

## LISTED INFRASTRUCTURE:

# Three win/win opportunities for investors and society in the U.S.



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### At a glance

- Utility companies and rail operators in the U.S. deliver essential services which enable the modern economy to operate. The business models of these companies also support the delivery of stable and growing returns for investors.
- In this paper, we identify three growth drivers for U.S.-based listed infrastructure companies and discuss the potential benefits of these opportunities for both shareholders and society, including:
  - Improving the resilience of the electric grid
  - Enhancing customer affordability through the transition to renewable generation
  - Reducing cost and emissions by moving more freight by rail
- These opportunities have the potential to offer meaningful benefits to customers and society and can thus be sources of sustainable returns for investors.

## Investing in grid resilience is good for everyone

The electric grid is increasingly vulnerable to damage from storms and other natural events such as wildfires. Hardening the grid is therefore a major focus for utility companies in the U.S. today.

Hardening refers to investment in items such as the replacement of older (usually wooden) electric poles with concrete or steel, the undergrounding of overhead wires, and raising the elevation of substations to protect from flooding and storm surges. Edison Electric Institute (EEI), which represents U.S. investor-owned electric utilities, found that 34-35% of its members' total annual capital spending on the grid was dedicated to climate adaptation, hardening

and resilience projects, with over \$25 billion in total spending.<sup>1</sup> This proportion is even higher for utilities that serve territories exposed to extreme weather events. The UN Sustainable Development Goals also identify strengthening resilience to major weather events as one of the main targets. Sustainable Development Goal 13, Climate Action Target 13.1 is to: "Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries". Over time, resilience strategies utilized in developed economies such as the U.S. could also be transferrable to developing economies.

<sup>1</sup> As of September 2022. Source: EEI. "EEI Industry Capital Expenditures with Functional Detail"

[https://www.eei.org/-/media/Project/EEI/Documents/Issues-and-Policy/Finance-And-Tax/bar\\_cap\\_ex.pdf?la=en&hash=3D08D74D12F1CCA51EE89256F53EBA BEEAAF4673](https://www.eei.org/-/media/Project/EEI/Documents/Issues-and-Policy/Finance-And-Tax/bar_cap_ex.pdf?la=en&hash=3D08D74D12F1CCA51EE89256F53EBA BEEAAF4673)

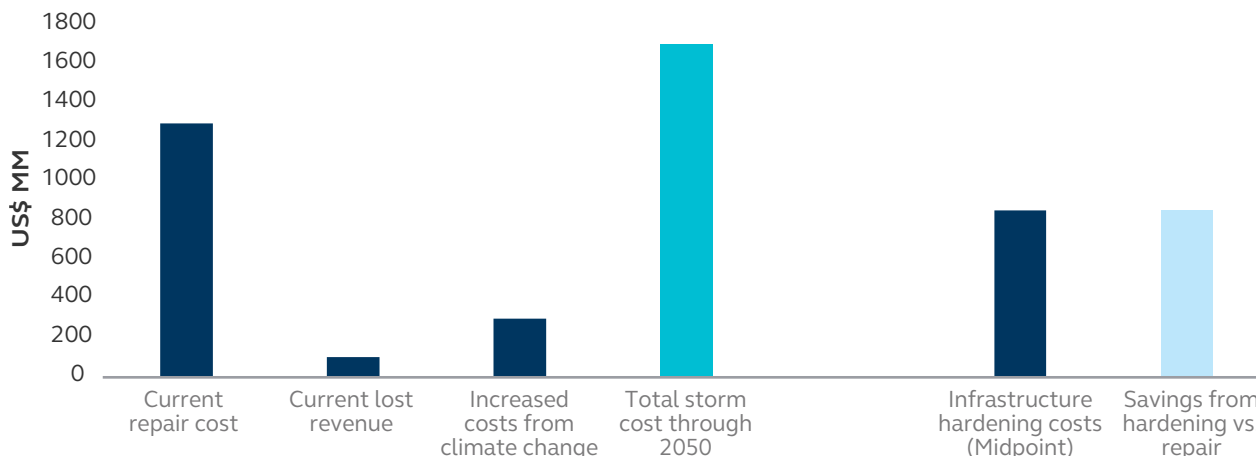
<https://www.eei.org/en/issues-and-policy/energy-grid>

When utility companies invest to make the electric grid more resilient to storms and natural disasters, companies, shareholders, and customers all have the potential to benefit. This is because preventative

spending is generally agreed to be lower cost to society as a whole than repair spending after major events, offering the potential for better returns to utility investors.

