Introduction

Infrastructure in the United States today feels like the opening line of Charles Dickens’ A Tale of Two Cities: “It was the best of times, it was the worst of times”. Many segments of the US infrastructure market are working well while other segments suffer from chronic underinvestment. We believe that a large part of this disparity can be explained by differences in funding models and ownership structures. The Global Listed Infrastructure asset class plays a large role in the US.

This article looks at the ownership profiles of different US infrastructure segments; and at the performance of those segments. It also discusses the ways that global listed infrastructure companies are providing solutions, and what impact President Trump may have on the sector.

Ownership of US infrastructure assets

<table>
<thead>
<tr>
<th>Sector</th>
<th>Public sector owned</th>
<th>Private sector owned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric utilities</td>
<td>15% government (federal &amp; local)</td>
<td>70% privately owned, 15% Rural co-ops</td>
</tr>
<tr>
<td>Gas utilities</td>
<td>Small minority local government owned</td>
<td>Vast majority privately owned</td>
</tr>
<tr>
<td>Water utilities</td>
<td>85% local government owned</td>
<td>15% privately owned</td>
</tr>
<tr>
<td>Waste</td>
<td>25% local government owned</td>
<td>75% privately owned</td>
</tr>
<tr>
<td>Roads</td>
<td>Almost all local, state &amp; federal government owned</td>
<td>20 privately owned toll roads</td>
</tr>
<tr>
<td>Airports</td>
<td>All but one is owned by local, state or federal governments</td>
<td>San Juan (PR) &amp; several PPPs</td>
</tr>
<tr>
<td>Sea Ports</td>
<td>Port authorities owned by local &amp; state governments</td>
<td>Stevedore &amp; terminal management predominately private sector</td>
</tr>
<tr>
<td>Freight rail</td>
<td>All privately owned</td>
<td></td>
</tr>
<tr>
<td>Passenger rail</td>
<td>Federal government (Amtrak) for long distance trains</td>
<td>Several small PPPs</td>
</tr>
<tr>
<td>Oil &amp; gas pipelines</td>
<td>Local and state government owned metropolitan trains</td>
<td>All privately owned</td>
</tr>
<tr>
<td>Mobile towers</td>
<td>All privately owned</td>
<td></td>
</tr>
<tr>
<td>Satellites</td>
<td>Minority federal government owned including Global Position System (GPS), National Aeronautics and Space Administration (NASA) &amp; Department of Defense satellites (DoD satellites)</td>
<td>Majority privately owned</td>
</tr>
</tbody>
</table>

Source: Industry associations & First State Investments estimates as at end February 2018.
Performance of US infrastructure

In the World Bank’s 2016-17 Global Competitiveness Index, the US ranks 3rd in overall competitiveness, but only 11th in Infrastructure.

This Infrastructure ranking is behind Japan (5th), France (7th), Germany (8th) and the United Kingdom (9th), but ahead of Canada (15th), Australia (17th) and China (42nd). While the overall ranking is solid, we believe great disparities exist in the quality of infrastructure within the US.

The American Society of Civil Engineers (ASCE) produces an annual report card on US infrastructure. The 2017 grade was D+ (from a potential A to F range) which they define as being "Poor, at risk". The table below compares ASCE’s sector grades against ownership type. It shows a clear link between private ownership and better grades.

Ownership and quality of US infrastructure assets

<table>
<thead>
<tr>
<th>Ownership</th>
<th>ASCE 2017 report card grade (A-F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freight rail</td>
<td>B</td>
</tr>
<tr>
<td>Waste</td>
<td>C+</td>
</tr>
<tr>
<td>Sea Ports</td>
<td>C+</td>
</tr>
<tr>
<td>Electric utilities</td>
<td>D+</td>
</tr>
<tr>
<td>Gas utilities</td>
<td>D+</td>
</tr>
<tr>
<td>Water utilities</td>
<td>D</td>
</tr>
<tr>
<td>Roads</td>
<td>D</td>
</tr>
<tr>
<td>Passenger rail</td>
<td>D-</td>
</tr>
<tr>
<td>Oil &amp; gas pipelines</td>
<td>N/A</td>
</tr>
<tr>
<td>Mobile towers</td>
<td>N/A</td>
</tr>
<tr>
<td>Satellites</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Source: ASCE and First State Investments.

Below is the complete ASCE 2017 infrastructure grading by sector.

