

Harnessing the Power Behind the Power of AI: Opportunities Across Public Real Assets

The boom in artificial intelligence (AI) and other quantum computing applications is driving explosive growth in data demand. While many investors are focusing on the potential for technology companies to benefit from this megatrend, we believe there are less-appreciated attractive opportunities in the public real asset companies powering the power of AI.

Data, the world's fastest-growing commodity, requires critical real assets in order to be transported, processed, stored, and powered. The insatiable appetite for data is leading to a subsequent rapid increase in power demand, and electrical grids are already having trouble keeping pace. In our view, significant investment will be required to upgrade the infrastructure and real estate needed to handle the growing data and power demands resulting from the AI megatrend.

We believe real asset companies that operate the backbone of the digital economy offer an attractive way to capitalize on the AI megatrend with potentially lower substitution and technology risks than traditional technology companies such as semiconductor firms. We see AI powering opportunities across four key areas of the broader public real asset universe and believe these exposures can provide diversification benefits to technology-heavy portfolios.

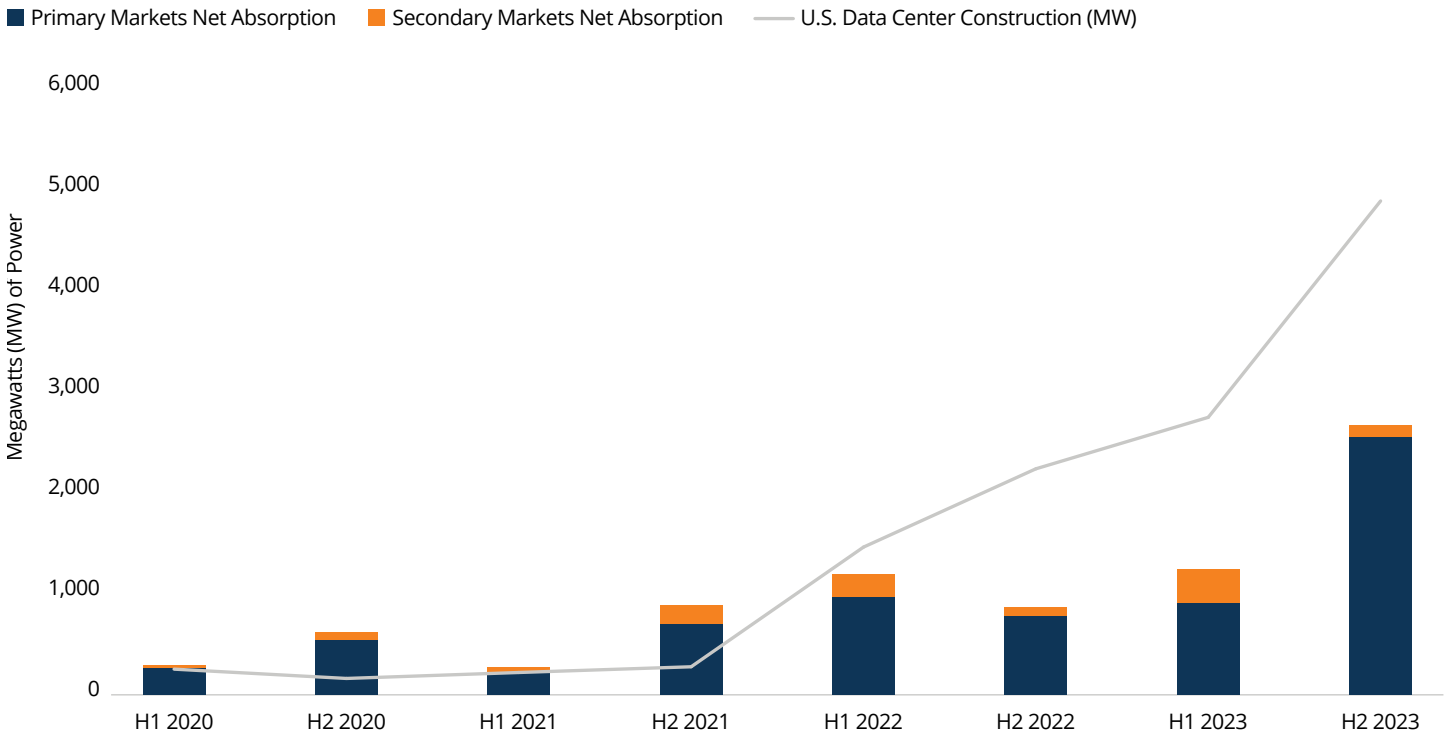
DATA-RELATED PROPERTY TYPES AND INFRASTRUCTURE

Data centers are perhaps the most obvious beneficiary of the AI megatrend. Data centers house the essential infrastructure required to compute, store and transmit the global economy's growing amount of data. Data center demand, as measured in megawatts (MW) of power leased by users, has exploded in the past few years amid the boom in AI.

Rental rates for these properties have risen as a result, and we expect they will remain strong, given limited supply. More than 5.3 GW of data center capacity is under construction in the U.S. Much of this construction won't be ready until 2025 or later, but capacity coming online in 2024 is mostly pre-leased.¹

