American Listed Infrastructure
Cleaner and greener

First Sentier Investors

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American Listed Infrastructure (ALI) companies provide customers with cleaner and greener services than alternatives

Investments by ALI's railroads, electric and water utilities are reducing carbon emissions, improving safety and increasing customer satisfaction

We believe ALI's sustainability benefits are going to be valued more highly in the future by customers, regulators, politicians and investors

The essential service nature of listed infrastructure makes sustainability a key value driver for the asset class. American Listed Infrastructure (ALI) companies provide cleaner and greener services than the alternatives.

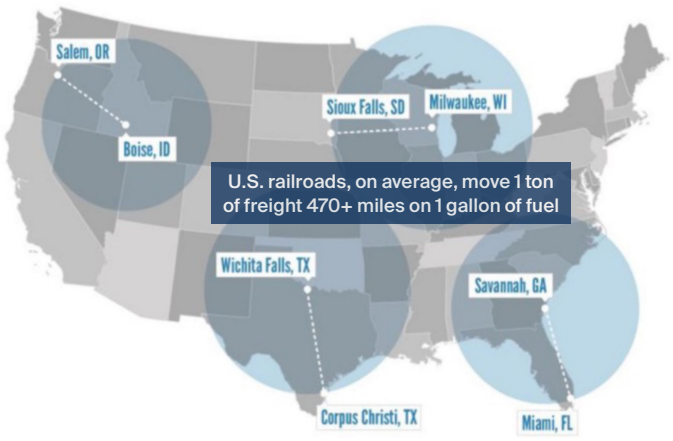
This article reviews the environmental and social benefits that ALI's railroads, electric and water utilities provide, relative to customer alternatives. We believe these benefits will gain increased recognition in the future and listed markets will value these companies accordingly[1].

Railroads

Transportation is the largest producer of carbon emissions in the United States (US). Freight is moved by trucks, railroads, pipelines, barges, the postal service and aircraft. Railroads account 28%[2] of US freight, competing mainly against trucks with 40% market share.

ALI's railroads have multiple sustainability benefits relative to the trucking alternative. Environmentally, they are three to four times more fuel efficient than trucks[3]. A freight train can move a ton of freight by an average of 472 miles per gallon of fuel[4]; while a truck moves a ton of freight by an average of 140 miles, for each gallon of fuel consumed. This fuel efficiency means that moving freight via rail reduces greenhouse gas (GHG) emissions by 75%. Hence while railroads move 28% of freight, they account for only 2% of the US' transportation related GHG emissions.[5]

Now that's fuel (and carbon) efficiency by railroads



Source: Association of American Railroads (AAR)

US railroads have a strong track record of improving their fuel efficiency. The graph on the following page shows the large improvements railroads have made in fuel efficiency relative to trucks over the last 30 years.

[1] Certain statements, estimates, and projections in this document may be forward-looking statements. These forward-looking statements are based upon First Sentier Investors' current assumptions and beliefs, in light of currently available information, but involve known and unknown risks and uncertainties. Actual actions or results may differ materially from those discussed. Readers are cautioned not to place undue reliance on these forward-looking statements. There is no certainty that current conditions will last, and First Sentier Investors undertakes no obligation to correct, revise or update information herein, whether as a result of new information, future events or otherwise.

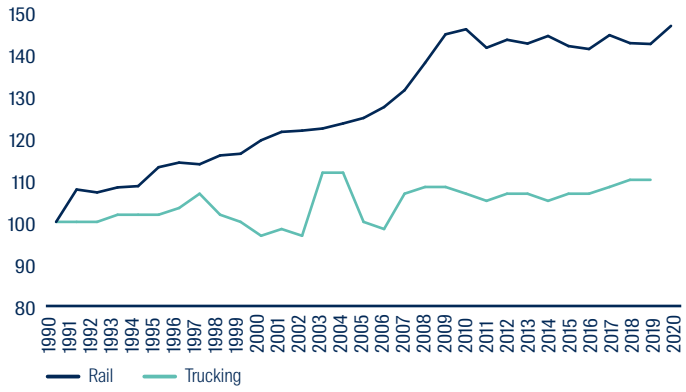
[2] US Department of Transportation (2019) as measured by ton miles.