"Slowly but surely, government-owned infrastructure sectors are seeking and utilising private sector capital to fund new investment.”
Private sector delivering investment

Infrastructure sectors in the US that are owned and operated by private sector players are investing in order to maintain and grow their asset base.

We would argue that the lightly regulated, privately owned freight rail\(^1\), oil & gas pipelines\(^2\), mobile towers\(^3\) and waste\(^4\) sectors provide the US with world class infrastructure assets run by world class companies. These sectors are able to deploy capital effectively for the following reasons:

1. investment is driven by commercial considerations, not through public policy,
2. regulation tends to be light handed,
3. there is no requirement for government subsidies, and
4. there is a predominance of business to business transactions (i.e. freight rail with Walmart, oil & gas pipelines with ExxonMobil, mobile towers with Verizon), with no direct impact on end consumers/voters.

These sectors have proven track records of raising and deploying large amounts of capital to meet the growing needs of the US economy. We have just witnessed a period of significant investment by oil & gas pipeline companies in response to the shale oil and gas energy renaissance in the US. The following charts illustrate the growing capital investments made by the freight railway industry, and the large productivity improvement delivered to the economy.

**Capital Expenditure by US freight railways (US$, bn)**

![Graph showing capital expenditure by US freight railways](graph1.png)

Source: Association of American Railroads, Class 1 railways only. Data as end December 2015.

**Investor owned electric utilities investment (US$, bn)**

![Graph showing investor owned electric utilities investment](graph2.png)


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\(^1\) Including companies like Union Pacific, BNSF, CSX, Norfolk Southern and Kansas City Southern.

\(^2\) Including companies like Kinder Morgan, Williams Cos, Enterprise Products Partners and Enbridge Energy.

\(^3\) Including companies like American Tower, Crown Castle, SBAC Communications and Vertical Bridge.

\(^4\) Including companies like Waste Management, Republic Services, Waste Connections and Advance Disposal.

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While electric and gas utilities are predominately privately owned, they are closely regulated by state utility commissions and, to a lesser extent, the US Federal Energy Regulatory Commission (FERC). Hence their rate of investment tends to be determined in conjunction with state-based public policy objectives, and is often constrained by the impact on customers’/voters’ energy bills. In recent years, the shale energy revolution has kept electric and gas utility fuel costs low. This has enabled regulators and utilities to spend money on maintaining and enhancing aged transmission, distribution and generation assets without needing to sharply raise bills.
Public sector investment lagging

The US infrastructure sectors where we believe investment is failing to keep up with demand are roads, bridges, airports, water utilities and passenger rail. These sectors are all dominated by government ownership. In our view the main reasons for this under investment are:

1. inadequate or flawed funding models in a low taxing economy6,
2. a political inability to raise taxes,
3. the timing mismatch between political electoral cycles of between 2 and 4 years and infrastructure asset lifecycles of between 40 and 60 years,
4. a public perception that roads and bridges should be “free”, limiting politicians’ ability to introduce tolling systems and,
5. planning complexity between local, state, regional and federal governments.

The evidence of under investment and failure to meet the demands of the growing economy in these government dominated infrastructure sectors are numerous. Some of the main examples include:

- The US Department of Transportation estimates an annual highway and bridge investment shortfall of US$43 billion.
- Despite a 23% increase in highway spending from 2002 to 2012, travel delays have increased 20% and ride quality has declined by 2%6.

Aging US water utility infrastructure

The American Water Works Association (AWWA) estimates that investment needs for buried drinking water infrastructure total more than US$1 trillion nationwide over the next 25 years.

Source: American Water Works. Data as at end January 2018.

How Americans commute to work

Source: US Census Bureau. Data as at end December 2016.

6 Tax as a percentage of US GDP was 26% in 2016, well below the OECD average of 34%. Over the past 50 years this percentage has increased by just 2% for the US but by 9% on average for the OECD.
6 We note this percentage has been declining over the past five years.
6 These losses include over US$200 million from state subsidies.
6 Acela Express and Northeast Regional services which account for around a third of Amtrak’s passengers.
6 PPPs are “a project delivery model whereby private companies partner with local governments to finance, construct, manage, and share the risk of public projects. Depending on the scope of the partnership, a private company may take on just some or all aspects of a project. The private companies are repaid in various ways, including by income generated through highway tolls or airport fees or bonds issued by local governments. Payments often are tied to performance metrics; failure to meet established thresholds may trigger reduced or delayed payments” – Icons of Infrastructure.
In the airports space, Puerto Rico has sold its main airport to the private sector, while PPPs are being used to upgrade terminals at LaGuardia Airport and Denver International Airport. Plans are also in train for a US$10 billion PPP at John F. Kennedy International Airport.

