MARKET INTELLIGENCE

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Data Center Market Analysis

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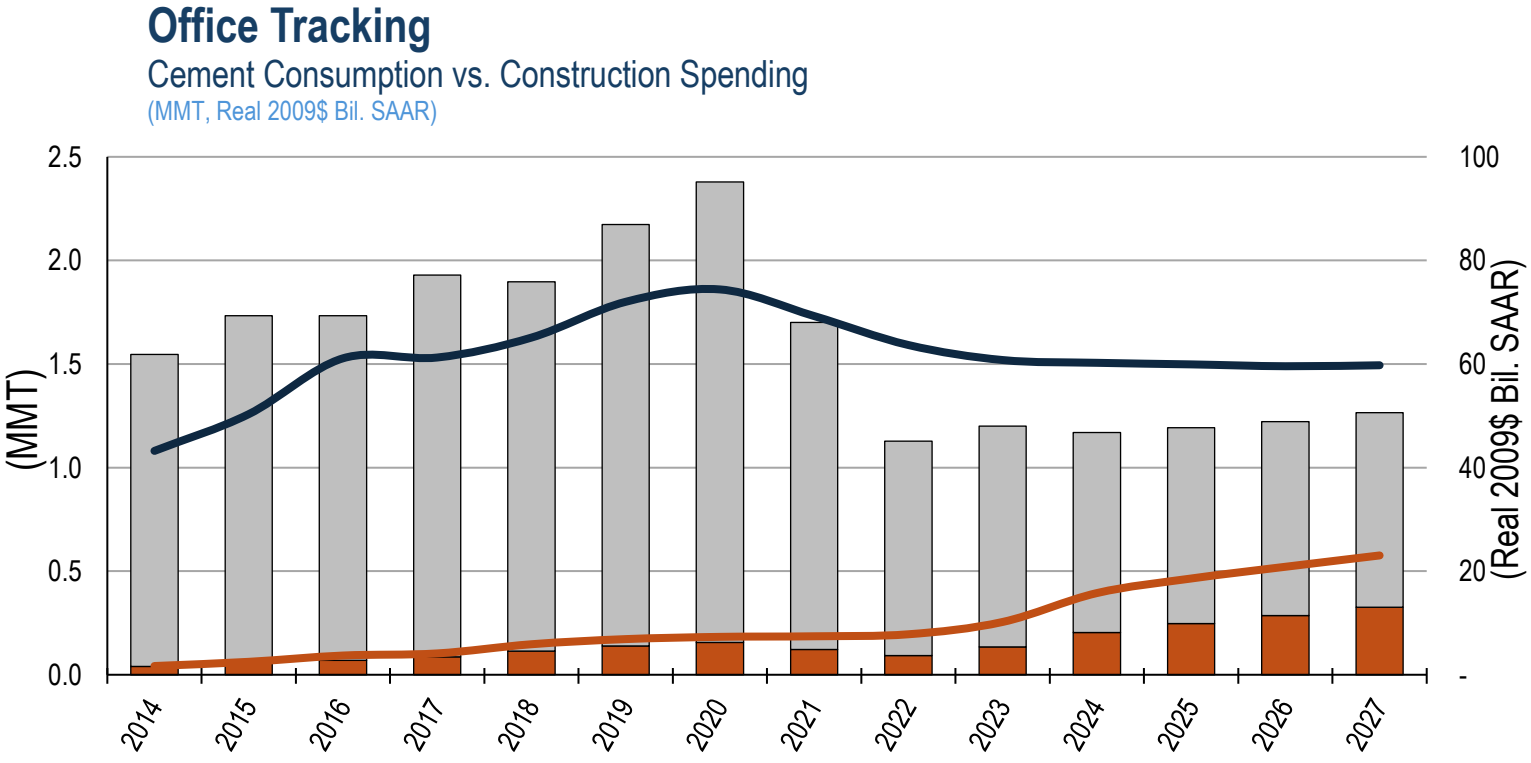
Overview