[3] Association of American Railroads from Federal Highway Administration data.

[4] "The Positive Environmental Effects of Increased Freight by Rail Movements in America" Association of American Railroads 2020.

[5] Environmental Protection Agency.

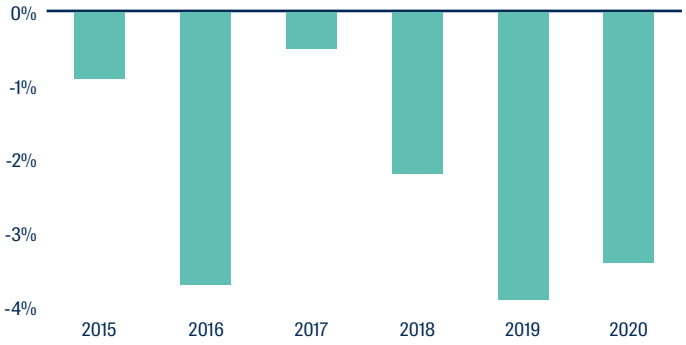
Rail vs Truck fuel efficiency



Source: AAR, FSI

Capital investment by railroads in newer, more fuel efficient locomotives is further driving down GHGs via improved fuel efficiency. CSX Corporation[6] has reduced its GHG emissions intensity by 13.8% since 2014[7]. Norfolk Southern has improved its fuel efficiency by 9.4% since 2015[8].

CSX Corp reductions in GHG emissions intensity



Source: CSX Corporation 2020 Environment, Social & Governance Report

Socially, railroads have many benefits relative to trucking. First, they provide a safer alternative for the movement of goods. Large trucks account for 4% of registered vehicles, 7% of vehicle miles travelled but 10% of fatal accidents.[9] In 2019, accidents involving large trucks caused ~5,000 fatalities compared to ~600 involving freight railroads[10].

Second, the government expenditure needed to maintain US roads and bridges would be reduced if more freight shifted from truck to rail. Roads and bridges built 50 plus years ago were not designed to carry the number and weight of trucks using these assets today. It is also worth remembering freight railroads build, own and maintain their networks and do not rely on taxpayers.

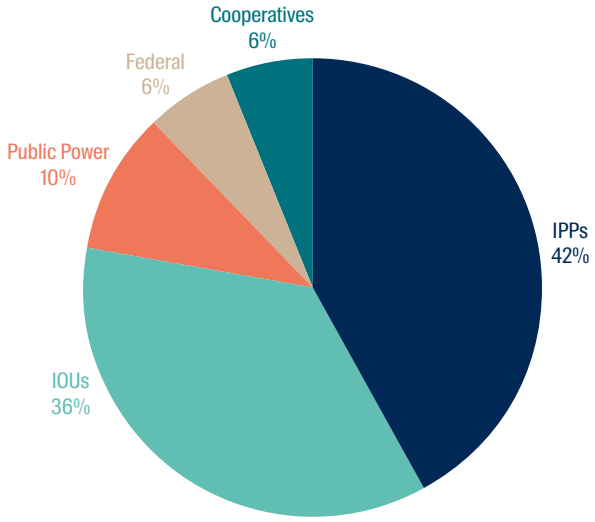
Third, highway congestion and therefore air pollution, is reduced as more freight is transported by railroads. This has both environmental and social benefits for US citizens.

Railroads are a lower carbon, more fuel efficient and safer way to transport goods relative to trucking. As corporate America looks at ways to improve sustainability, particularly carbon footprint reduction, we believe railroad customers will increasingly value these sustainability benefits relative to the trucking alternative.

Electric utilities

Electricity in the US is produced by five types of entities – investor-owned utilities (IOUs), independent power producers (IPPs), the Federal government[11], public power utilities[12] and cooperatives. Both IOUs and IPPs are part of the ALI asset class.

Split of US electricity generating capacity



Source: American Public Power Association 2021 Statistical Report

ALI's IOUs and IPPs are significantly cleaner and greener than their government-owned electric utility peers.

First, both public power utilities and cooperatives are highly dependent on carbon heavy coal-fired power generation. Coal accounts for ~26%[13] and ~32%[14] of public power utilities' and cooperatives' electric capacity respectively, compared to ~20% for the US power generation sector as a whole. Cooperatives account for seven of the ten most coal-heavy utilities in the US[15]. As customers, regulators and politicians increasing focus on climate change and reducing carbon, these coal-fired power plants will face ever higher pressure to close.