In the passenger rail space, Denver’s US$2.2 billion Eagle P3 project was completed in 2016, the privately owned Brightline railway has recently opened in Florida, Maryland’s Purple Line PPP broke ground in 2017 (with completion due in 2022) and there are plans for a privately funded fast train between Dallas and Houston (of which we remain highly sceptical).

In the words of Ferrovial, “PPPs help local governments leverage their limited resources to build infrastructure quickly and at a reduced cost”.

Global listed infrastructure is part of the funding solution

The global listed infrastructure asset class is a significant, successful investor in the US, predominantly via the freight railway, oil & gas pipeline, mobile tower, waste and electric, gas & water utilities sectors. As stated above, we believe these sectors are effectively deploying substantial amounts of capital into the stock of US infrastructure. Going forward we believe more global listed infrastructure companies can participate in funding and fixing the US infrastructure investment deficit in various sectors. Some of the main opportunities are outlined below:

Toll roads

- Transurban, Ferrovial and Vinci are world leaders in designing, building and owning toll road concessions. We would expect these firms to be active participants in any new projects.
- Transurban, Ferrovial, Vinci and Abertis all have operating toll roads assets in the US.
- Atlantia has an electronic toll collection company in the US.

A solution to congestion on “existing urban corridors”

A solution to congestion on “existing urban corridors” by means of Active management of “newly added capacity” through tolling

Source: Ferrovial.

Airports

- Ferrovial, Vinci, Groupe AdP, AENA and Fraport would be active participants in any airport privatisations or PPPs
- Ferrovial is leading the US$800 million Denver International Airport PPP
- Grupo Aeroportuario del Sureste owns Puerto Rico’s San Juan airport
- BBA Aviation operates a network of US private jet airports
- CCR provides support services to US airports.

LaGuardia Airport PPP

Source: LaGuardia Gateway Partners.

Water utilities

- American Water Works, Aqua America, Eversource Energy and Suez Environment are active consolidators of the fragmented and government-dominated US water utility sector.

Passenger rail

- Listed Japanese passenger rail companies East Japan Railway and Central Japan Railway are both seeking to export their fast train technology into the US market.

The most promising areas of investment growth for global listed infrastructure within the US are express lanes and airport PPPs. We believe these solutions work as they:

- solve the political problem for governments; that being, they don’t have to sell / privatise the asset, and they don’t need to put up taxes / tolls / user charges,
- strongly attract private sector investment,
- increase economic prosperity and productivity,
- improve the customer / voter experience,
- reduce congestion levels, and
- insulate users from construction cost overruns.

We anticipate that Ferrovial, Transurban and Vinci will be major players in the US express lane and airport PPP space over the coming three to five years. Even a small portion of the massive US infrastructure market opening up to private sector investment can equate to a substantial opportunity for these global listed infrastructure firms.
What can President Trump do to help US infrastructure?

We believe the Trump presidency will have a positive impact on private sector investment in US infrastructure, which will benefit global listed infrastructure companies.

To be clear, we do not expect any ‘big bang’ step change in private sector infrastructure investment; rather, a gradual increase. This is because the US system of government is very much state based. Most infrastructure decisions are made at local or state government level, not federal. For example, local and state governments own 96% of US highways and 98% of bridges. As one infrastructure Chief Financial Officer (CFO) said to us recently “Demand for infrastructure in US is strong – but the decision-making process is very fragmented”.

Focus on ex-Goldman appointees to deliver infrastructure

However even a gradual increase in private sector investment in this massive market can be very meaningful for global listed infrastructure firms. The four main impacts we expect the Trump presidency to have on the infrastructure sector are outlined below.

Firstly, Trump has established a pro-business political and regulatory environment, lowering the barriers to investment. He has made pro-business appointments to the FERC, the Federal Communications Commission (FCC) and the Environmental Protection Agency (EPA). These moves are positive for infrastructure investment.

Secondly, by cutting taxes (and most likely increasing the US deficit), Trump is “starving the beast of government”, meaning that the government now has less revenue to spend on infrastructure projects. As a result, private sector capital will become an even more necessary source of funding for infrastructure projects.