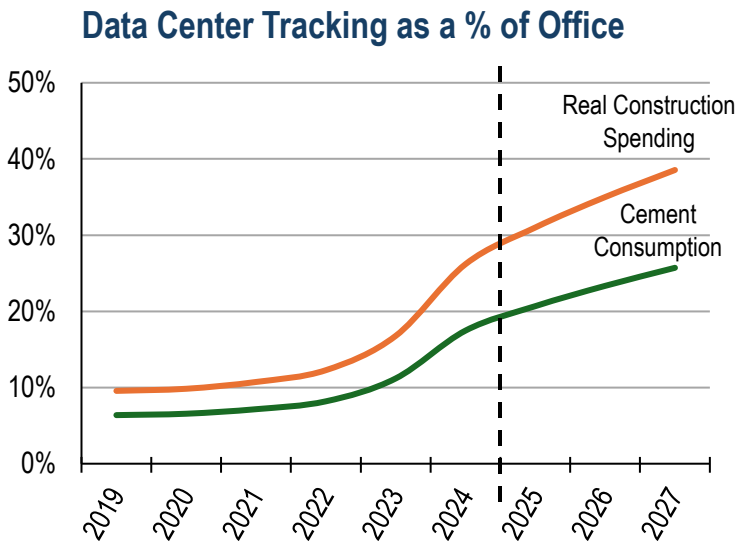
The rapid expansion of data centers, driven largely by the adoption of artificial intelligence, is emerging as a notable contributor to U.S. cement demand. As of March 2025, there were 5,426 operational facilities nationwide, with projections estimating growth to reach near 6,000 by the end of 2027. This buildout is expected to require close to one million metric tons of cement over the next three years. This report examines how data center investments are reshaping construction activity and the near-term effects on cement consumption.

Data centers are categorized as a subsection within the office sector. Office-related construction spending is calculated by combining medical office facilities, financial institutions, general office buildings, and data centers. In recent years, data centers have grown significantly within this group. In 2014, they accounted for just under 4% of office-related construction spending; by 2024 they surpassed 26% and are on track to reach 38.6% by 2027.



Historical Context

As of January 2025, the seasonally adjusted annualized rate (SAAR) of real spending on data centers in 2009 dollars was $18.4 billion. Over the past decade, inflation-adjusted spending has grown by nearly 850%, with a 55% rise in 2024 alone. Increased focus on computer learning and AI programming has brought data center construction to the forefront, with the supply of processing power struggling to keep pace with this surge in demand.



Major technology firms, including Amazon, Microsoft, Google, and Meta are key drivers in the expansion of data center infrastructure across the United States. Fueled by rising demand for cloud computing, artificial intelligence, and machine learning capabilities, these companies are collectively investing billions in next-generation facilities that are faster, more efficient, and strategically located. Although they currently account for about 10% of all data centers nationwide, their influence is far greater in both scale and capabilities. Of the announced or under-construction data centers, these companies account for approximately 25% of the new projects.

Methodology

Data Center Construction Spending

U.S. data center-related spending has grown at an average annual rate of 25.1% over the past decade. Yet rising headwinds, including power limitations, regulatory uncertainty, and labor shortages are expected to dampen this pace. While the number of operational facilities is expected to continue rising, spending and cement consumption growth rates are likely to moderate.

