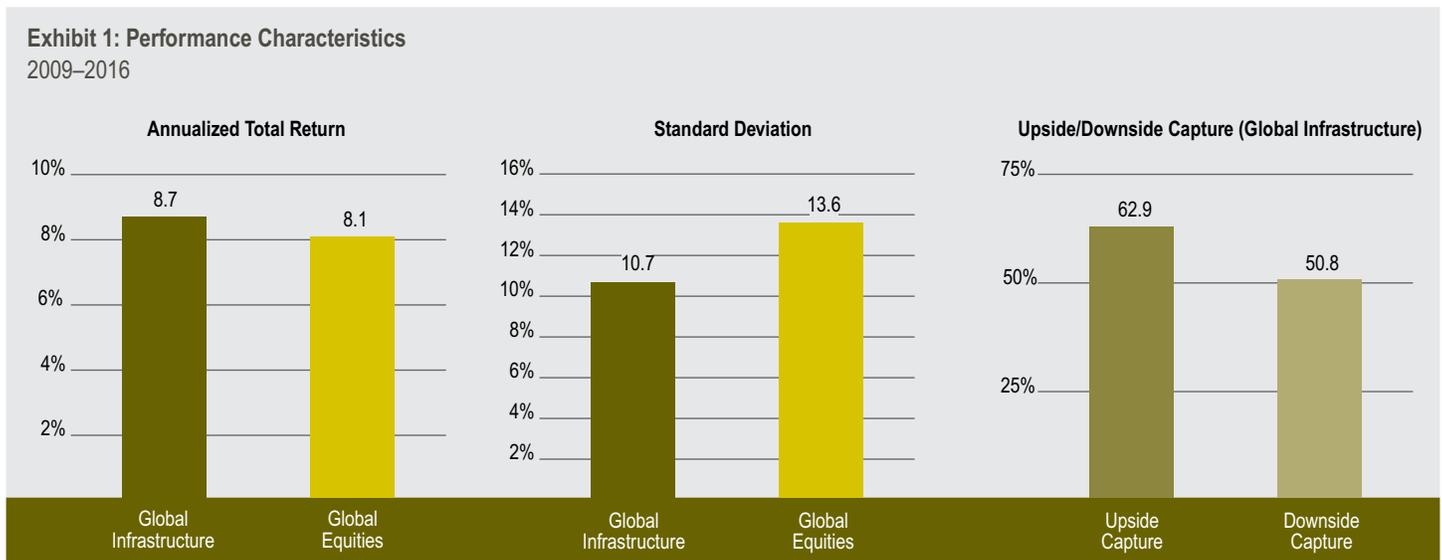
Investors' demand for listed infrastructure has also grown as the asset class's attractive risk-adjusted-return profile has received wider attention. Exhibit 1 compares risk and return characteristics of listed infrastructure with the broader stock market.

Results for the seven-year period ended December 31, 2016 (the infrastructure index used in Exhibit 1 was inception in 2009) indicate that listed infrastructure could have the potential to deliver:

**Equity-like returns.** Listed infrastructure's annualized return of 8.7% for the period was competitive with the broader stock market's performance.

**Reduced volatility.** The group's returns in the period came with a lower standard deviation. The relatively predictable cash flows of infrastructure companies historically have led to lower volatility of returns compared with the broader equity market.

**Downside protection.** The potential to produce attractive full-cycle returns with some downside protection also reflects the unique aspects of the asset class. In down markets during the period, infrastructure held up considerably better than the broad stock market.



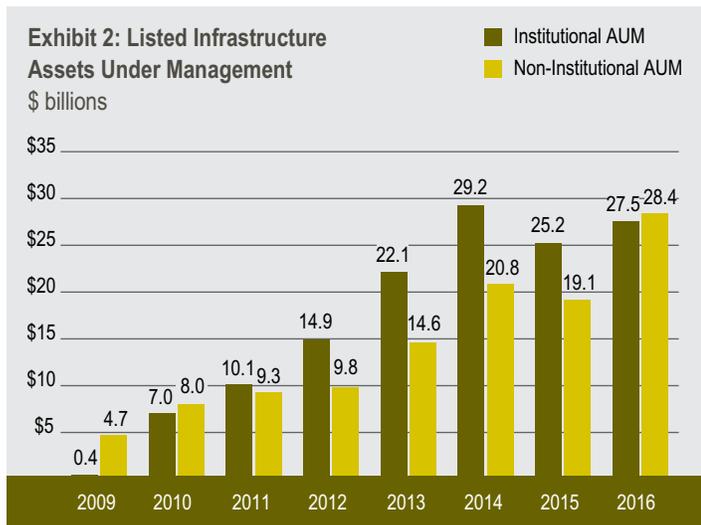
At December 31, 2016. Source: Morningstar Direct and Cohen & Steers.

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Listed infrastructure has the potential to deliver equity-like returns with some downside protection.

For investors seeking alternatives to bonds in a rising-rate environment and wary of elevated valuations in broader stock markets, we believe listed infrastructure offers a compelling complement to their portfolios. The search for diversification in the modern market environment also helps explain the strong growth in infrastructure investment demand shown in Exhibit 2.

Between 2009 and 2016, institutional assets under management in listed infrastructure strategies increased from under \$1 billion to more than \$27 billion (Exhibit 2). Institutions in Australia were one of the early adopters of listed infrastructure allocations, as their market was among the first to privatize transportation infrastructure assets, giving investors greater familiarity with infrastructure owned by listed entities. The expansion of the listed infrastructure market reflects greater acceptance of the asset class in the U.S. and other parts of the world, primarily by institutions, but also increasingly by individual investors.



At December 31, 2016. Source: eVestment.

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### Policy Imperatives Driving Long-Term Opportunities

More recently, shifting economic and political factors have put a spotlight on infrastructure. Many analysts foresee a turning point in the economy amid a strengthening business cycle and a more active mindset for policymakers in the U.S. and elsewhere. While there may be periods of short-term volatility as interest rates adjust to accelerated growth, we expect infrastructure to be a key beneficiary from a reflationary environment, as historically listed infrastructure has tended to perform well during periods of unexpected inflation.