Thirdly, it is widely expected that Trump will release his infrastructure agenda in the first half of 2018. The table on the next page is the leaked priority list of infrastructure projects. While we have low expectations, it should at least provide more low cost financing, tax credits and a framework for using more private sector capital. All of this will be helpful for global listed infrastructure investment. However as one CFO said to us recently, “All Trump can do is supply more financing, but financing is not the problem. We need states to make decisions”.

Source: peoplespunditdaily.com.
### President Trump's infrastructure priority list

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Sector</th>
<th>State</th>
<th>Revenue Stream</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gateway Program</td>
<td>Mass Transit/Rail</td>
<td>NY, NJ</td>
<td>No</td>
</tr>
<tr>
<td>The Brent Spence Bridge</td>
<td>Highways and Bridges</td>
<td>OH, KY</td>
<td>No</td>
</tr>
<tr>
<td>National Research Lab for Infrastructure</td>
<td>National Initiative</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Locks and Dams 52 and 53 on the Ohio River</td>
<td>Inland Waterways</td>
<td>IL</td>
<td>Yes</td>
</tr>
<tr>
<td>I-95 Critical Highway Repairs</td>
<td>Highways and Bridges</td>
<td>NC</td>
<td>No</td>
</tr>
<tr>
<td>15 Bridges on I-95, Philadelphia</td>
<td>Highways and Bridges</td>
<td>PA</td>
<td>No</td>
</tr>
<tr>
<td>Mississippi River Shipping Channel Dredging</td>
<td>Ports</td>
<td>LA</td>
<td>Yes</td>
</tr>
<tr>
<td>NextGen Air Traffic Control System</td>
<td>National Initiative</td>
<td>National</td>
<td>No</td>
</tr>
<tr>
<td>Plans and Eastern Electric Transmission Lines</td>
<td>Electricity and Transmission</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>Project Clean Lake, Cleveland</td>
<td>Water</td>
<td>OH</td>
<td>Yes</td>
</tr>
<tr>
<td>South Carolina Dams Accelerated Repairs</td>
<td>Water/Inland Waterways</td>
<td>SC</td>
<td>No</td>
</tr>
<tr>
<td>Hydroelectric Plants operated by USACE</td>
<td>Inland Waterways/Electricity</td>
<td>National</td>
<td>Yes</td>
</tr>
<tr>
<td>Alaska Pipeline &amp; LNG Project</td>
<td>Oil and Gas</td>
<td>AK</td>
<td>Yes</td>
</tr>
<tr>
<td>Cotton Belt Line Rail Project</td>
<td>Mass Transit</td>
<td>TX</td>
<td>Yes</td>
</tr>
<tr>
<td>Cadiz Water Conveyance Project</td>
<td>Water</td>
<td>CA</td>
<td>Yes</td>
</tr>
<tr>
<td>TransWest Express</td>
<td>Electricity and Transmission</td>
<td>CA, NV, AZ</td>
<td>Yes</td>
</tr>
<tr>
<td>Chokecherry and Sierra Madre Wind Energy</td>
<td>Electricity and Transmission</td>
<td>WY</td>
<td>Yes</td>
</tr>
<tr>
<td>Second Avenue Subway - Phases 2 &amp; 3</td>
<td>Mass Transit</td>
<td>NY (Partial)</td>
<td>Yes</td>
</tr>
<tr>
<td>Savannah Harbor Expansion Acceleration</td>
<td>Ports</td>
<td>CA</td>
<td>Yes</td>
</tr>
<tr>
<td>Atlantic Coast Pipeline</td>
<td>Oil and Gas</td>
<td>VA, NC</td>
<td>Yes</td>
</tr>
<tr>
<td>Champlain Hudson Power Express</td>
<td>Electricity and Transmission</td>
<td>NY</td>
<td>Yes</td>
</tr>
<tr>
<td>DC Union Station Expansion and Rehab</td>
<td>Rail</td>
<td>DC</td>
<td>No</td>
</tr>
<tr>
<td>Maryland Purple Line</td>
<td>Mass Transit</td>
<td>MD</td>
<td>Yes</td>
</tr>
<tr>
<td>M-1 Rail, Detroit</td>
<td>Mass Transit</td>
<td>MI</td>
<td>Yes</td>
</tr>
<tr>
<td>Gordie Howe International Bridge</td>
<td>Highways and Bridges</td>
<td>MI</td>
<td>Yes</td>
</tr>
<tr>
<td>Kansas City Airport</td>
<td>Airports</td>
<td>MO</td>
<td>Yes</td>
</tr>
<tr>
<td>The Peace Bridge</td>