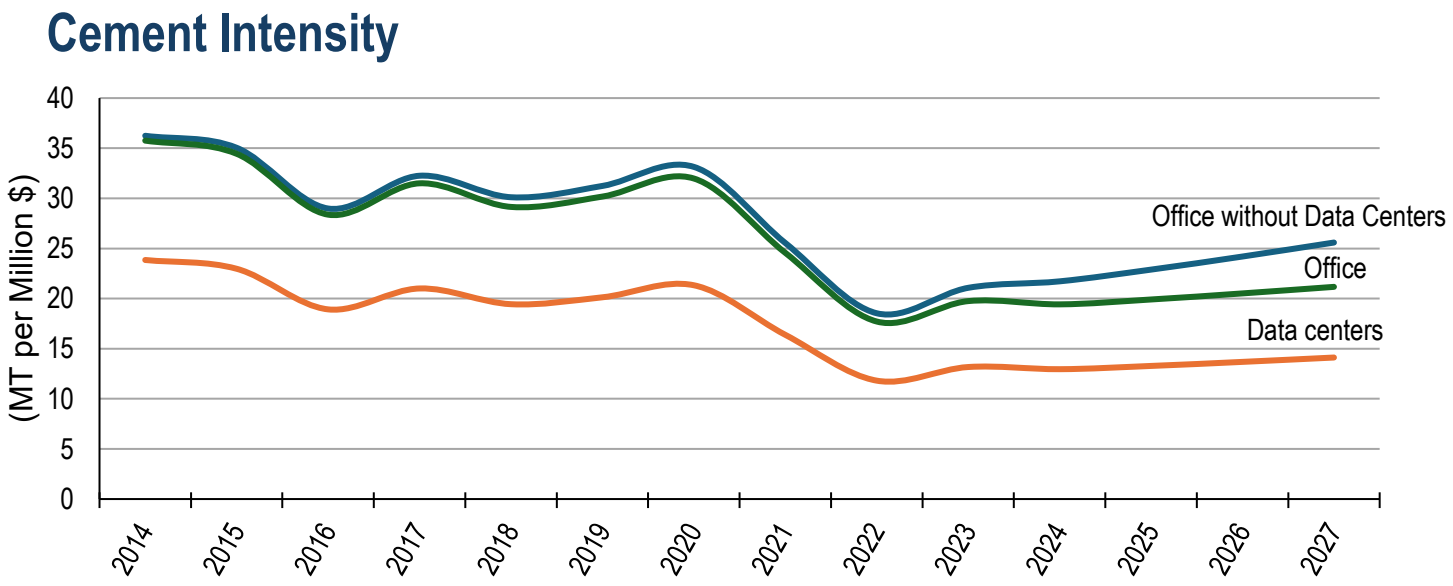
ACA's forecast reflects an estimated addition of 180 new facilities being built annually over the next three years in order to reach the projected growth toward 6,000 data centers. Spending on data center construction is expected to moderate to an average annual rate of 13% over the next 3 years. Despite the deceleration, capital investments in the sector are expected to continue increasing in real terms, adding an estimated $2 billion annually.

Spending in early 2025 reflects this moderation. In the first quarter, year-over-year spending on data centers rose by 43% in January, 33% in February, and 27% in March. These gains, while significant, are expected to continue to fall. This rapid deceleration reinforces expectations of a cooling growth rate in 2025. Total real spending is projected to rise 17.8%, with 2025 expected to be the strongest year for data center expansion throughout the forecast horizon.

The moderation in data center growth is expected to continue through 2026 and 2027. While demand for digital space will remain elevated, the challenges that this market is facing are expected to

deepen. In 2026, data center investments will reflect the heightened uncertainty observed in 2025. Growth in 2026 is expected to align with the projected annual growth rate, increasing 12.2%.

By 2027, spending is expected to continue moderating, increasing 10.5%. Despite this slowing trajectory, data centers are expected to represent a growing share of total office spending. As other office construction remains relatively subdued, data center expenditures are projected to account for 38.6% of total office-related spending by 2027, up from current levels hovering near 30%.



Data Center Cement Consumption

The initial hypothesis was that data centers would serve as a major driver of increased cement consumption within office-related construction. Unlike conventional office buildings, which are designed with occupant comfort and general utility, data centers are engineered primarily for function and resilience. Their walls are often constructed with high volumes of concrete to maximize fire resistance, physical security, thermal stability, and long-term structural integrity.

Upon further analysis, it was revealed that the cost per square foot for a new data center was, on average, three to four times greater than that of a typical office building. Moreover, between 45% and 70% of the estimated costs associated with the construction of a new data center were attributed to electrical systems, HVAC systems, and plumbing. A typical office building would allocate between 20% and 40% of its total expenditure to those same systems.