Stronger growth should particularly benefit the more economically sensitive infrastructure subsectors such as marine ports and freight railways. At the same time, the

prospect for higher inflation could raise the group's overall appeal, as many infrastructure businesses have inflation-linked pricing mechanisms.

Political shifts in the U.S. have also drawn attention to infrastructure, as the Trump administration appears keen to boost infrastructure spending to repair aging systems and provide economic stimulus. Engineering, construction and materials companies would likely be the primary beneficiaries of any such programs. Listed infrastructure companies, which are more akin to "landlords" than builders, stand to be secondary beneficiaries, amid increased private sector involvement in the ownership, operation and financing of infrastructure projects over the medium to longer term. This trend will be supported by increasing awareness of service and reliability issues—reinforced by headline events ranging from Flint, Michigan-type water crises to the latest freight or passenger train derailment. Given weak government balance sheets and increased political motivation, this should drive more private sector (potentially listed) ownership and operation of critical infrastructure assets in the U.S. We believe that the private sector is ultimately the more efficient financier and operator of infrastructure assets, and that any long-term solution to reverse the deterioration of infrastructure service quality will include increased privatization of key assets. This will take time, as infrastructure projects are locally approved and financed and fraught with political issues.

### Infrastructure Gets Its Own Category in Morningstar and eVestment Databases

Faced with a growing number of mutual funds dedicated to infrastructure, Morningstar created a standalone category for the group in 2016. Until then, infrastructure funds were housed primarily in the World Stock group. Cohen & Steers advocated for the move, based in part on our analysis showing distinct performance and risk profiles of infrastructure relative to stock funds.

The research firm eVestment, which primarily serves institutional investors, also recently defined a separate category for listed infrastructure. With these developments, investors seeking the potential benefits of infrastructure will be better able to evaluate, screen and identify products relative to their proper peers accurately and effectively.

### GLIO: Building a Listed Infrastructure Community

The Global Listed Infrastructure Organization (GLIO) was launched in 2016 to promote listed infrastructure to the global investment community. With an advisory committee composed of dedicated infrastructure investors, the group's educational outreach ranges from whitepapers discussing the opportunities in infrastructure investment to information regarding the different benchmarks available to the \$2 trillion listed infrastructure universe.

### Asset Class Overview

Infrastructure companies typically have limited competition with high barriers to entry.

### Investing in Assets Vital to Economic Function

Infrastructure companies own assets that provide essential services and facilitate economic progress. Found in a broad range of industries within the transportation, energy, utilities and communications sectors, infrastructure companies are generally united by having monopolistic business models, with limited competition/high barriers to entry due to the capital-intensive nature of their respective industries. They also typically have resilient, inelastic demand—their customers will continue to pay for electricity and water, for instance, regardless of the economic landscape.

Infrastructure companies tend to have more relatively predictable income streams than global equities, often linked to inflation. As a result, many infrastructure businesses have historically shown the versatility to perform well in periods of both rising and easing inflation, as well as through different points in the economic cycle.

#### Infrastructure Business Characteristics

<b>Long-lived real assets</b>	The useful lives of infrastructure assets are typically greater than 20 years.
<b>High barriers to entry</b>	The value of existing assets can be enhanced by strict zoning restrictions and large capital requirements—and in some cases exclusivity rights—which make it difficult or prohibitive for competitors to enter the market. The replacement cost cycle helps provide inflation protection.
<b>Stable cash flows</b>	The often regulated nature of infrastructure businesses can serve to enhance cash-flow predictability and potentially lower financial risk.
<b>Inelastic demand</b>	Infrastructure assets provide essential services have tended to be resistant to economic downturns.

### Geographic and Industry Diversification

Through listed infrastructure companies, investors can gain access to a globally diversified portfolio of infrastructure assets, spread across the Americas, Europe and Asia Pacific. The listed infrastructure universe spans a broad range of subsectors, which we group into four main categories:

Transportation	Energy	Utilities	Communications
Toll Roads	Storage and Transportation	Electric Utilities	Wireless Towers
Airports	Renewable Energy	Gas Utilities	Satellite Services
Marine Ports	Pipelines	Water	
Railroads			

Most listed infrastructure companies own several, if not dozens, of infrastructure assets, which are not necessarily all in the same country. This type of asset diversification—similar to the benefits of portfolio diversification—is important for several reasons:

- Regulation is a significant risk faced by the asset class; accordingly, diversification across regulatory and political environments can be beneficial.
- Diversification can reduce volatility related to varying regional economic and market conditions.

### Predictable Revenue, Often Linked to Inflation

Infrastructure assets tend to produce predictable cash flows, which are generally a function of two factors—price and volume.

- Prices are often a function of the regulatory or concession framework and can have periodic inflation-linked adjustments.
- Volume is often a function of a region's underlying economic conditions such as gross domestic product (GDP) growth.

Below, we provide context on how price and volume tend to drive revenues in several infrastructure subsectors, while showing how these characteristics can be inherently linked with inflation.

#### Exhibit 3: Revenue Drivers of Infrastructure Subsectors

Subsector	Price	Inflation Characteristics	Volume
<b>Airports</b>	Aeronautical—regulated, Regulatory Asset Base (RAB) methodology with 3- to 5-year rate agreements.  Retail, real estate—can be regulated, unregulated or quasi-regulated.	Regulated fees generally have annual CPI-based adjustments.	Economic growth is the key driver of business/leisure travel and retail consumption.  Demographic shifts in emerging markets leading to air travel as a growing means of transport.
<b>Integrated Utilities</b>	Power generation revenues, typically driven by market power prices.	Power prices have shown strong historical correlation with inflation.	Generally same as regulated utilities.
<b>Passenger Rails</b>	Transportation—often regulated with infrequent price adjustments; retail and real estate—generally unregulated.	Little inflation impact on pricing.	Passenger volumes driven primarily by GDP; retail business often a function of passenger traffic.
<b>Ports</b>	Mix of direct asset ownership and concessions; mostly deregulated.  1- to 5-year contracts negotiated with customers (shippers). Short-term pricing often supply/demand driven.	Longer-term contracts can have inflation escalators.	Trade volumes are usually linked to GDP. Since 1990, container volumes grew at 3.0x the rate of GDP.  Tanker and dry bulk volumes have expanded at 0.7x and 1.2x, respectively.
<b>Toll Roads</b>	Long-term (20–99 year) concession agreements with local governments.	Generally, annual inflation-based toll adjustments.	Economic growth has historically impacted heavy vehicle traffic.
<b>Towers</b>	10- to 15-year contracts with wireless carriers.	Contracts generally include annual escalators of approximately 3%–5% per annum.	Increasing data intensity of wireless devices; wireless device penetration.
<b>U.K. Water</b>	Regulated Asset Base (RAB) methodology.	Generally, annual inflation-linked increases.	Residential demand steady; commercial demand growth historically sensitive to economic conditions.
<b>U.S.-Regulated Utilities</b>	3- to 5-year rate agreements with regulators.	Inflation impacts allowed returns often occur through rate base and cost of capital calculations.	Industrial and commercial demand is primarily a function of economic conditions.  Residential demand historically steady over the long run and weather-driven in the short term.

