

+ 13,849
+ 9,904
- 4,905
+ 3,854
+ 18,489

CBRE Research

A SOURCE OF STABILITY: DIGITAL INFRASTRUCTURE IN 2020

NORTH AMERICAN
DATA CENTER
REPORT H2 2020

CBRE

LP - 1010110
20 | 20 HP - 329 847 398
H - 998
U - 209

YT - 387
RP - 873

P - 476 - 895 - 238
NU - 387 - 298
PRO - 589
B - 1 | 4 S - RT 10100

CONTENTS

- 03 Executive Summary
- 04 State of the Market
- 06 Supply Insights
- 08 Demand Insights
- 10 National Pricing
- 12 Capital Markets
- 13 Valuations
- 14 Network
- 15 2021 Outlook
- 16 Trends to Watch
- 17 Market Spotlights
- 37 Appendix
- 39 Contributors

EXECUTIVE SUMMARY

- Demand for wholesale data centers in primary U.S. markets fell by 11% year-over-year in 2020, largely due to companies temporarily freezing IT budgets to reevaluate their digital infrastructure.
- Supply across primary markets grew by 5.9% in H2 2020, bringing their total overall colocation footprint to more than 2.8 gigawatts (GW).
- More than 457MW of capacity was under construction across primary markets at year end, with Northern Virginia accounting for 61% of the pipeline.
- A need for highly connected sites with cloud on-ramps is driving new demand, some of it from enterprise data centers that lack this connectivity and flexibility.
- Data centers with robust network infrastructure are well positioned to meet the anticipated future demand of emerging Edge, 5G and IoT initiatives.
- A slowdown in new supply last year vs. 2019 enabled prices to stabilize in primary markets, while asking rents continued to decline in secondary markets.
- The strong performance of the publicly traded data center REITs helped to spur an uptick in investor interest in buying assets directly. With more investors targeting data centers and limited opportunities of scale, yields compressed.
- Data center providers are increasingly adopting environmental, social and corporate governance (ESG) practices with a heightened focus on power sources that support corporate assets.

NATIONAL DATA CENTER OVERVIEW

STATE OF THE MARKET

- The prioritization of digital infrastructure, largely due to the effects of COVID-19 on businesses and new technological innovations, continues to drive much of the growth in the data center sector.
- Total inventory in primary markets grew by 159.2 MW (5.9%) in H2 and by 291.8 MW (11.3%) year-over-year. These markets' construction pipeline grew by nearly 84.2 MW in H2 from H1 for a total of 457.8 MW, an increase of 182.95 MW from 2019 construction volume.
- Hyperscalers continue to dominate leasing volume at wholesale colocation data centers across both primary and secondary markets as they expand capacity to keep up with increased end-user demand. This trend, coupled with the deployment of self-built data centers and land acquisitions for future buildouts, accounted for most of the data center activity in H2.
- Average rental rates fell in H1 but began to stabilize in H2. The average asking price across the primary wholesale colocation markets for a 250-to-500-kW requirement held at \$121 per kW/month from H1 to H2 but dropped from \$126 in 2019. Secondary markets saw a decline in prices year-over-year to \$135 kW/month in 2020 from \$142 kW/month in 2019. These rates also held steady between H1 and H2 2020.
- Secondary markets saw a 9.6 MW or 47% decrease in H2 net absorption from H2 2019. This was largely due

- to enterprise companies reevaluating their IT budgets during the pandemic in the first half of 2020. Secondary markets are expected to see growth in 2021, based on companies prioritizing their digital infrastructure spend and planning to deliver requirements driven by future demand from 5G, Edge and IoT technologies.
- Seattle led secondary markets in total 2020 net absorption with 6.9MW, followed closely by the Austin/ San Antonio market (6.8 MW). Southern California also had positive leasing momentum with 5.5MW of net absorption, largely due to one colocation provider delivering new supply.

