

GLOBAL X INSIGHTS

Infrastructure: Paving the Way Forward

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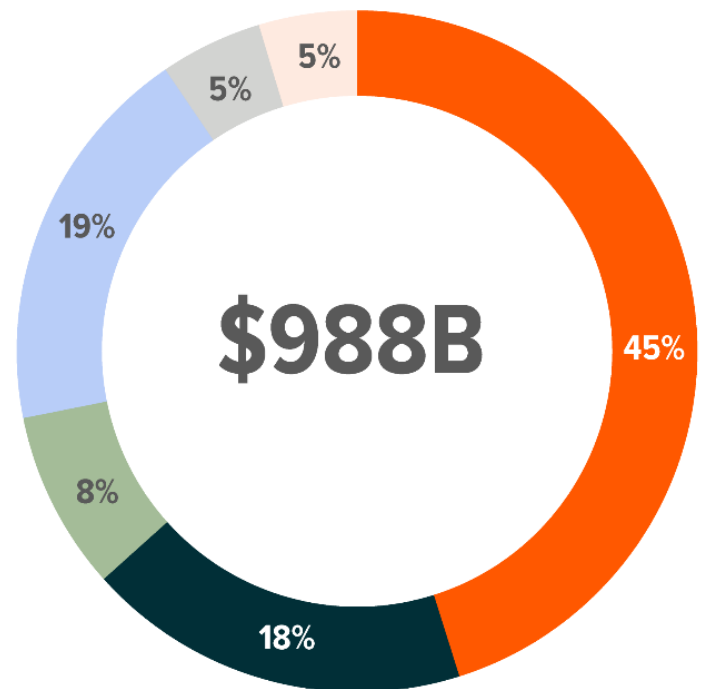
Topics: [Thematic](#), [Charting Disruption](#), [Infrastructure & Environment](#)

This piece is part of a series that dives deeper into the most prevalent themes of this year's iteration of our flagship research piece, [Charting Disruption](#). This feature focuses on infrastructure, as part of a larger [Infrastructure & Environment](#) section exploring a variety of innovations in the space. For additional insights from the project, please click [here](#).

The convergence of multiple long-term structural trends like electrification, aging infrastructure, shifting demographics, and the construction of AI data centers, are unlocking trillions of dollars in government funding and private investments for infrastructure development. For example, \$568 billion in state-level funding from the Infrastructure Investment and Jobs Act (IIJA) has been announced, which is expected to support 66,000 infrastructure projects throughout the country.¹ Additionally, private sector investments towards manufacturing and clean power infrastructure are nearing \$1 trillion.² Given these tailwinds, many U.S. infrastructure companies have noted positive earnings and rising order backlogs within the past year, even amid less-than-optimal operating conditions. Going into 2025, we expect that these dynamics will lead to even more opportunities for companies throughout the U.S. infrastructure value chain, creating compelling opportunities for investors.

PRIVATE INVESTMENT SURGE IN THE U.S. IS IMPACTING SEVERAL INDUSTRIES

- █ Semiconductors & Electronics Manufacturing
- █ EV & Battery Manufacturing
- █ Clean Energy Manufacturing
- █ Clean Power
- █ Heavy Industry
- █ Biomanufacturing



Note: Announced investments since January 2021.

Sources: Global X ETFs with information derived from: The White House. (n.d.). Investing in America: Invest.gov. Accessed on November 1, 2024.



Key Takeaways

- While U.S. infrastructure companies have begun to realize benefits from the IIJA, Inflation Reduction Act (IRA), and CHIPS and Science Act, maximum benefits are likely to peak between 2025 to 2028, depending on where a company is situated along the value chain.³
- Private investments, particularly into manufacturing, are also likely to create ample opportunities for U.S. infrastructure developers over the next several years.
- The rapid expansion of AI data centers is quickly becoming another powerful tailwind for infrastructure development in the United States.

Federal Policies Outline over \$1 Trillion in Potential Infrastructure Funding⁴

In November 2024, the Biden Administration provided a progress update for the IIJA's three-year anniversary. The more than 65,000 projects that have already been announced are slated to significantly improve the United States' infrastructure assets, which are often in dire need of upgrades and replacements.^{5,6} IIJA funding has so far kickstarted improvement projects for over 196,000 miles of road and 11,400 bridges, resulted in the replacement of 367,000 lead pipes, and funded nearly 600 port and water projects.⁷

Despite the steady progress being made, benefits from the IIJA are still expected to peak in the second half of this decade. This is because many of the projects that have received IIJA funding have not yet reached the construction phase. For example, of the over 400 airport terminal projects that have received IIJA funding, only roughly half are under construction or completed.⁸ In total, IIJA funds are only about 67% allocated and 33% spent.⁹

Direct funding for infrastructure assets in the IRA and CHIPS Act is also only just beginning to translate into shovels in the ground. All combined, as of the start of Q4 2024, nearly 35% of \$1.04 trillion in direct infrastructure funding within the IIJA, IRA, and CHIPS Act still requires allocation, and an even higher percentage remains unspent.¹⁰ This means that legislative tailwinds for infrastructure development within the United States could last several more years.