**EXHIBIT 1:** Repair costs compared to hardening costs for a typical U.S. utility

20-Year estimates for typical South East U.S. utility



As of 24 April 2019. Source: McKinsey “Why, and how, utilities should start to manage climate-change risk”

A utility company operating in the Gulf Coast region recently estimated its proposed hardening expenditures have a positive net present value (NPV) of \$35 billion to the regional economy, using a methodology established by the U.S. Department of Energy<sup>2</sup>. Independent studies have also concluded that the cost of hardening the grid is materially lower to utilities than the cost of repairing damage after major events<sup>3,4</sup>.

The need for preventative spending to harden the grid has a clear benefit for utility company shareholders as well. Utilities earn a return on the dollars they spend on hardening the grid. This return is reflected in the companies’ earnings and cash flows. By contrast, utilities do not generally earn a return on post-event repair expenditures, although these costs can usually be recovered. In addition, preventative capital expenditures reduce the risk of lost power sales during outages.

**Renewable generation can improve customer affordability**

Affordability is an often underappreciated benefit of renewable electricity generation in our experience. Renewable generation has become more competitive economically as unit costs have decreased over time, in contrast to the increases in fuel and operating and maintenance (O&M) costs experienced by fossil fuel generation.

Fuel and O&M costs are typically passed through to customers and the utility does not earn a return on these expenses. Renewable generation typically has lower O&M costs than fossil and no incremental fuel cost. Utilities are able to earn an investment return on the capital costs of new renewable generation. Thus, new renewable generation helps lower customer bills

<sup>2</sup> As of 16 June 2022. Source: entergy. “The future is on – Analyst Day 2022” <https://entergycorporation.gcs-web.com/static-files/2a90a616-8405-4f74-b76b-97b579dd0f18> Slide 37

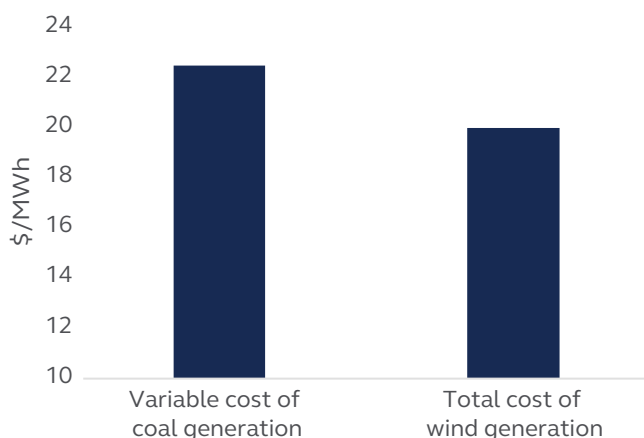
<sup>3</sup> As of 24 April 2019. Source: McKinsey. “Why, and how, utilities should start to manage climate-change risk” <https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/why-and-how-utilities-should-start-to-manage-climate-change-risk>

<sup>4</sup> As of 24 February 2022. Source: Deloitte. “Carbon-proofing the grid: Increasing renewables and resilience” <https://www2.deloitte.com/us/en/insights/industry/power-and-utilities/carbon-proofing-strategies.html>

(because of lower fuel and O&M cost pass-throughs), while generating higher profits for utility companies and investors through investment returns – a true win/win.

The affordability benefit of renewables is greatest in locations with the best natural wind and solar resources. The all-in cost of developing and operating new renewables can be lower than the cost of running existing fossil generation in these regions, as can be seen in the example below from a utility with operations in multiple states including Minnesota, Colorado and Texas (Exhibit 2).