70-100%

4785 - H

YT - 1091 - 98
 906 - 895 [07]
 SQ - RT - 8954 - 0063

PR1 - 895 986 384 984
 DT - 985 387 485 - 985
 GTN - 859 - 274

23 - 95
 34 - 85
 19 - 74
 27 - 92
 75 - 95
 74 - 89
 38 - 90
 80 - 84

N | P - 8943 - 9032
 L | S | R - 8894 - 0092

HT - YR - 0043 - 1031
 G - 893

21,899

52,094

67,003

36,827

42,094

48,005

76,063

61,893

68,238

23,168

73,904

39,125

74,839

63,972

19,583

FIGURE 1

H2 2020 Wholesale Primary Market Fundamentals

Market	Inventory	Y-o-Y Change	Available MW/ Vacancy Rate	Y-o-Y Change*	2020 Net Absorption	Y-o-Y Change	Rental Rates (kW/mo)**
Northern Virginia	1,376.7 MW	▲ 176.3 MW	76.9 MW / 5.6%	▼ -420 bps	217.2 MW	▼ -37.4 MW	\$85-\$120
Dallas/Ft. Worth	360.9 MW	▲ 39.5 MW	65.4 MW / 18%	▼ -40 bps	33.7 MW	▲ 7.9 MW	\$100-\$140
Silicon Valley	292.1 MW	▲ 24.3 MW	6.8 MW / 2.3%	▼ -110 bps	26.6 MW	▼ -9.0 MW	\$135-\$150
Chicago	288.5 MW	▲ 18.5 MW	42.7 MW / 14.8%	▲ 100 bps	13.1 MW	▼ -2.6 MW	\$96-\$110
Phoenix	238.9 MW	▲ 9.0 MW	15.9 MW / 6.7%	▼ -390 bps	17.5 MW	▲ 4.8 MW	\$115-\$130
New York Tri-State	149.1 MW	▲ 3.0 MW	13.1 MW / 8.8%	▼ -40 bps	3.3 MW	▼ -5.7MW	\$125-\$135
Atlanta	163.8 MW	▲ 21.2 MW	23.8 MW / 14.5%	▼ -10 bps	18.2 MW	▲ 3.6 MW	\$115-\$130

*Vacancy Y-o-Y changes are calculated by comparing the difference between H2 2020 and H2 2019. **Rental rates are quoted asking rated for 250+ kW at N+1/Tier III requirements. Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

FIGURE 2

H2 2020 Wholesale Secondary Market Fundamentals

Market	Inventory	Y-o-Y Change	Available MW/ Vacancy Rate	Y-o-Y Change*	2020 Net Absorption	Y-o-Y Change	Rental Rates (kW/mo)**
Austin/San Antonio	146.6 MW	▲ 5.4 MW	4.1 MW / 2.8%	▼ -110 bps	6.8 MW	▼ -5.8 MW	\$125-\$155
Houston	128.4 MW	▲ 1.0 MW	29.4 MW / 22.9%	▼ -210 bps	3.8 MW	▼ -12.2 MW	\$130-\$150
Southern California	127.1 MW	▲ 6.0 MW	24.0 MW / 18.9%	▼ -56 bps	5.5 MW	▼ -8.9 MW	\$130-\$160
Seattle	137.0 MW	▲ 5.3 MW	20.6 MW / 15.0%	▼ -182 bps	6.9 MW	▲ 6.4 MW	\$115-\$145
Denver	84.8 MW	▼ -1.2 MW	18.9 MW / 22.2%	▼ -341 bps	2.0 MW	▲ 1.6 MW	\$125-\$145
Boston	77.8 MW	► 0 MW	12.9 MW / 16.5%	▼ -470 bps	3.6 MW	▲ 1.2 MW	\$150-\$175
Charlotte/Raleigh	61.7 MW	▲ 1.2 MW	18.2 MW / 29.5%	▼ -80 bps	1.3 MW	▼ -1.6 MW	\$120-\$135
Minneapolis	52.0 MW	▲ 0.9 MW	14.7 MW / 28.2%	▼ -190 bps	1.6 MW	▼ -2.0 MW	\$130-\$145