At December 31, 2016. Source: Cohen & Steers. See page 15 for additional disclosures.

Macro Sensitivities

**Infrastructure Historically Has Shown Resilience After Interest Rate Increases**

Infrastructure companies are often perceived as more sensitive to interest rates in the short term due to their high dividend yields and capital-intensive business models. However, while infrastructure stocks may at first react negatively to rapid increases in interest rates, performance has historically improved over the long run as the initial shock of higher rates wore off and investors began to focus on the underlying fundamentals. Exhibit 4 shows the average returns during the 10 largest spikes in the 10-year Treasury yield since 2000. After an initial reaction, infrastructure stocks subsequently produced strong absolute and relative performance.



At December 31, 2016. Source: Cohen & Steers, Morningstar.

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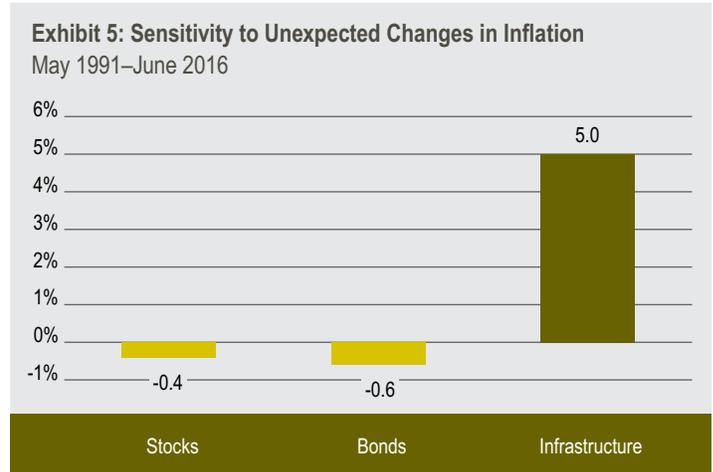
(a) Time periods determined by ranking 30-day increases in the 10-year U.S. Treasury yield since 2000 (discarding overlapping periods of lesser yield increases), measuring average index returns in those 30-day periods and the ensuing 3-, 6- and 12-month periods thereafter. See page 15 for index associations and additional disclosures.

Against a backdrop of broadly improving economic trends and strong fundamentals, reactions to interest rates are generally associated with a contraction in earnings multiples rather than an indication of balance-sheet strength or cash flow sustainability. We believe long-term returns will ultimately be driven by fundamental factors specific to each infrastructure business, subsector and region.

**Positive Association With Inflation Surprise**

One reason often stated for allocating to infrastructure is the desire for protection from inflation. Periods in which inflation comes as a surprise can be particularly damaging to portfolio returns. To illustrate this point, we compared the sensitivity of various asset classes to unexpected changes in inflation (Exhibit 5). The chart shows the average outperformance of each asset class for every 1% that inflation exceeded the median inflation estimate from the prior year. A positive sensitivity to inflation surprise signifies that unexpected inflation has typically had a beneficial effect on performance, and vice versa.

The results of our analysis suggest that an allocation to listed infrastructure may help mitigate the potentially negative effects of unexpected inflation on stocks and bonds. The data imply that for every one percentage point increase in inflation above the previous year’s forecast, stocks and bonds delivered inflation-adjusted returns that were 40 and 60 basis points below average, respectively, whereas listed infrastructure outperformed its long-term inflation-adjusted average by 500 basis points. We believe this reinforces the view that listed infrastructure has distinct characteristics from a broad equity portfolio, consistent with the qualities of a real asset allocation.



At June 30, 2016. Source: Bloomberg and Cohen & Steers.

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Stocks represented by the S&P 500 Index. Bonds represented by the BofA Merrill Lynch U.S. 7–10 Year Treasury Index. Infrastructure represented by a 50/50 Blend of Datastream World Pipelines and Datastream World Gas, Water & Multi-Utilities through July 2008 and the Dow Jones Brookfield Global Infrastructure Index thereafter. Inflation sensitivity based on a linear regression analysis of 1-year real returns and the difference between the realized inflation rate (y/y change in the Consumer Price Index) and the lagged 1-year-ahead median inflation estimate from the University of Michigan survey of consumers. See page 15 for index associations and additional disclosures.