When isolating cement-related expenditures, approximately 55% of the total budget for a typical office building is allocated to structural components, encompassing both interior and exterior walls as well as shell-related finishes. In contrast, data centers dedicate only about 30% of their overall budget to comparable infrastructure. Essentially, data centers are capital intensive and much of the dollars targeted toward data center construction are not spent on structural elements. However, traditional

office construction draws more competition from other building materials like steel and lumber, whereas data centers require certain attributes that lend themselves to concrete construction.

Cognizant of the confluence of these factors, PCA estimated the cement intensity of data centers. It was revealed that data centers have a cement intensity of approximately 66% of a traditional office, reflecting the difference in costs allocated to infrastructure for data centers versus offices. This approach allows for a comparative estimate of cement consumption between the two structures.

Based on 2025 spending estimates and the current cement model, data centers are projected to contribute approximately 247,000 metric tons (MT) of cement consumption in 2025. Over the next three years, their cumulative contribution is expected to reach roughly 860,000 MT. Despite heightened interest in data centers and artificial intelligence, their relative impact on total cement consumption remains limited. While data centers are projected to account for nearly 38.5% of total office-related construction spending by 2027, they are estimated to represent only 25.7% of the corresponding cement consumption.

Forecast Table

		Historical Values				Forecast		
		2021	2022	2023	2024	2025	2026	2027
Construction Spending (Real 2009$, Bil.)	**Total Office**	**69.3**	**63.7**	**60.8**	**60.2**	**59.9**	**59.5**	**59.7**
	Y/Y		-8.1%	-4.6%	-0.9%	-0.5%	-0.6%	0.3%
	Data Center	7.4	7.8	10.2	15.8	18.6	20.8	23.0
	Y/Y		5.2%	30.4%	54.7%	17.8%	12.2%	10.5%
	Data Center Spending as a % of Office	10.7%	12.3%	16.8%	26.2%	31.0%	35.0%	38.6%
Cement Consumption (MMT)	**Total Office**	**1.70**	**1.13**	**1.20**	**1.17**	**1.19**	**1.22**	**1.26**
	Y/Y		-33.7%	6.4%	-2.5%	2.0%	2.4%	3.5%
	Data Center	0.12	0.09	0.13	0.20	0.25	0.29	0.33
	Y/Y		-24.2%	45.5%	52.2%	20.8%	15.6%	14.0%
	Data Center Cement Consumption % of Office	7.2%	8.2%	11.2%	17.5%	20.7%	23.3%	25.7%
Cement Intensity (MT per Mil. $)	**Total Office**	**24.6**	**17.7**	**19.7**	**19.4**	**19.9**	**20.5**	**21.2**
	Office-related Without Data Centers	25.5	18.5	21.1	21.7	22.9	24.2	25.6
	Data Center	16.4	11.8	13.2	13.0	13.3	13.7	14.1

Potential Risks

Powering the Surge

One of the potential downside risks data center construction is facing and will continue to face is the procurement of massive amounts of electricity. The U.S. Energy Information Administration (EIA) projects that commercial electricity supply will increase by approximately 1% annually in both 2025 and 2026, with data centers playing an intensified role in driving demand. Complementing this, the Department of Energy (DOE) estimates that data centers, which accounted for 4.4% of national electricity consumption in 2023, could consume between 7% and 12% by 2028, underscoring the sector's rapidly accelerating energy footprint.

The surge in demand for power is already contributing to significant delays in securing critical infrastructure and specialized materials. For instance, transformers, essential components for data center operations, had average lead times of 40 to 80 weeks in 2022. These timelines have since extended to 120 to 130 weeks or more, creating substantial bottlenecks in project development.

While established data center hubs such as Virginia, Texas, and Georgia continue to lead the market, emerging states, including Mississippi, Minnesota, and Missouri, are experiencing a notable uptick in commercial energy demand. Virginia and Texas have posted the most significant gains, adding 14 billion and 13 billion kilowatt-hours (BkWh), respectively. In Virginia, Dominion Energy's active support for data center development has been a key enabler, while Texas continues to benefit from low-cost electricity and ample land, conditions well-suited to both hyperscale data centers and cryptocurrency operations. North Dakota has recorded the fastest growth in commercial electricity consumption, increasing by 37%, or 2.6 BkWh, between 2019 and 2023. This surge is fueled in part by large-scale facilities such as the Atlas Power Data Center, which alone consumes approximately 240 megawatts, roughly 25 times the daily energy use of the Empire State Building operating at full capacity.