SIGNIFICANT NEW SUPPLY IS REQUIRED TO SUPPORT COMPUTING AND DATA STORAGE NEEDS

United States Data Center Construction and Net Absorption



As of February 28, 2024. Source: JLL “North America Data Center Report.” Includes markets with complete historical data from 2020-2023. Primary markets include Northern Virginia, Phoenix, Northern California, Chicago, Atlanta, Dallas-Forth-Worth and New Jersey. Secondary markets include Salt Lake City, the Northwest, Austin/San Antonio, Las Vegas/Reno, Los Angeles, New York, Denver, Vancouver and Houston. Net Absorption is the net change in occupied space over a given period of time. Unless otherwise noted, net absorption includes direct and sublease space. See disclosures for more information.

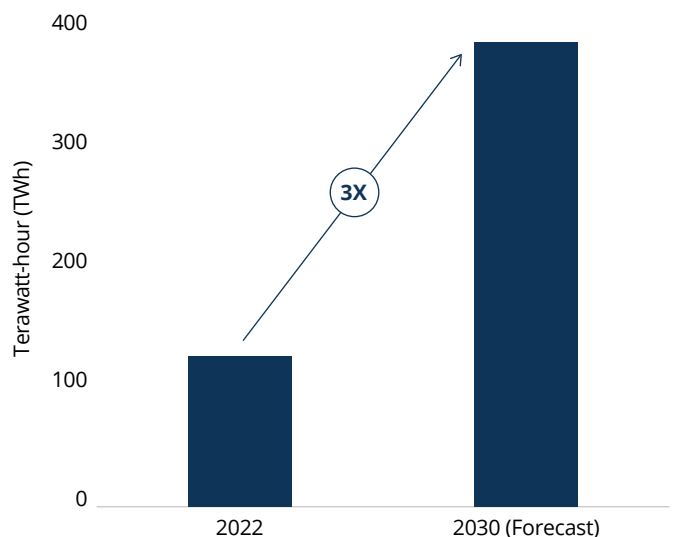
Additional communication infrastructure sites will also be needed to support increasing amounts of data as AI develops. Mobile networks will evolve, and faster download speeds will require greater bandwidth. Communication infrastructure companies are likely to benefit from a need for more sites and additional investment by carriers to upgrade existing assets.

GENERATION, TRANSMISSION & DISTRIBUTION OF POWER

Generative AI is highly computationally intensive, with the graphics processing unit (GPU) semiconductor chips required consuming more power than legacy processor chips. This creates increased power density and rising power demand from both existing and new data centers. As computing and storage demands increase, power consumption is expected to grow significantly, tripling from 126 terawatt-hours (TWh) in 2022 to 390 TWh by 2030—or the equivalent power consumption of around 40 million homes.²

DATA CENTER POWER CONSUMPTION IS EXPECTED TO SIGNIFICANTLY GROW

Data Center Electricity Consumption in the U.S. (TWh)



As of March 4, 2024. Source: Barron's, Boston Consulting Group. “TWh” refers to terawatt-hours. There is no assurance that such events or projections will occur, and actual outcomes may be significantly different than those shown here. See disclosures for more information about forward-looking statements.