## Secular Drivers

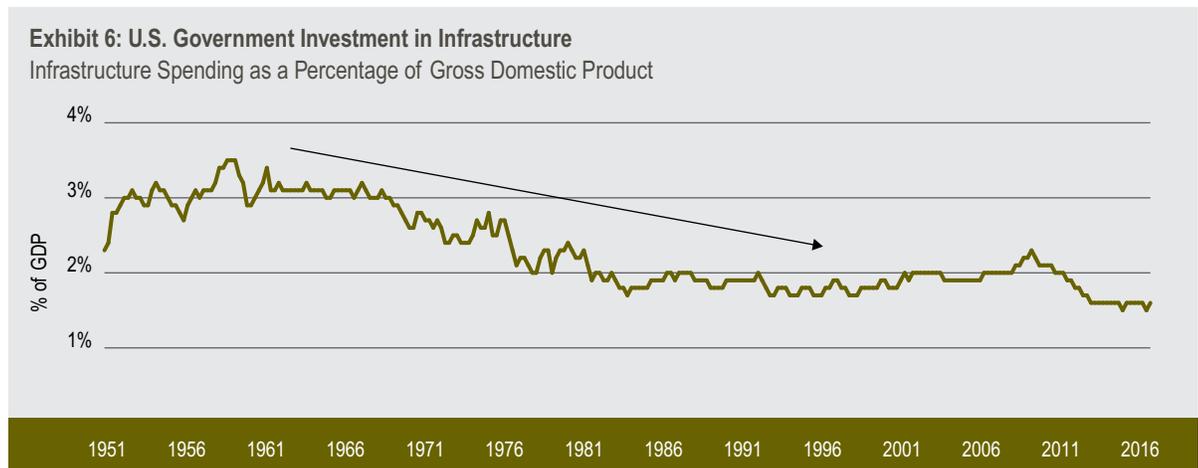
### Opportunities Amid the Massive Need for Infrastructure Financing

Infrastructure is vital to everyday life and economic growth. Yet while public funding for infrastructure has become scarcer, especially after the financial crisis, the need to maintain or build networks worldwide is greater than ever. For developed markets, investment opportunities can be framed by the daunting task of upgrading and replacing antiquated infrastructure networks (e.g., roads and bridges, electricity transmission wires, water pipelines). At the same time, emerging economies frequently face critical investment needs to support economic growth, expand urban capacity and meet the demand for higher standards of living.

#### Developed Markets: A History of Infrastructure Underinvestment

Developed markets have seen a steady, decades-long decline in infrastructure spending. Exhibit 6 shows the more than 50-year decline in infrastructure investment in the U.S. as a percentage of the country's GDP. To varying degrees, similar patterns exist in developed markets in Europe and Asia.

Spending on infrastructure in the United States has been on the decline for many years. According to the American Society of Civil Engineers (ASCE), this neglect could lead to about \$3.6 trillion of pending needs by the year 2020. Yet only about \$2.0 trillion has been funded to date, leaving a funding gap of just over \$1.6 trillion, or about \$200 billion per year.



At March 31, 2017 (most recently published data). Source: Thomson Reuters, Credit Suisse Research.

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Infrastructure spending has accounted for a steadily declining share of developed countries' economies.

According to a study by the American Society of Civil Engineers, the deterioration of the nation's infrastructure undermines the U.S. economy, jeopardizes public safety and threatens the quality of life.

Every four years, ASCE compiles a comprehensive report card that grades the state of infrastructure assets across a broad range of sectors. What was notable from their most recent report, published in March 2017, was America's poor overall grade of D+. The report concludes that the deterioration of the nation's infrastructure undermines the U.S. economy, jeopardizes public safety and threatens the quality of life. ASCE's findings by infrastructure category are highlighted in Exhibit 7.

**Exhibit 7: Poor Grades for U.S. Infrastructure from the American Society of Civil Engineers (ASCE)**

	Grade	Comments
<b>Overall</b>	<b>D+</b>	Grades have been near failing since the survey began in 1998, due to delayed maintenance and underinvestment across most categories.
Aviation	D	With a federal cap on how much airports can charge passengers for facility improvements, airports struggle to keep up with investment needs, creating a \$42 billion funding gap between 2016 and 2025.
Bridges	C+	Nearly 10% of the nation's 614,387 bridges were structurally deficient in 2016.
Dams	D	It is estimated that it will require an investment of nearly \$45 billion to repair aging, yet critical, high-hazard-potential dams.
Drinking Water	D	According to the American Water Works Association, an estimated \$1 trillion is necessary to maintain and expand service to meet demands over the next 25 years.
Energy (national grid)	D+	Without greater attention to aging equipment, capacity bottlenecks, and increased demand, Americans will likely experience longer and more frequent power interruptions.
Hazardous Waste	D+	More than half of the U.S. population lives within three miles of a hazardous waste site.
Waterways	D	Most locks and dams on the inland waterway system are well beyond their 50-year design life, and nearly half of vessels experience delays.
Ports	C+	To remain competitive globally and with one another, ports have been investing in expansion, modernization and repair.
Rails	B	Although the grade rose to B from C+ last year, U.S. rail still faces clear challenges, most notably in passenger rail, which faces the dual problems of aging infrastructure and insufficient funding.
Roads	D	More than two out of every five miles of America's urban interstates are congested and traffic delays cost the country \$160 billion in wasted time and fuel in 2014.
Transit	D-	Despite increasing demand, the nation's transit systems have been chronically underfunded, resulting in aging infrastructure and a \$90 billion rehabilitation backlog.

**A = Exceptional    B = Good    C = Mediocre    D = Poor    F = Failing**

**At December 31, 2016.** Source: ASCE.

The views expressed in the above exhibit do not express the views of Cohen & Steers. See page 15 for additional disclosures.

## Antiquated Water Infrastructure Systems

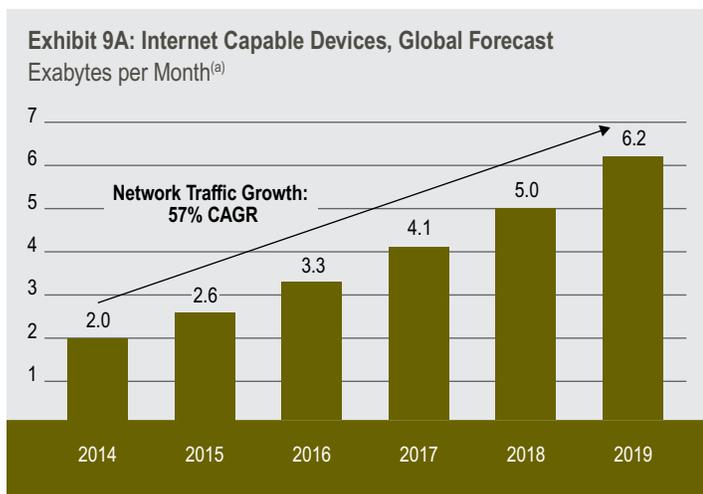
As highlighted by the recent water crisis in Flint, Michigan, where elevated lead levels were attributed to aging pipes, the United States is a prime example of a need for safe water upgrades. A mid-2013 study by the U.S. Environmental Protection Agency (EPA) projected that \$384 billion in improvements would be needed for the nation's drinking water infrastructure through 2030 for nearly 75,000 systems to continue providing safe drinking water. In many cases, drinking water infrastructure was reported to be 50 to 100 years old. The 2013 survey, submitted to Congress every four years as part of the Safe Drinking Water Act, divided the capital requirements into the four general areas summarized in Exhibit 8 below.