[6] For illustrative purposes only. Reference to the names of each company mentioned in this communication is merely for explaining the investment strategy and First Sentier Investors does not necessarily maintain positions in such companies. Any fund or stock mentioned in this presentation does not constitute any offer or inducement to enter into any investment activity nor is it a recommendation to purchase or sell any security.

[7] Page 27, CSX Corp 2020 Environmental, Social and Governance Report.

[8] Page 7, Norfolk Southern 2021 Environmental, Social and Governance Report.

[9] National Safety Council.

[10] Bureau of Transportation Statistics within US Department of Transportation. It should be noted that this figure includes ~400 fatalities from trespassers.

[11] There are five Federal electric utilities: Tennessee Valley Authority (TVA), Bonneville Power Administration (BPA), Southeastern Power Administration (SEPA), Southwestern Power Administration (SWPA), and Western Area Power Administration (WAPA). TVA is an independent government corporation, while BPA, SEPA, SWPA, and WAPA are separate and distinct entities within the Department of Energy. Starting with BPA in 1937, and followed by SEPA, SWPA, and WAPA, Congress established Power Marketing Administrations (PMAs) to distribute and sell electricity from a network of more than 130 federally-built hydroelectric dams.

[12] Public power utilities are not-for-profit utilities that are usually owned by state or local government. These companies include Los Angeles Department of Water & Power, New York Power Authority, CPS Energy, Santee Cooper and Salt River Project.

[13] American Public Power Association 2021 Statistical Report.

[14] NRECA.

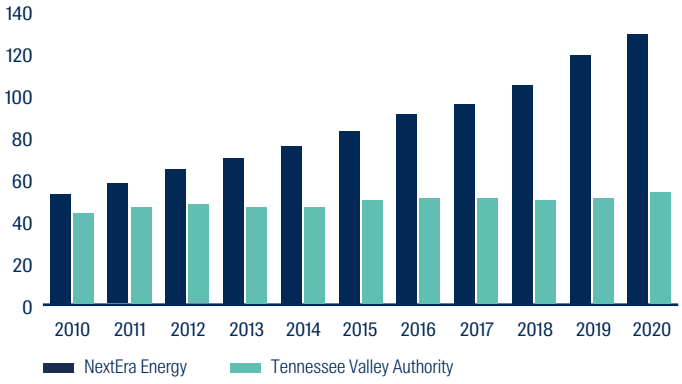
[15] Re-Membering the Cooperative Way (John Farrell).

Second, wind and solar ownership is dominated by ALI's IOUs and IPPs. Government entities do not have meaningful capital to invest in the clean energy transition. Public power utilities, cooperatives and the Federal government combined only own ~1% of wind and solar generation capacity in the US. This means ALI has significant and mutually exclusive gains with the inevitable growth of carbon free renewable energy.

Third, future investment is being driven by ALI's IOUs and IPPs. Public power utilities, cooperatives and the Federal government combined account for only 3%[16] of new electricity generation capacity in the US. These government entities do not have the capital to invest while private sector players (including ALI companies) are developing renewables at a breakneck pace.

Government owned giant Tennessee Valley Authority (TVA) illustrates this inability to invest new capital needed to decarbonise the electricity sector. Since 2010, TVA has grown its asset base at only 2% pa. Capital expenditure of $2.1 billion in 2020 was below 2010 level of $2.4 billion. The chart below shows how high levels of renewable energy investment by ALI's NextEra Energy (NEE) have enabled asset base growth relative to the stagnation of government owned TVA.