Private Investments Are Fueling a Manufacturing Resurgence

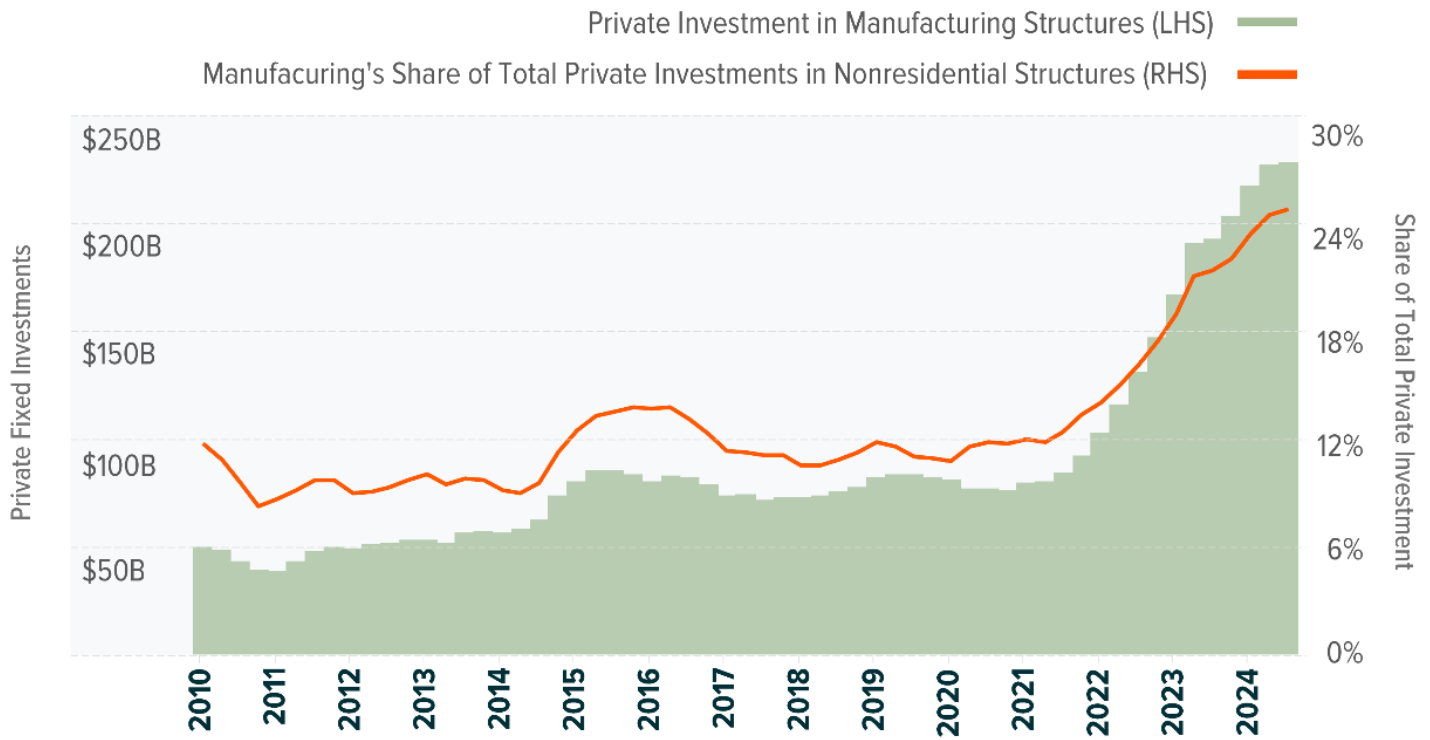
Private investments related to these major pieces of recent legislation are also creating strong tailwinds for infrastructure development. In particular, manufacturing facilities represent 76% of the \$988 billion in announced private investments.¹¹ Semiconductor and electronics manufacturing account for almost half of all private investments, and the United States' EV & battery manufacturing, clean energy manufacturing, and biomanufacturing footprints are also slated to grow.¹²

Building out manufacturing facilities requires significant resources, including construction materials, engineering, procurement, construction services, and construction labor. According to Intel, which is building three new factories in the United States, a single chip factory requires 600,000 cubic meters of concrete, 75,000 tons of steel reinforcement, 35,000 tons of structural steel, and 9 million meters of cable.¹³ Each factory also requires the removal of more than 1 million cubic meters of soil and rock, and the sheer scale of each facility requires more than 6,000 construction workers.¹⁴ Zooming out, announced investments from the CHIPS Act alone could create around 115,000 construction and manufacturing jobs.¹⁵