**Exhibit 8: EPA Assessment of Infrastructure Capital Requirements Through 2020**

Capital Requirements by 2020	Infrastructure Category	Purpose
\$247.5 billion	Distribution and transmission	Replace or refurbish aging or deteriorating lines
\$72.5 billion	Treatment	Construct, expand or rehabilitate infrastructure to reduce contamination
\$39.5 billion	Storage	Construct, rehabilitate or cover finished water storage reservoirs
\$20.5 billion	Source	Construct or rehabilitate intake structures, wells and spring collectors

At June 2013. Source: Environmental Protection Agency.

The views expressed in the above exhibit do not express the views of Cohen & Steers.



At February 28, 2015. Source: Cisco VNI Mobile.

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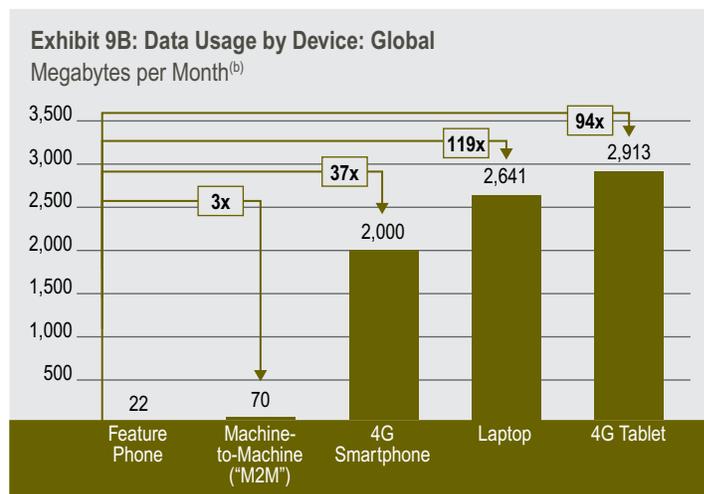
(a) One exabyte equals one quintillion bytes, or one billion gigabytes. (b) One megabyte equals one million bytes. See page 15 for additional disclosures.

## Growing Demand for Wireless Communications

Not all developed-market opportunities are tied to the obsolescence of aging infrastructure assets. Here we introduce the case for tower companies, which revolves around the increasingly data-intensive nature of wireless traffic, as well as the expected growth in demand for wireless devices. These trends are highlighted in Exhibits 9A and 9B below.

Today, there are over 100,000 commercial wireless towers spread throughout the United States. To accommodate the increasing data intensity of wireless traffic, telecommunications carriers are reportedly investing heavily in their networks, requiring more leased space from cellular tower companies to house their communications equipment. We expect this trend to bode well for the business models of tower companies, which are often characterized by low variable costs, low churn and high operating leverage. Due to these types of business models, incremental revenues from new leases and lease escalations tend to flow directly to the bottom line. Moreover, leases tend to be long term and often have annual revenue escalators.

Over the next five years, wireless data usage is projected to grow at a compound annual growth rate of 57%.



### North American Midstream Energy Companies Poised for Recovery

Midstream energy companies represent a key component of North American infrastructure. They are critical to the energy value chain, collecting fees for the services of transporting, processing and storing energy commodities as they move from supply regions to demand centers. Many of these companies are organized as master limited partnerships (MLPs)—a tax-advantaged vehicle designed for the efficient delivery of income to investors.

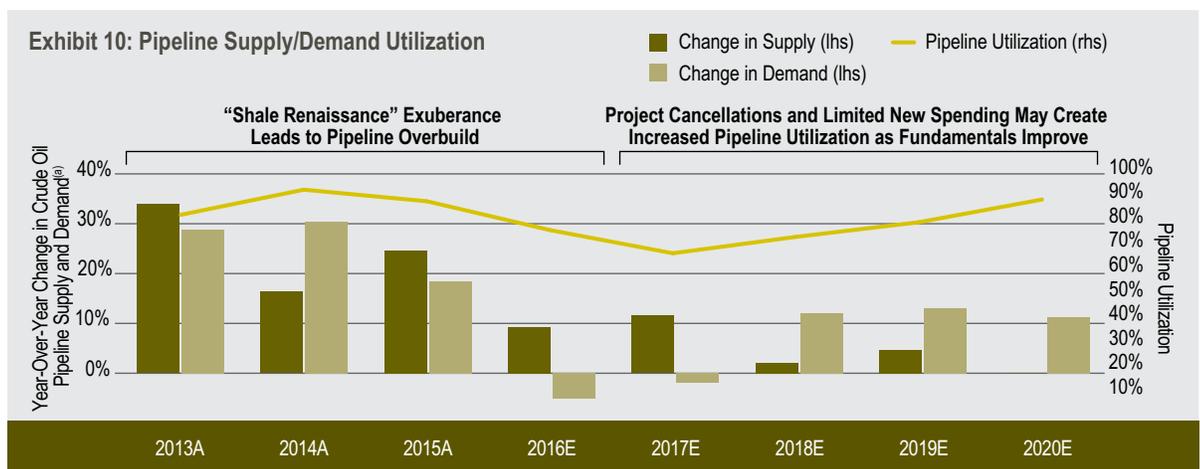
While turmoil in energy markets and a rapid decline in oil prices and production growth in recent years weighed heavily on midstream energy companies, they now appear poised to benefit from a stabilization and longer-term increase in activity. Due to OPEC’s November 2016 agreement to reduce output by 1.2 million barrels per day, coupled with modest demand growth, we expect the global oil surplus to continue to fall over the course of 2017 and into 2018. Amid higher oil prices and an associated rise in North American production, the increased volumes stand to benefit midstream energy companies.