Utilities and owners of power generation assets are positioned to benefit from the increase in electricity demands. In fact, several U.S. utilities have recently increased their load growth forecasts as a direct result of data centers located in their respective territories.

The relationship between power providers and their technology and data infrastructure customers is evolving. Instead of simply providing megawatts of power, utilities and power companies are increasingly collaborating with customers on long-term solutions to provide energy that is reliable and cost-efficient, with an eye toward decarbonization.

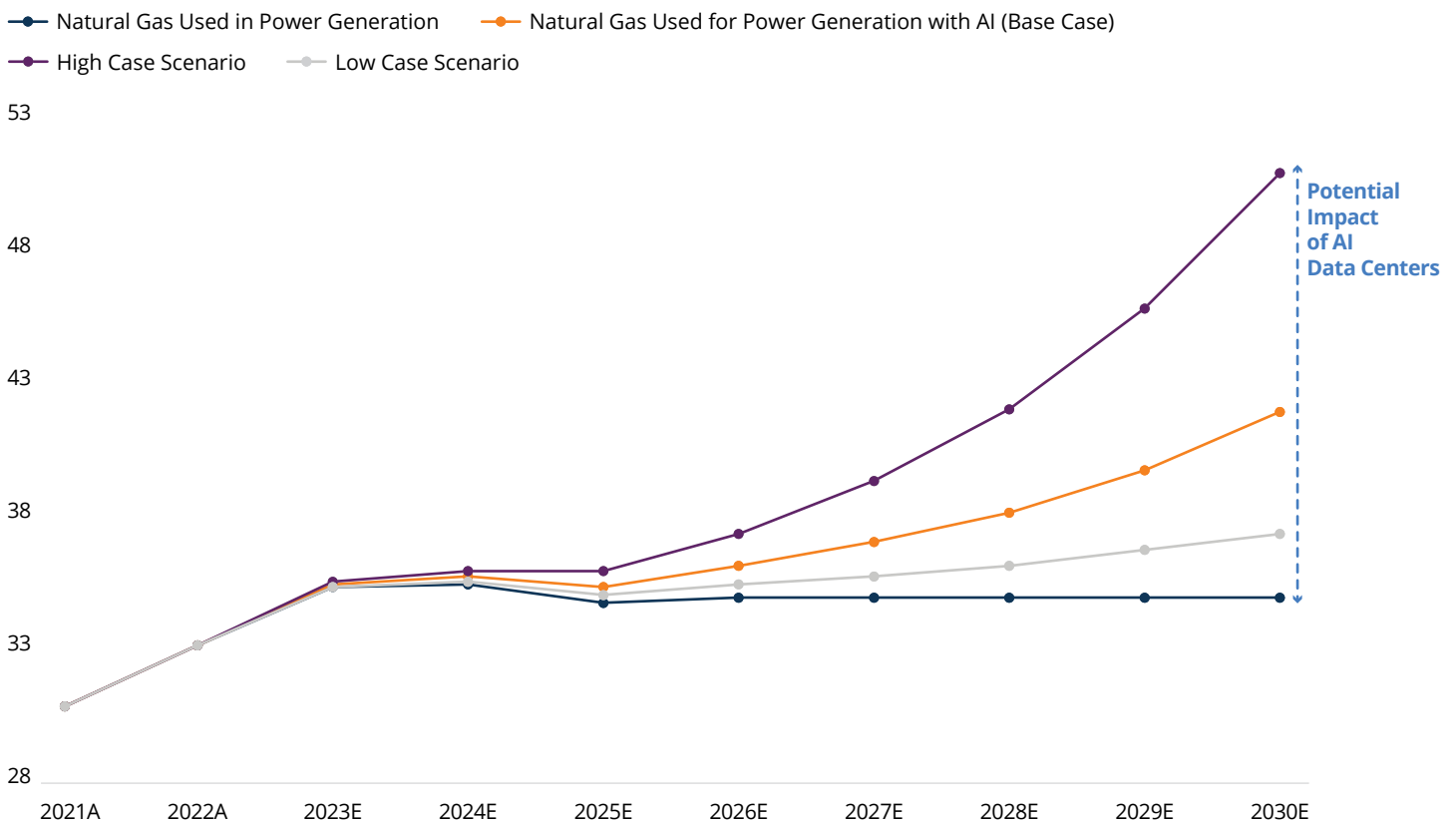
Given the decreasing costs of renewables and heightened focus on reaching net-zero carbon emissions, renewable power providers are well positioned to benefit from this trend over the long term. Additionally, the intermittency of renewable power today and absence of meaningful energy storage mean that power from traditional, low-carbon baseload power solutions—like natural gas—will also be important.³ They can potentially help ensure cost-efficient, consistent and reliable power sources, in our view.