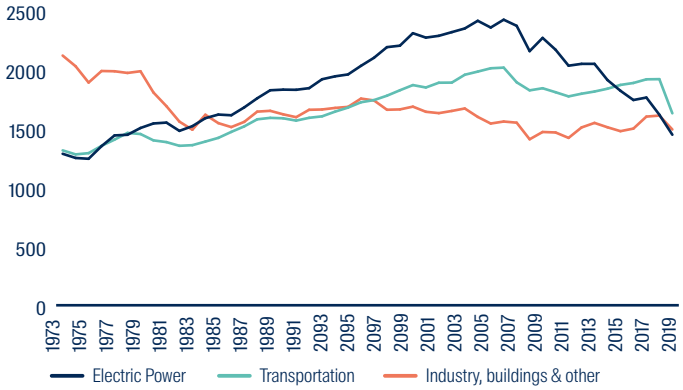
Total Assets of NEE and TVA ($ billions)



Source: Annual reports, First Sentier Investors

In summary, ALI's electric utilities are cleaner and greener than their government owned peers. Going forward, we expect these privately owned utilities to expand their market share of the US electricity generation industry due to their higher wind, solar and storage capital investment plans. While governments talk about decarbonisation, their lack of capital means that private sector utilities are the ones actually achieving this.

ALI's utilities are the driver of US carbon emission reductions (mt)



Source: Energy Information Agency, First Sentier Investors

Water utilities

Private sector investment in the US water industry remains a fraction of what it could, and should be. Ownership of US water utilities is dominated by local governments which serve ~85% of the population. The remaining ~15% is served by small private operators, and larger ALI companies like American Water Works, Essential Utilities and American States Water. In addition, over the last five years several ALI electric and gas utilities (Eversource Energy, NW Natural and NextEra Energy) have expanded into the water space to deploy capital.

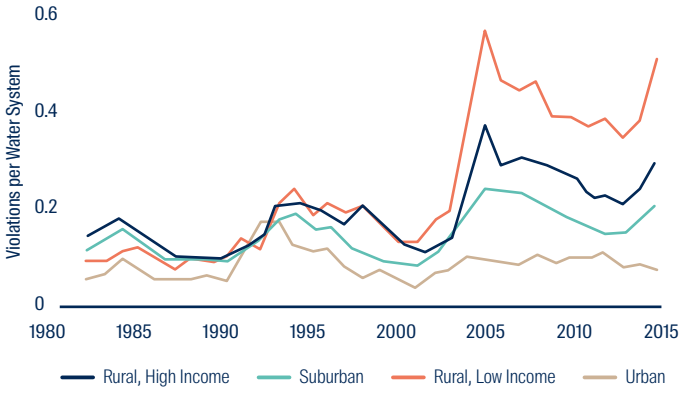
The water crises in Flint, MI and Jackson, MS both happened under government ownership. The latest World Economic Forum Global Competitiveness Report ranks US infrastructure 13th overall. With regards to water specifically, the US ranks 14th on 'exposure to unsafe drinking water' and 30th on 'reliability of water supply'. In our view, this relatively poor performance reflects a lack of local government funding.

Water safety violations have increased over the past 20 years. This stems from a combination of increased regulation and the inability of many local authorities to invest capital to maintain (let alone improve) their water systems. Today, more than 30 million Americans live in areas where water systems violate safety rules.[17]

[16] American Public Power Association 2021 Statistical Report.

[17] America's Clean Water Crisis Goes Far Beyond Flint. There's No Relief in Sight. Time Magazine February 2020.

US water safety violations increasing



Source: 'National trends in drinking water quality violations' PNAS 2018

ALI's water utilities offer several significant sustainability benefits relative to the public water system alternative.

First, ALI water utilities provide higher quality water[18] than their government owned peers. American Water Works has stated its water quality was 14x better than the industry average. Essential Utilities stated that it 'outperformed the national average on drinking water quality by a factor of about seven times'. The National Association of Water Companies quotes a study based on data from 1982-2015 showing that privately owned water utilities had a materially lower percentage of water violations than public water systems (17% lower in California, 28% lower in Texas, 37% lower in Pennsylvania and 69% lower in New Jersey)[19].

Second, ALI water utilities have a stronger focus on customer service. The below table shows ALI water utilities (in blue) dominating the J.D. Power customer satisfaction survey. The transparency and discipline required of a publicly-listed company incentivizes ALI water utilities to focus on customer satisfaction in a way that does not exist for government bureaucracies. High customer satisfaction improves ALI's social standing in the communities the companies serve and reduces the political and regulatory risks.