**EXHIBIT 2:** Example of coal generation costs compared to renewables

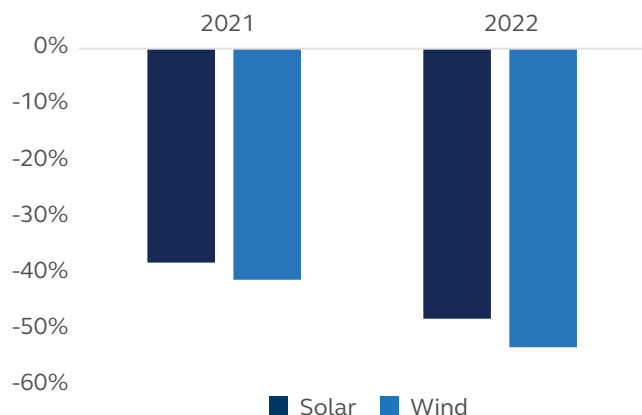


As of 8 August 2022. Source: XcelEnergy. “Investor Meetings, August 2022” [https://s25.q4cdn.com/680186029/files/doc\\_presentations/2022/08/Current-IR-Presentation-August-2022.pdf](https://s25.q4cdn.com/680186029/files/doc_presentations/2022/08/Current-IR-Presentation-August-2022.pdf). Slide 23

In the current commodity price environment, renewables have become even more attractive relative to fossil generation. One reason for this is higher coal and natural gas prices. On a national average basis, in 2021 the unit cost of new wind and solar generation was similar to new, efficient gas fired generation<sup>5</sup>. Capital costs for renewable generation have increased since, but coal and natural gas prices have risen much faster. This means that in many locations, the deployment of renewables can offer an offset to increased customer costs in the current inflationary environment. The chart shown in Exhibit 3 compares the all-in cost of developing new solar and wind generation with new natural gas generation in the Texas market. Wind and solar were already more

economical than natural gas in this region in 2021, but the increase in the natural gas price has widened the gap by a further 10-12% in the past year.

**EXHIBIT 3:** Example of the year/year change in new renewable versus new gas fired generation cost



As of 14 June 2022. Source: NextEra Energy, Re Electric Reliability Council of Texas. “Investor Conference 2022” [https://www.investor.nexteraenergy.com/~/\\_media/Files/N/NEE-IR/news-and-events/events-and-presentations/2022/06-14-2022/June%202022%20Investor%20Presentation\\_Consolidated\\_vF\\_.pdf](https://www.investor.nexteraenergy.com/~/_media/Files/N/NEE-IR/news-and-events/events-and-presentations/2022/06-14-2022/June%202022%20Investor%20Presentation_Consolidated_vF_.pdf) Slide 27

The economic advantages of renewables were enhanced further by the provisions of the recently passed “Inflation Reduction Act.” This new law creates new incentives and extends existing ones for solar, wind, battery storage and hydrogen, among other incentives for renewable energy. For regulated utilities, customers will enjoy the benefits of these incentives, as the savings will result in lower bills, all else equal.

From an investor’s perspective, regulated U.S. utilities that currently own fossil generation but are transitioning their mix towards renewables at the fastest rate represent some of the more compelling opportunities. Companies that are transitioning more generation at a faster rate have the greatest potential to benefit, as their costs will also reduce at the fastest rate. Utilities that lower their cost of generation through transitioning to renewables are also more likely to be able to increase future investment levels in other areas to improve service and reliability, which represents another great outcome for customers and greater earnings growth for utility shareholders.