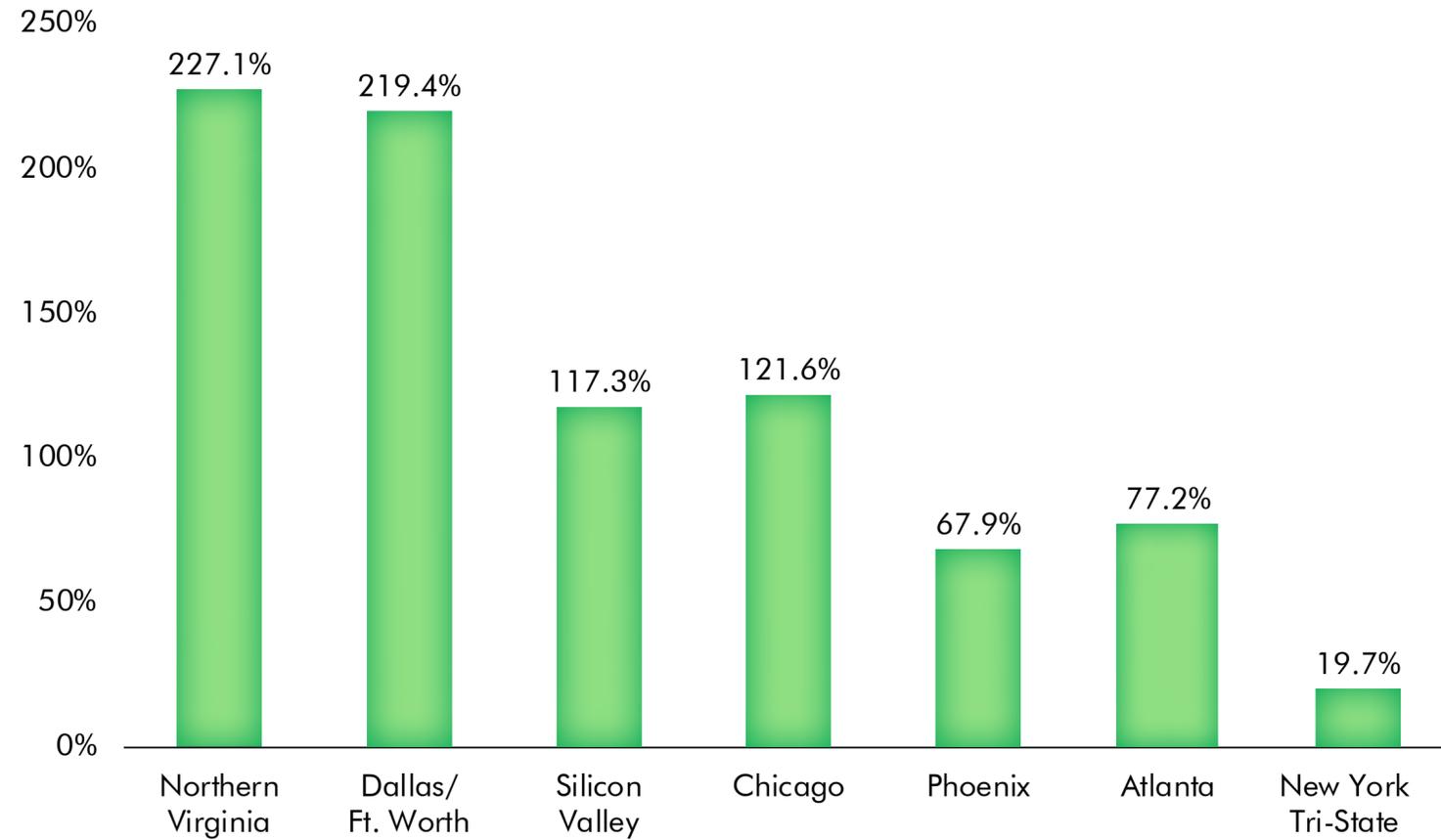
*Vacancy Y-o-Y changes are calculated by comparing the difference between H2 2020 and H2 2019. **Rental rates are quoted asking rates for 250+ kW at N+1/Tier III requirements. Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

SUPPLY INSIGHTS

- The increased demand for data centers continued to drive new development in primary markets last year. Northern Virginia, the largest data center market in the world, saw 101 MW added to its critical power in H2 and 176.3 MW of new deliveries for the year. The Northern Virginia vacancy rate fell by 4.2 percentage points year-over-year to 5.6% in H2.
- Dallas remains the second largest market for wholesale colocation inventory. 13.5 MW of new data center capacity was delivered in H2, bringing new inventory to 39.5 MW for the year. The Dallas vacancy rate fell by 40 bps year-over-year to 18% in H2, at the low end of its 18%-to-21% range since 2016. An uptick in enterprise leasing in 2021 likely will further lower the vacancy rate, as Dallas has historically been a market dominated by enterprise and Fortune 1000 users.
- Atlanta's inventory grew by 12.7 MW in H2 for a total of 21.2 MW of new supply in 2020. The vacancy rate dropped by 10 bps year-over-year to 14.5%. Silicon Valley had 6.8 MW of its 292.1-MW total inventory available, bringing its vacancy rate down to 2.3%—a record low and the lowest of all primary markets. Phoenix and New York Tri-State also saw their vacancy rates drop slightly, while Chicago had a 1-percentage-point increase in vacancy.
- Of the 457.8 MW currently under construction in primary markets, 239 MW has been preleased. Silicon Valley ended H2 with 50.1 MW under construction, of which 37.1 MW (74%) is preleased. Northern Virginia reports 160 MW (56%) of its 283.5 MW construction pipeline as preleased and that more than 250 MW of it will be delivered in 2021.
- Northern Virginia's supply pipeline is so large that it faces possible delays in substation deliveries by local utilities due to the dense concentration of power utilized by data center off-takers. Planned projects could potentially experience longer-than-normal lead times.
- The importance of network connectivity continues to drive demand for high-quality assets. Connectivity and cloud on-ramps are imperative for many clients looking to adopt a hybrid IT model. While this may be the case for many enterprise clients, some still feel that cloud migration is not currently their most strategic approach. Many continue to keep their data infrastructure on-premises or in traditional, affordable colocation facilities.