Moreover, midstream energy companies that own pipeline assets stand to benefit from rising rates of pipeline utilization. Slowing pipeline additions should be met with growing energy production as North America continues to take market share in global crude oil supply. As shown in Exhibit 10, we project rising pipeline demand (production) to be combined with relatively muted new supply; post the completion of current projects, we expect few long-haul pipelines will be developed through the end of the decade.

As oil markets fundamentals improve, we expect midstream energy stocks and MLP unit prices to respond positively to any sign of sustained higher oil prices as investors anticipate the favorable impact this will have on production and therefore cash flows.

North American shale oil is well positioned to benefit from a recovery in oil demand. Like offshore and oil sands, shale offers substantial undeveloped resources. Yet in contrast to those competing sources, shale oil can be tapped in as little as 6 to 12 months and at a moderate cost. We expect North American producers to gain significant market share due to their cost competitiveness and speed to market, with favorable implications for midstream energy companies that operate in the region.

**North American producers are cost competitive relative to most other producing regions. Over time, we believe midstream energy fundamentals should strengthen as commodity prices rise, volumes grow and the supply/demand picture for pipelines improves.**



At December 31, 2016. Source: Wells Fargo, Cohen & Steers.

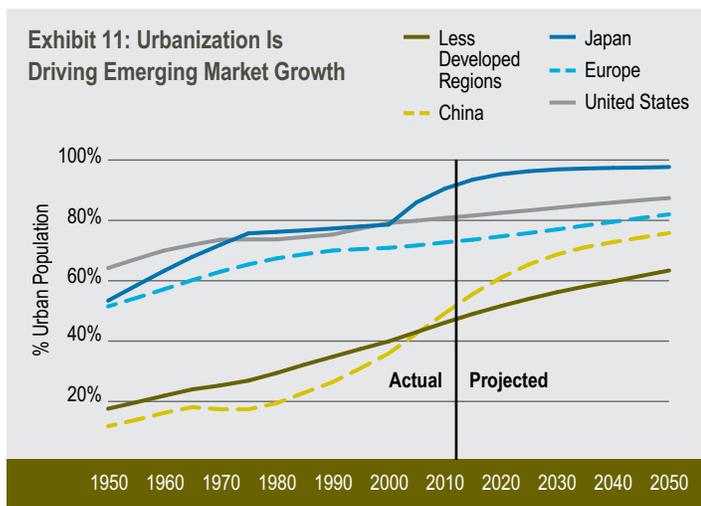
Data quoted represents past performance, which is no guarantee of future results. There is no guarantee that any historical trend illustrated herein will be repeated in the future, and there is no way to predict precisely when such a trend will begin.

(a) Wells Fargo data aggregated across the four major U.S. oil basins (Permian, Bakken, Niobrara and Eagle Ford). Pipeline utilization is a measure of available contracts and volumes for existing pipelines and is provided by Wells Fargo. Note that this data point is separate from changes in supply and demand. See page 15 for index associations and additional disclosures.

## Emerging Markets: Demographic Shifts Driving Infrastructure Demand

Many of the world's developing regions continue to be shaped by powerful long-term demographic trends—higher birth rates, rising incomes and rapid urbanization—which, in turn, are helping drive massive infrastructure spending on basic services, such as energy transmission, transportation and communications infrastructure.

Pursuant to the United Nation's Population Division, the world's urban population has grown rapidly, from 746 million in 1950 to 3.9 billion in 2014. While the level of urbanization has lagged in Asia, this region is home to 53% of the world's urban population, followed by 14% in Europe and 13% in Latin America and the Caribbean. Exhibit 11 provides a brief summary of actual and projected urbanization trends for various countries and regions.



At June 2014. Source: United Nations Population Division.

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By 2030, emerging markets will be home to 9 of the world's 10 largest cities.

These trends of urbanization tend to go hand-in-hand with rising incomes, which in turn are driving demand for basic services in emerging economies. However, as we highlight in Exhibit 12, there is still an enormous disparity in the provision of their basic services, compared to developed economies.

## Exhibit 12: Access to Infrastructure Services by Country

United States = 100

	Passenger Vehicles	Road Network Length	Rail Line Length	Telephone Subscribers	Internet Users
United States	100	100	100	100	100
EU	70	11	211	42	78
Japan	75	1	27	50	91
Russia	44	1	85	27	71
Brazil	26	2	30	22	58
India	3	5	66	2	18
China	13	4	67	18	49

Data reflects the most current information available as of December 31, 2014.

Source: IMF, World Bank, CIA Global Fact Book and Cohen & Steers. Passenger vehicles is per 1,000 people, road network length is per million kilometers, rail line length is per 1,000 kilometers rescaled to 100 and telephone subscribers and internet users are per 100 people. See page 15 for additional disclosures.

To put these trends into perspective, from 2015 to 2050 the United Nations projects that the world's urban populations will grow by 2.5 billion people, with nearly 90% of the increase concentrated in Asia and Africa. Notably, about 37% of this projected increase is attributed to just three countries—India, China and Nigeria—including about 404 million in India, 292 million in China and 212 million in Nigeria. As highlighted in Exhibit 13, emerging markets will be home to 9 of the world's 10 largest cities by 2030.

## Exhibit 13: 10 Largest Cities in the World by 2030 Population (thousands of people)

	1990	2010	2025	2030
1 Tokyo	38,001	38,323	37,876	37,190
2 Delhi	25,703	29,348	32,727	36,060
3 Shanghai	23,741	27,137	29,442	30,751
4 Mumbai (Bombay)	21,043	22,838	25,207	27,797
5 Beijing	20,384	24,201	26,494	27,706
6 Dhaka	17,598	20,989	24,331	27,374
7 Karachi	16,618	19,230	22,009	24,838
8 Al-Qahirah (Cairo)	18,772	20,568	22,432	24,502
9 Lagos	13,123	16,168	20,030	24,239
10 Ciudad de México (Mexico City)	20,999	21,868	22,916	23,865

Source: United Nations Urbanization Project: 2014 update.