<sup>5</sup>As of March 2022. Source: U.S. Energy Information Administration. “Levelized Costs of New Generation Resources in the Annual Energy Outlook 2022” [https://www.eia.gov/outlooks/aeo/pdf/electricity\\_generation.pdf](https://www.eia.gov/outlooks/aeo/pdf/electricity_generation.pdf)

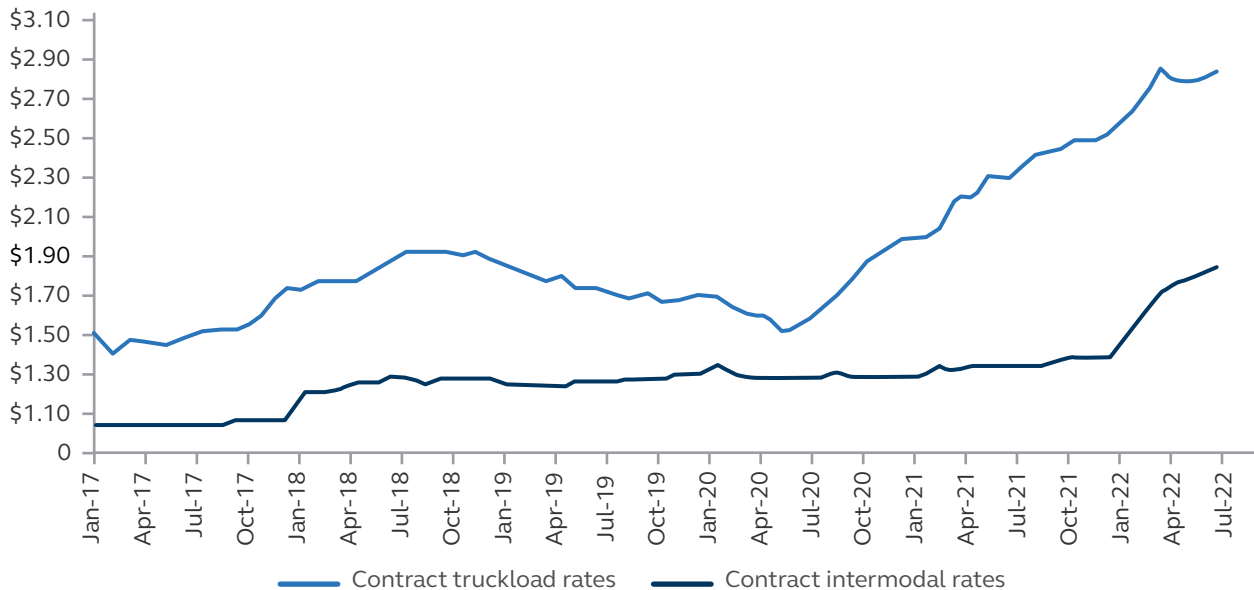
## Market expansion for railroads generates both financial and environmental benefits

The opportunity to move an increasing proportion of freight by rail is an important part of the investment case for U.S. railroads. The addressable market is large as 80% of U.S. freight (by value) is moved by truck and total trucking revenue in the U.S. was \$732 billion in 2020<sup>6</sup>, compared to total U.S. Class 1 rail revenues of \$79 billion. Rail has the potential to compete for the longer haul portion of the truck market, which represents roughly half of the total market.<sup>7</sup> Railroads and trucklines have a symbiotic relationship in some respects, and both trucking and rail will continue to be essential for the U.S. economy. That said, even a

small shift in the mix towards rail would be a material growth opportunity for the listed U.S. railroads. To fully take advantage of this opportunity, railroads are striving to increase staffing levels and improve their service product. The scale of the opportunity justifies this investment.

Rail usually offers a cost advantage, which has averaged 25-30% over the past five years, relative to trucking for comparable journeys based on contract rates (Exhibit 4).

**EXHIBIT 4:** Rail transport is generally cheaper for customers than trucking



As of August 2022. Source: The Journal of Commerce. “Intermodal Savings Index, 2nd Quarter” <https://www.joc.com/sites/default/files/u3839656/JOC%20ISI%20Report%20Q2%202022.pdf> Chart 4c

Rail’s lower cost is largely because of the greater fuel efficiency of moving large loads by train rather than truck. Studies estimate that rail freight is between 2.0-5.5 times more fuel efficient than trucking for equivalent journeys.<sup>8,9</sup> Freight rail operators have improved their fuel efficiency substantially. The average North American Class 1 freight rail company has reduced its fuel consumed per gross ton mile by 13% over the past ten years.