While many of these projects are not yet out of the planning stages, a U.S. manufacturing boom appears already well underway. Private fixed investment into manufacturing structures reached \$236 billion in Q3 2024, marking an increase from \$90.5 billion right before the IIJA passed in late 2021.¹⁶ Investments into manufacturing facilities now account for one-fourth of all investment into nonresidential structures—up from a 15% share in late 2021.^{17,18}



MANUFACTURING IS DRIVING NONRESIDENTIAL STRUCTURE GROWTH



Sources: Global X ETFs with information derived from: U.S. Bureau of Economic Analysis. (2024, October 30). Private Fixed Investment: Nonresidential: Structures. Federal Reserve Economic Data (FRED).; U.S. Bureau of Economic Analysis. (2024, October 30). Private Fixed Investment: Nonresidential: Structures: Manufacturing. Federal Reserve Economic Data (FRED).

Data Center Expansion Is Amplifying Demand for Power and Grid Infrastructure Assets

After two decades of near-flat growth, U.S. power demand is set to rise significantly.¹⁹ Expectations for increased power consumption from AI data centers are central to the strengthened demand outlooks, along with the expansion in manufacturing facilities and continued uptake of EVs.²⁰ By one estimate, U.S. power demand is forecast to increase from 3,800TWh in 2020 to 5,900TWh by 2040.²¹ This would represent 55% growth, which would be 6x higher than the 9% growth seen between 2000 and 2020.²²

Meeting this demand will require the buildout of new power generation assets, including traditional power sources, renewable energy, energy storage, and other alternative energy sources. Renewables and storage capacity additions could grow from 140GW installed over the past seven years to up to 450GW over the next seven years.²³ However, the country's current grid infrastructure is outdated and represents huge hurdles to realizing power supply growth forecasts. Developers are waiting on average 4.7 years to connect each project, which is one year longer than the average wait time three years ago.²⁴ As a result, U.S. infrastructure developers involved in the electrical grid are likely to see growing opportunities over the longer term.

Conclusion: Public and Private Investment Likely to Drive a Long-Term Infrastructure Renaissance

The historic levels of public funding and private investments into U.S. infrastructure are creating ample opportunities for U.S. infrastructure developers. In particular, ongoing efforts to bolster domestic manufacturing footprints and realizing data center growth forecasts will require significant resources throughout the construction value chain. While the impacts are already being seen by many companies, the full benefits will likely not be realized for years to come and are expected to drive positive sentiment toward the U.S. infrastructure development theme heading into 2025.



Footnotes

1. The White House. (n.d.). Investing in America: Build.gov. Accessed on November 1, 2024.
2. The White House. (n.d.). Investing in America: Invest.gov. Accessed on November 1, 2024.
3. National Governors Association. (2024, December). Inflation Reduction Act: Infrastructure Implementation Resources.
4. Latson, S., Overly, S., Rivard, R., Hendel, J. & Mui, C. (2024, May 8). Biden's Big Bet Hits Reality. Politico.
5. The White House. (n.d.). Investing in America: Build.gov. Accessed on November 1, 2024.
6. American Society of Civil Engineers. (2021, March 3). 2021 Report Card for America's Infrastructure.
7. The White House. (2024, November 15). FACT SHEET: Biden-Harris Administration Transforms Nation's Infrastructure, Celebrates Historic Progress in Rebuilding America for the Three-Year Anniversary of the Bipartisan Infrastructure Law.
8. Ibid.
9. Global X Analysis with information derived from sources outlined in the 'Federal Funding Sources' footnote below the full list.
10. Ibid.
11. The White House. (n.d.). Investing in America: Invest.gov. Accessed on November 1, 2024.
12. Ibid.
13. Intel. (n.d.). How a Semiconductor Factory Works. Accessed on November 27, 2024.
14. Ibid.
15. U.S. Department of Commerce. (2024, August 9). Two years Later: Funding from CHIPS and Science Act Creating Quality Jobs, Growing Local Economies, and Bringing Semiconductor Manufacturing Back to America.
16. U.S. Bureau of Economic Analysis. (2024b, October 30). Private Fixed Investment: Nonresidential: Structures: Manufacturing. Federal Reserve Economic Data (FRED).
17. Ibid.
18. U.S. Bureau of Economic Analysis. (2024a, October 30). Private Fixed Investment: Nonresidential: Structures. Federal Reserve Economic Data (FRED).
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20. Ibid.
21. NextEra. (2024, October 23). Third Quarter 2024: Earnings Conference Call. [Presentation]
22. Ibid.
23. Ibid.
24. Berkeley Lab. (2024, April 10). Grid connection backlog grows by 30% in 2023, dominated by requests for solar, wind, and energy storage.

Information provided by Global X Management Company LLC.

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