See page 15 for additional disclosures.

### Water Scarcity: A Rising 21st Century Challenge

According to the UN, water usage has been rising over the past century at more than twice the rate of population growth. By 2025, 1.8 billion people could be living in countries or regions with absolute water scarcity; we believe it is possible that two-thirds of the world population could be under stress conditions. Fresh water accounts for less than 3% of the world's total water resources; 60% is found in just 10 countries.<sup>(1)</sup>

Global infrastructure investment opportunities exist in water utilities, waste-water treatment providers and their related businesses. We also find attractive investment opportunities in U.S.-based regulated water utilities, which are investing heavily in pipeline upgrades and are attempting to grow through acquisitions of smaller, often-municipal water systems. Waste-water treatment is also an attractive theme, particularly in emerging markets, while we expect investment opportunities in desalinization businesses to grow significantly over time due to a rising need for potable water.

### Public and Private Funding

#### Trends in Financing of Infrastructure

##### Business Structures With a Growing Focus on Income Delivery

Governments within developed and emerging markets, already challenged by fiscal budget constraints, have become even more stressed in the wake of the financial crisis, compounding their approach to meet infrastructure challenges. Amid a massive capital void, new forms of listed infrastructure have arisen to help meet these needs, including YieldCos, MLPs and REITs in the U.S., and infrastructure trusts in Mexico, Japan and India.

This relatively new mechanism for capital formation also reflects investors' increased appetite for income-focused investments, as well as the desire of many companies to segment risk to attract a broader pool of investors. Examples can be found throughout infrastructure-related sectors such as energy transmission and communications.

## New Structures in an Expanding Universe for Global Infrastructure Stocks

The global listed infrastructure universe continues to expand, with a growing emphasis on security structures focused on income delivery. In addition to the types of U.S. securities highlighted below, new structures have also arisen internationally, such as the FIBRA-E in Mexico and the infrastructure trust in India.

	YieldCos	MLPs	REITs
<b>Description</b>	YieldCos, which can be structured as publicly traded limited liability companies, limited partnerships or traditional corporations, generally house power generation assets, including renewables.	Distributions generally tax sheltered, and in some cases, tax credits.	Like MLPs, REITs are not taxable entities. However, they typically must pay out at least 90% of taxable earnings as dividends to shareholders.
<b>Potential Investment Benefits</b>	<ul style="list-style-type: none"> <li>Historically predictable cash flows and attractive income with relatively low volatility</li> <li>Distributions generally tax sheltered through depreciation, and in some cases, tax credits</li> <li>Historically above-average dividend growth</li> </ul>	<ul style="list-style-type: none"> <li>Relatively high predictable streams of income and distributions</li> <li>Often lower cost of capital than C-Corporation peers</li> <li>Tax efficiency</li> </ul>	<ul style="list-style-type: none"> <li>Historically predictable streams of income</li> </ul>
<b>Examples</b>			
<b>Company</b>	NextEra Energy Partners	Enterprise Products Partners	Crown Castle International
<b>Business Focus</b>	Solar and Wind Energy	Midstream Energy	Wireless Infrastructure
<b>Market Cap</b>	\$1.4 billion at 12/31/2016	\$56.4 billion as of 12/31/2016	\$31.3 billion as of 12/31/2016
<b>Description</b>	NextEra Energy Partners is a growth-oriented partnership formed by NextEra Energy, a leading developer of renewable energy in the United States. The company's portfolio includes contracted renewable generation assets.	Enterprise Products Partners is the largest midstream energy company in North America, with several business lines including natural gas liquids (NGL), natural gas, and crude oil pipelines and related product services.	Crown Castle, which converted to REIT status in 2014, is a pure-play U.S. tower company. The company provides infrastructure for broadcasting and wireless broadband on behalf of major service providers.

(1) Source: Food and Agriculture Organization of the United Nations as of May 2015.

## Rising Privatization Trends Across Global Markets

Many governments are actively seeking private capital investment in large-scale infrastructure projects. Through privatizations and public-private partnerships, public projects can often be designed, implemented, administered and salvaged at lower cost and risk to the public than those associated with traditional government provisions.

An example of a privatization can be found in the Spanish government's sale of 49% of its stake in AENA, the world's largest airport operator by passenger volume, in a February 2015 IPO. Other countries that have privatized infrastructure assets or have plans to step up infrastructure spending through private enterprise include Mexico, France, India, Australia and the U.S.

### Company Profile: AENA

Country and Sector	Date of Issuance	Market Cap
Spanish Airport	February 2015	€19.5 billion at December 31, 2015

Cash-strapped governments are turning to private sectors for funding.

## Asset Allocation

### Listed Infrastructure as a Complement to Direct Investment

Listed infrastructure is a compelling way to invest in a rapidly growing sector of the global economy, combining attributes of private infrastructure investments with benefits of liquidity, transparency and daily market pricing.

Listed infrastructure offers liquidity and typically can be sold at any time, in contrast to direct investments that often have long lock-ups.

### Business Characteristics Similar to Direct Investments

As noted earlier, listed infrastructure companies tend to own long-lived assets with regulated and monopolistic structures. Similar to private infrastructure investments, their businesses are often characterized by significant barriers to entry, and there is relatively inelastic demand for the services they provide. Many invest in the same types of assets owned by sovereign wealth funds, infrastructure funds and private equity funds. In several cases, assets are co-owned by a combination of listed infrastructure companies and direct institutional investors.

### Relative Liquidity Advantage

While private and listed infrastructure invest in the same kinds of assets, listed infrastructure markets provide a higher level of liquidity relative to the long lock-up periods and limited secondary markets for private infrastructure investment vehicles. These securities benefit from transaction-driven, real-time pricing and can typically be sold at any time, while lock-ups on direct investments can last anywhere from 5 to 15 years. In a liquid environment, managers of listed infrastructure can capitalize on pricing anomalies and other technical drivers.

### Moderate Leverage

Direct infrastructure investments are often highly leveraged to enhance return potential. Comparatively, most listed infrastructure companies are more conservatively leveraged.