J.D. Power 2021 Water utility customer satisfaction rankings

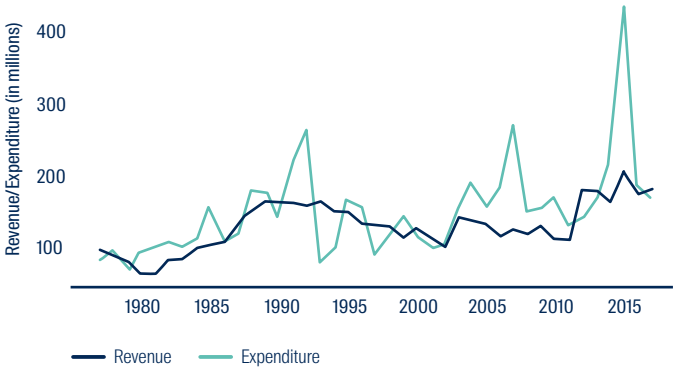
	North East	Midwest	West
1st	NJ American Water	IL American Water	Seattle Public Utilities
2nd	NYC Environmental Protection	Louisville Power	California Water Service
3rd	WSSC	MO American Water	Golden State Water
4th	Aqua	Detroit Water & Sewage	Las Vegas Valley Water
5th	PA American Water	City of Columbus	SFPUC
6th	Philadelphia Water	IN American Water	City of Phoenix
7th	Suffolk County	Citizens Energy Group	Denver Water
8th	Suez	Cincinnati Water Works	CA American Water
9th	City of Baltimore	City of Cleveland	LA Dept Water & Power
10th		City of Chicago	East Bay Muni Utility

Source: J.D. Power

Third, ALI owned water utilities are investing more capital into their water systems than either public or smaller private operators. This is evidenced by the robust 7-9% rate base growth of ALI water utilities; steady acquisitions of small rural public water systems by ALI water utilities; the decline in water capital investment funding from the Federal government (whose share has reduced from over 30% of the total amount in 1977 to less than 5% in 2017[20]) and the lack of local government funding available.

The below chart, from the most recent government-owned water disaster in Jackson, MS illustrates why there is so little investment for public water systems – local governments don't have the money.

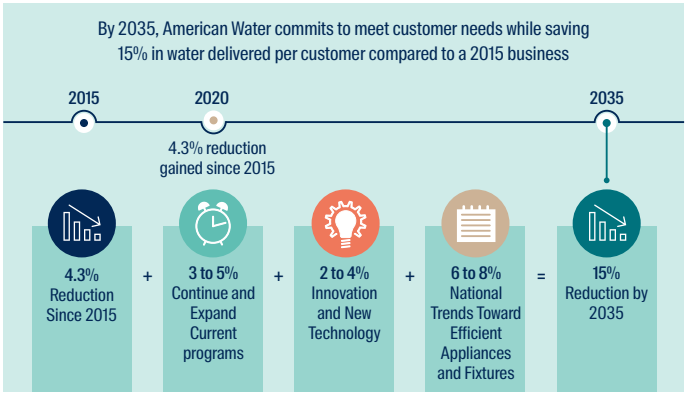
Jackson MS water revenue and expenditure



Source: Brookings Institute

ALI water utilities are improving their business practices and investing capital into their water systems to ensure that these positive environmental and social outcomes continue into the future. In contrast, capital-starved public water systems are struggling to maintain their aged assets, let alone keep up with society's higher health and safety expectations. This public system water crisis is only getting worse as climate change induced drought in the southwest adversely impacts basic water supply. However it is encouraging to see a number of states (Texas, Illinois, Pennsylvania, New Jersey, Virginia, North Carolina, Ohio and Kentucky) introducing regulation to encourage the purchase of smaller, failing water utilities by financially robust ALI companies.

ALI's American Water Works is not standing still



Source: American Water Works

We believe there is clear data to illustrate that ALI owned water utilities provide substantial environmental and social benefits relative to their government-owned peers.

[18] When measured by water safety violations.

[19] Source: Proceedings of the National Academy of Sciences of the United States of America.

[20] "The economic benefits of investing in water" - ASCE.

Conclusion

Railroads, electric and water utilities provide their customers with cleaner and greener services than alternative suppliers. The ALI asset class provides many environmental and social benefits to the customers they serve.

We believe these sustainability benefits of the ALI asset class are going to be **valued more highly** in the future by customers, regulators, politicians and investors.

The future for ALI is bright and sunny

Source: PNM Resources

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