ENERGY MIDSTREAM INFRASTRUCTURE

We believe that natural gas infrastructure companies—which provide the infrastructure necessary to move natural gas from supply centers to demand centers—will be a prime beneficiary from increasing power demand related to AI. Construction of new data centers could drive a 20% incremental increase in natural gas demand from the power sector through the end of the decade.⁴

DATA CENTERS COULD DRIVE MEANINGFUL NATURAL GAS DEMAND GROWTH

Forecasted Natural Gas Consumption by Power Plants



As of March 21, 2024. Source: Wells Fargo Equity Research, “AI Power Surge—Quantifying Upside for Renewables & Natural Gas Demand.” AI refers to = artificial intelligence. There is no assurance that such events or projections will occur, and actual outcomes may be significantly different than those shown here. See disclosures for more information about forward-looking statements.

We anticipate that the step-change in power demand will spur energy infrastructure growth across the entire North American natural gas value chain. In fact, many power companies are already adjusting their resource plans to accommodate growing numbers of natural gas plants, and these facilities will require additional infrastructure and supplies in order to operate. We believe this growth will be additive to the rapidly expanding demand for U.S. liquified natural gas (LNG) exports, which are expected to more than double through 2027.⁵ The expectation of a higher and longer growth profile for global natural gas consumption could drive multiple expansion for the asset class, in our view.

HARDWARE SOLUTIONS SUPPORTING DATA INFRASTRUCTURE

As data centers use power from new and diversified energy sources, data center companies will likely need to implement unique on-site infrastructure hardware solutions and enhancements to ensure consistent reliable power, optimized energy efficiency, and operating efficiency. More powerful chips generate more heat, requiring investment in hardware cooling solutions to prevent malfunctions and breakdowns. We also see backup power solutions as critical to ensuring that data centers do not lose connectivity; if there are disruptions in traditional power supply, outages can cost millions.

We believe that these “behind-the-meter” applications—backup-power, energy efficiency and cooling systems at the data centers themselves—will also be integral to lowering the overall cost of data center operations.

60% **Estimated increase in air conditioners required to cool data centers as rack densities and power demands increase.**

Source: Uptime Institute, Vertiv Holdings Co. See disclosures for information about forward-looking statements.

ACCESSING THE OPPORTUNITY

We believe investors who focus solely on technology-related beneficiaries of the AI megatrend may be missing potentially less risky, and more under-the-radar, opportunities. These opportunities span the broader public real asset universe and can provide diversification benefits to technology-heavy portfolios, in our view. We find them across real estate and infrastructure companies providing the backbone powering the power of AI. To access them, we believe it’s crucial to work with an active manager with a dedicated focus on real assets who can help investors harness and capitalize on the most attractive, and shifting, opportunities as the AI landscape quickly evolves.

ENDNOTES

¹ Source: JLL "North America Data Center Report." As of February 28, 2024.

² Source: Barron's ("How AI Is Sparking a Change in Power," March 14, 2024), Boston Consulting Group.

³ "Baseload" refers to the minimum amount of electric power delivered or required over a given period of time at a steady rate.

⁴ Source: Wells Fargo, March 21, 2024 "Industry Update: Energy AI Power Surge—Quantifying Upside for Renewables & Natural Gas Demand."

⁵ Source: U.S. Energy Information Administration.

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