### **Potential Diversification Benefits**

The scope of the industry groups found in global infrastructure, such as those highlighted in Exhibit 3 on page 5, underscore the broad diversification that can be offered by listed infrastructure through a range of subsectors and geographies. There is also diversification at the security level. For example, it is not uncommon for utilities, which comprise the largest sector within the listed infrastructure universe, to own dozens or more assets spread across multiple subsectors and geographies. This type of diversification can help reduce the risk of concentrated exposure to regional economic downturns, regulations and market performance. In contrast, direct infrastructure funds typically invest in just a handful of assets, which tend to be concentrated within a few geographies and/or subsectors.

Notably, there is very little overlap between global listed infrastructure and global equities. The 220 securities of the FTSE Global Core 50/50 Net Tax Index represent roughly 4% of the MSCI World Index as measured on a market-capitalization basis, with well fewer than half of the FTSE index companies also included in the MSCI index. This aspect of infrastructure appears consistent with the group's typically modest correlation with the wider equity market.

### **Access to Themes Not Always Available Through Private Investments**

One of the attractive aspects of listed infrastructure is that investors can access a broad set of liquid investment themes across all geographies and subsectors—some of which would likely entail significant hurdles when trying to invest directly in the same assets. Often, public companies have premier assets that may not be accessed easily.

We believe the appeal of an allocation to global listed infrastructure lies in the relatively predictable cash flows and attractive return potential of the asset class, implemented as part of a separate real assets allocation or as a carve-out of global equities.

### **Conclusion**

Listed infrastructure offers unique characteristics and potential competitive advantages, providing easy access to subsectors and investment themes that are typically under-represented in general equity. Given this relatively light representation, a standalone allocation to listed infrastructure can benefit overall portfolios.

While there are parallels between the business characteristics of listed infrastructure and private equity infrastructure investment—long-lived assets, often with high barriers to entry and a monopolistic structure—the value-add comes primarily from the transparency, diversification, liquidity and daily pricing advantages of public securities markets. Depending on the asset allocation framework and investment objectives of the investor, listed infrastructure tends to be treated as a component of a real assets portfolio or as a carve-out allocation from global equities. In our view, both approaches make sense:

- A sleeve of a real assets allocation—either standalone or as a complement to direct infrastructure—recognizes the unique asset profiles, inflation linkages and long-term performance characteristics of the underlying businesses.
- An allocation as a carve-out of global equities recognizes that listed infrastructure has an equity “wrapper,” while appreciating its defensive attributes and alternative asset characteristics.

Within either framework, we believe listed infrastructure offers an attractive total-return proposition that combines stable, predictable dividends and attractive long-term cash-flow growth.

# Cohen & Steers

## INFRASTRUCTURE • The Listed Alternative



### Index Definitions

*An investor cannot invest directly in an index and index performance does not reflect the deduction of any fees, expenses or taxes.*

The BofA Merrill Lynch U.S. 7-10 Year Treasury Index is composed of U.S. Treasury Notes with a 7-10 year maturity. The Datastream World Gas, Water & Multi-Utilities Index is a global index of companies in these sectors compiled by Thomson Reuters Datastream. The Datastream World Pipelines Index is a global index of energy pipeline companies compiled by Thomson Reuters Datastream. The S&P 500 Index is an unmanaged index of 500 large-capitalization, publicly traded stocks representing a variety of industries. The Dow Jones Brookfield Global Infrastructure Index measures the stock performance of publicly listed infrastructure companies. Unless otherwise noted, asset classes mentioned in this material are represented by the following indexes: Global infrastructure: The FTSE Global Core Infrastructure 50/50 Net Tax Index is a market-capitalization-weighted index of worldwide infrastructure and infrastructure-related securities and is net of dividend withholding taxes. Constituent weights are adjusted semi-annually according to three broad industry sectors: 50% utilities, 30% transportation, and a 20% mix of other sectors, including pipelines, satellites, and telecommunication towers. The utilities sector excludes the subsector generation utilities. The index is free-float market-capitalization-weighted and is reconstituted annually with quarterly rebalances. Global stocks: MSCI World Index, a free-float-adjusted market-capitalization-weighted index that is designed to measure the equity market performance of developed markets.

### Important Disclosures

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### Risks of Investing in Global Infrastructure Securities

Infrastructure issuers may be subject to regulation by various governmental authorities and may also be affected by governmental regulation of rates charged to customers, operational or other mishaps, tariffs, and changes in tax laws, regulatory policies, and accounting standards. Foreign securities involve special risks, including currency fluctuation and lower liquidity. Some global securities may represent small and medium-sized companies, which may be more susceptible to price volatility than larger companies. No representation or warranty is made as to the efficacy of any particular strategy or fund or the actual returns that may be achieved.

### Risks of Investing in MLP Securities

An investment in MLPs involves risks that differ from a similar investment in equity securities, such as common stock, of a corporation. Holders of equity securities issued by MLPs have the rights typically afforded to limited partners in a limited partnership. As compared to common shareholders of a corporation, holders of such equity securities have more limited control and limited rights to vote on matters affecting the partnership. There are certain tax risks associated with an investment in equity MLP units. Additionally, conflicts of interest may exist among common unit holders, subordinated unit holders and the general partner or managing member of an MLP; for example, a conflict may arise as a result of incentive distribution payments. MLPs are subject to significant regulation and may be adversely affected by changes in the regulatory environment, including the risk that an MLP could lose its tax status as a partnership. MLPs may trade less frequently than larger companies due to their smaller capitalizations, which may result in erratic price movement or difficulty in buying or selling. MLPs may have additional expenses, as some MLPs pay incentive distribution fees to their general partners. The value of MLPs depends largely on the MLPs being treated as partnerships for U.S. federal income tax purposes. If MLPs were subject to U.S. federal income taxation, distributions generally would be taxed as dividend income. As a result, after-tax returns could be reduced, which could cause a decline in the value of MLPs. If MLPs are unable to maintain partnership status because of tax law changes, the MLPs would be taxed as corporations and there could be a decrease in the value of the MLP securities.

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We believe accessing investment opportunities around the world requires local knowledge and insight into specialized and regional markets. Cohen & Steers maintains a global presence through the following offices:

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