Technological Advancements

The landscape of data center infrastructure could look markedly different even a decade from now. One area of emerging innovation with transformative potential is quantum computing, which is now seeing meaningful breakthroughs. It is important to acknowledge that continued progress and investment in this field may present a long-term disruption to traditional data center construction. With the ability to process complex tasks exponentially faster than conventional computing systems, quantum technologies could eventually displace certain workloads, particularly those related to encryption, large-scale simulations, and advanced problem-solving, from standard data center environments.

In parallel, incremental innovations in conventional computing are expected to persist. Continued advancements in hardware efficiency, software optimization, and storage technology will likely lead to gains in performance while reducing resources required. Over time, these improvements may further shift the typical size and power needed of modern data centers, thereby challenging the long-term trajectory of data center development as we see it today.

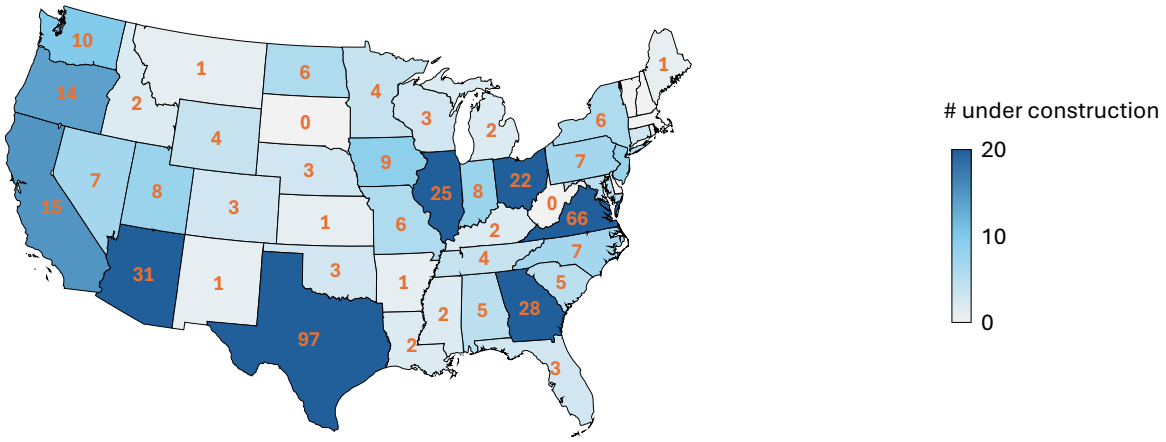
Potential Gains

Multiplier Effect

Although data centers currently account for less than 1% of total national cement consumption, their construction serves as a catalyst for broader economic and construction activity, particularly in rural and underdeveloped areas. The development of data centers forces significant infrastructure investment, which in turn stimulates demand for construction services, building materials, and skilled labor. These projects create not only direct employment opportunities within the data center sector but also generate secondary growth in related industries such as transportation, utilities, and local real estate. Furthermore, the presence of data centers can attract technology firms and service providers, fostering a regional ecosystem of innovation, talent, and support industries.

Who Benefits the Most?

Data Centers Announced or Under Construction



While most states will see some data center exposure, there are a few that far exceed the rest in anticipated projects over the next 3 years. In descending order, Texas, Virginia, Arizona, Georgia, Illinois, and Ohio are all positioned to benefit from data center expansion.

Conclusion

Data center construction spending in the U.S. is expected to moderate to an average annual growth of 13% through 2027. By 2027, data centers are anticipated to represent 38.6% of total office-related construction spending. However, their contribution to cement consumption will remain comparatively lower, accounting for just 25.7% of office-related cement. This disproportion reflects the lower cement used per dollar on data centers, which is roughly two thirds that of office buildings. Based on current estimates, data center construction is expected to consume approximately 247,000 metric tons of cement in 2025, and total about 860,000 metric tons over the next three years.