<sup>6</sup> As of December 2022. Source: American Trucking Associations. “Economics and Industry Data” <https://www.trucking.org/economics-and-industry-data>

<sup>7</sup> As of 17 March 2022. Source: CSX’s CFO Sean Pelkey testimony to the Surface Transportation Board.

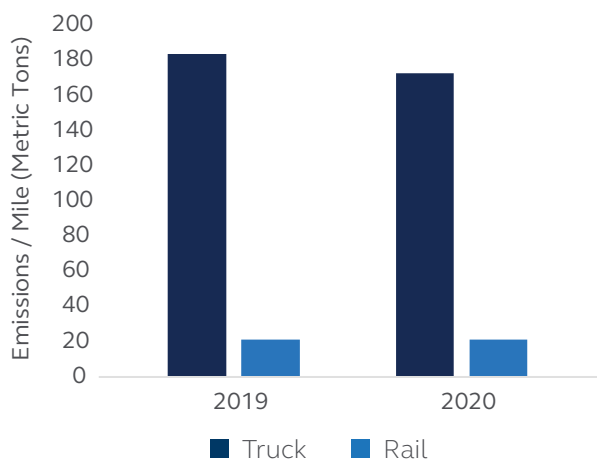
<sup>8</sup> As of 19 November 2009. Source: United States Department of Transportation. “Comparative Evaluation of Rail and Truck Fuel Efficiency on Competitive Corridors: Final Report” <https://rosap.ntl.bts.gov/view/dot/17265>

<sup>9</sup> As of September 2022. Source: Association of American Railroads. “Freight Rail Facts & Figures” <https://www.aar.org/facts-figures>.

As a result of its greater fuel efficiency, freight rail has an emissions profile over 8 times lower than trucking in absolute terms and 75% lower for equivalent distance and weight.<sup>10,11</sup> Independent studies support the financial and environmental benefits of relying on rail service for longer-haul routes<sup>12</sup>, with a disproportionate reduction in energy usage and greenhouse gas (GHG) emissions relative to the amount of freight switched.

In the future, alternative fuels offer the potential for further emissions reduction for both railroads and trucklines and may also offer cost savings opportunities. Initially, fuel substitution will focus on the increased use of biofuels, and several of the Class 1 railroads have established targets to increase their proportion of biofuel usage. Hydrogen is being tested as a potential low emissions fuel source, although it will be several years before it is known whether this will be economic. Battery electric locomotives are also in the early stages of deployment. So far, technology development has moved faster for trucking than for rail, but the pace of new technology adoption could well be faster for rail given its more concentrated ownership.

### EXHIBIT 5: GHG emissions per ton mile



As of 31 December 2020. Source: Bureau of Transportation Statistics & Association of American Railroads.

## FINAL THOUGHTS:

Investing in listed infrastructure offers exposure to growth opportunities that are also likely to benefit society as a whole. Within the U.S., opportunities to improve the resilience of the electric grid, enhance customer affordability through the transition to renewable generation and reduce both costs and carbon emissions by expanding freight rail adoption are three examples that demonstrate the win/win potential of listed infrastructure investing.

<sup>10</sup> As of December 2022. Source: Bureau of Transportation Statistics. “U.S. Ton-Miles of Freight” <https://www.bts.gov/browse-statistical-products-and-data/freight-facts-and-figures/us-greenhouse-gas-emissions-domestic> <https://www.bts.gov/content/us-ton-miles-freight>

<sup>11</sup> As of October 2022. Source: Association of American Railroads. “Freight Rail & Preserving the Environment” <https://www.aar.org/wp-content/uploads/2020/06/AAR-Sustainability-Fact-Sheet.pdf>

<sup>12</sup> As of June 2017. Source: Argonne National Laboratory, Energy Systems Division. “An Evaluation of the Potential for Shifting of Freight from Truck to Rail and Its Impacts on Energy Use and GHG Emissions” <https://publications.anl.gov/anlpubs/2017/08/137467.pdf>

## Risk Considerations

Past performance is no guarantee of future results. Investing involves risk, including possible loss of principal. 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. Inflation and other economic cycles and conditions are difficult to predict and there is no guarantee that any inflation mitigation/protection strategy will be successful.

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