<td>Highways and Bridges</td>
<td>NY</td>
<td>No</td>
</tr>
<tr>
<td>MBTA Green Line Extension, Boston</td>
<td>Mass Transit</td>
<td>MA (Partial)</td>
<td>Yes</td>
</tr>
<tr>
<td>Augustin Plains Ranch</td>
<td>Water</td>
<td>NM</td>
<td>Yes</td>
</tr>
<tr>
<td>I-93 Rebuild</td>
<td>Highways and Bridges</td>
<td>NH</td>
<td>No</td>
</tr>
<tr>
<td>Lake Ponchartrain Bridge</td>
<td>Highways and Bridges</td>
<td>LA</td>
<td>Yes</td>
</tr>
<tr>
<td>Port Newark Container Terminal Improvements</td>
<td>Ports</td>
<td>NJ</td>
<td>Yes</td>
</tr>
<tr>
<td>Fort Mojave Solar Project</td>
<td>Electricity and Transmission</td>
<td>AZ</td>
<td>Yes</td>
</tr>
<tr>
<td>Red and Purple Line Modernization, Chicago</td>
<td>Mass Transit</td>
<td>IL (Partial)</td>
<td>Yes</td>
</tr>
<tr>
<td>I-953-395 Reconstruction</td>
<td>Highways and Bridges</td>
<td>FL</td>
<td>No</td>
</tr>
<tr>
<td>Chicago Union Station Redevelopment</td>
<td>Rail</td>
<td>IL</td>
<td>No</td>
</tr>
<tr>
<td>Upper Mississippi Locks 20-25</td>
<td>Inland Waterways</td>
<td>MO</td>
<td>Yes</td>
</tr>
<tr>
<td>Illinois River Locks</td>
<td>Inland Waterways</td>
<td>IL</td>
<td>Yes</td>
</tr>
<tr>
<td>Colorado I-70 Mountain Corridor</td>
<td>Highways and Bridges</td>
<td>CO (Partial)</td>
<td>No</td>
</tr>
<tr>
<td>Colorado I-25 Improvements</td>
<td>Highways and Bridges</td>
<td>CO</td>
<td>No</td>
</tr>
<tr>
<td>NHC Lock Replacement, New Orleans</td>
<td>Inland Waterways</td>
<td>LA</td>
<td>Yes</td>
</tr>
<tr>
<td>Chickamauga Lock</td>
<td>Inland Waterways</td>
<td>TN</td>
<td>Yes</td>
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<tr>
<td>Sao Locks Modernization Project</td>
<td>Inland Waterways</td>
<td>MI</td>
<td>Yes</td>
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<tr>
<td>Huntington Beach Desalination Plant</td>
<td>Water</td>
<td>CA</td>
<td>Yes</td>
</tr>
<tr>
<td>Upper Ohio Navigation Improvements</td>
<td>Inland Waterways</td>
<td>OH</td>
<td>Yes</td>
</tr>
<tr>
<td>Monongahela River Locks and Dams</td>
<td>Inland Waterways</td>
<td>PA (Partial)</td>
<td>Yes</td>
</tr>
<tr>
<td>Seattle Airport Expansion</td>
<td>Airports</td>
<td>WA</td>
<td>Yes</td>
</tr>
<tr>
<td>Arlington Memorial Bridge</td>
<td>Highways and Bridges</td>
<td>VA</td>
<td>No</td>
</tr>
<tr>
<td>Energy Storage and Grid Modernization</td>
<td>Electricity and Transmission</td>
<td>National</td>
<td>Yes</td>
</tr>
<tr>
<td>St. Louis Airport</td>
<td>Airports</td>
<td>MO</td>
<td>Yes</td>
</tr>
</tbody>
</table>


Fourthly, a committed federal government can work with states – at least with red, Republican-led ones - to find solutions and remove the obstacles blocking new infrastructure investment. While the US presidency is weak in many areas of domestic policy, we should not underestimate the value of Theodore Roosevelt’s “bully pulpit” to advocate for an infrastructure agenda.

While we do not believe the Trump presidency will create a step change in infrastructure spending, it is likely to assist in providing more investment opportunities for global listed infrastructure companies.
Outlook – slowly but surely

The US infrastructure sector is divided between privately owned assets which work well, and government-owned sectors which suffer from chronic underinvestment from a low taxing government.

Slowly but surely, government-owned infrastructure sectors are seeking and utilising private sector capital to fund new investment. Over the next three to five years we expect global listed infrastructure companies to expand their participation in the US infrastructure market.