FIGURE 3

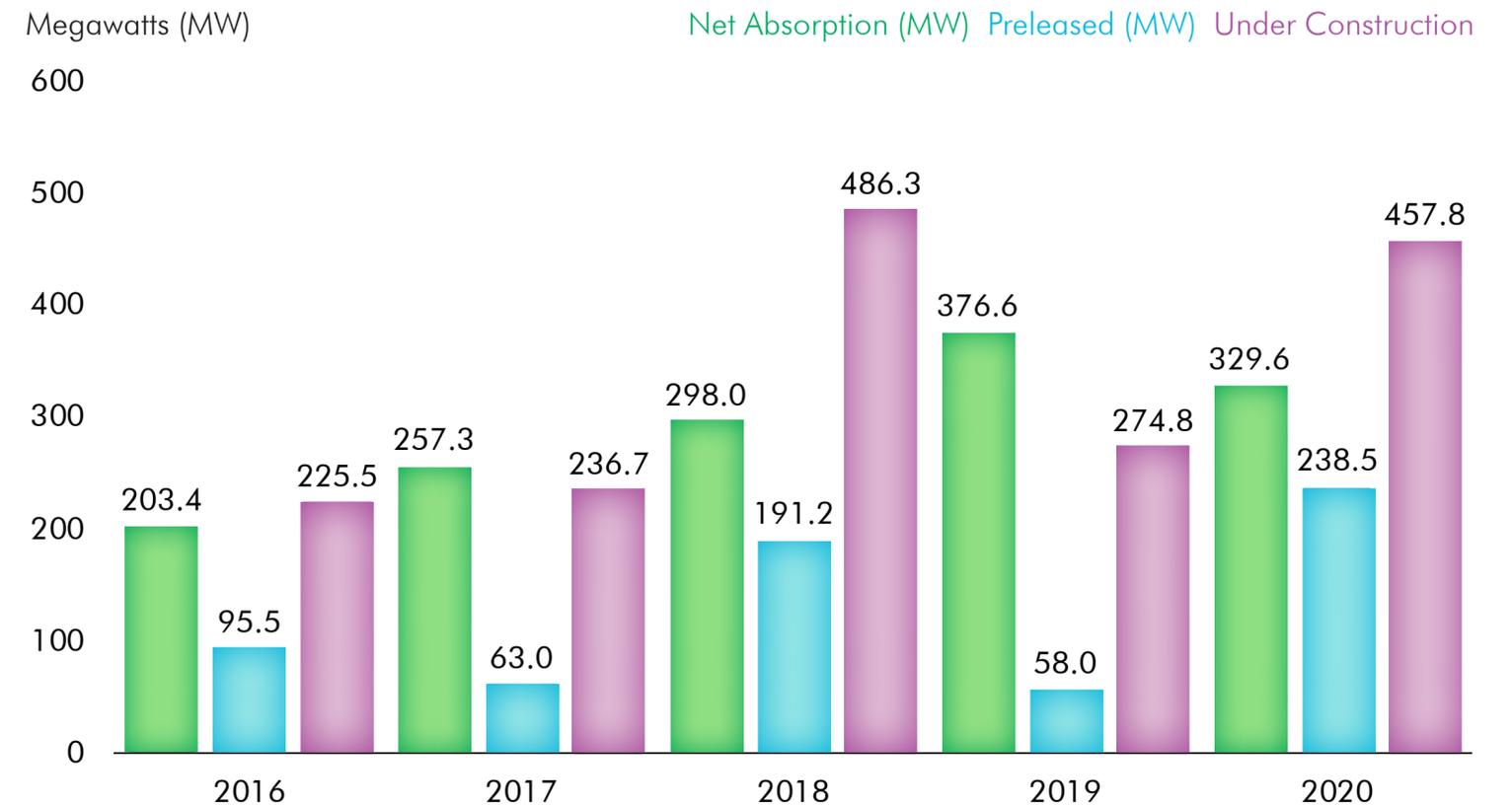
Inventory Growth of Primary Data Center Markets since H1 2015



Note: This data range has included information not available in the H1 2020 report.
 Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

FIGURE 4

Primary Markets - Net Absorption, Preleasing & Under Construction



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

DEMAND INSIGHTS

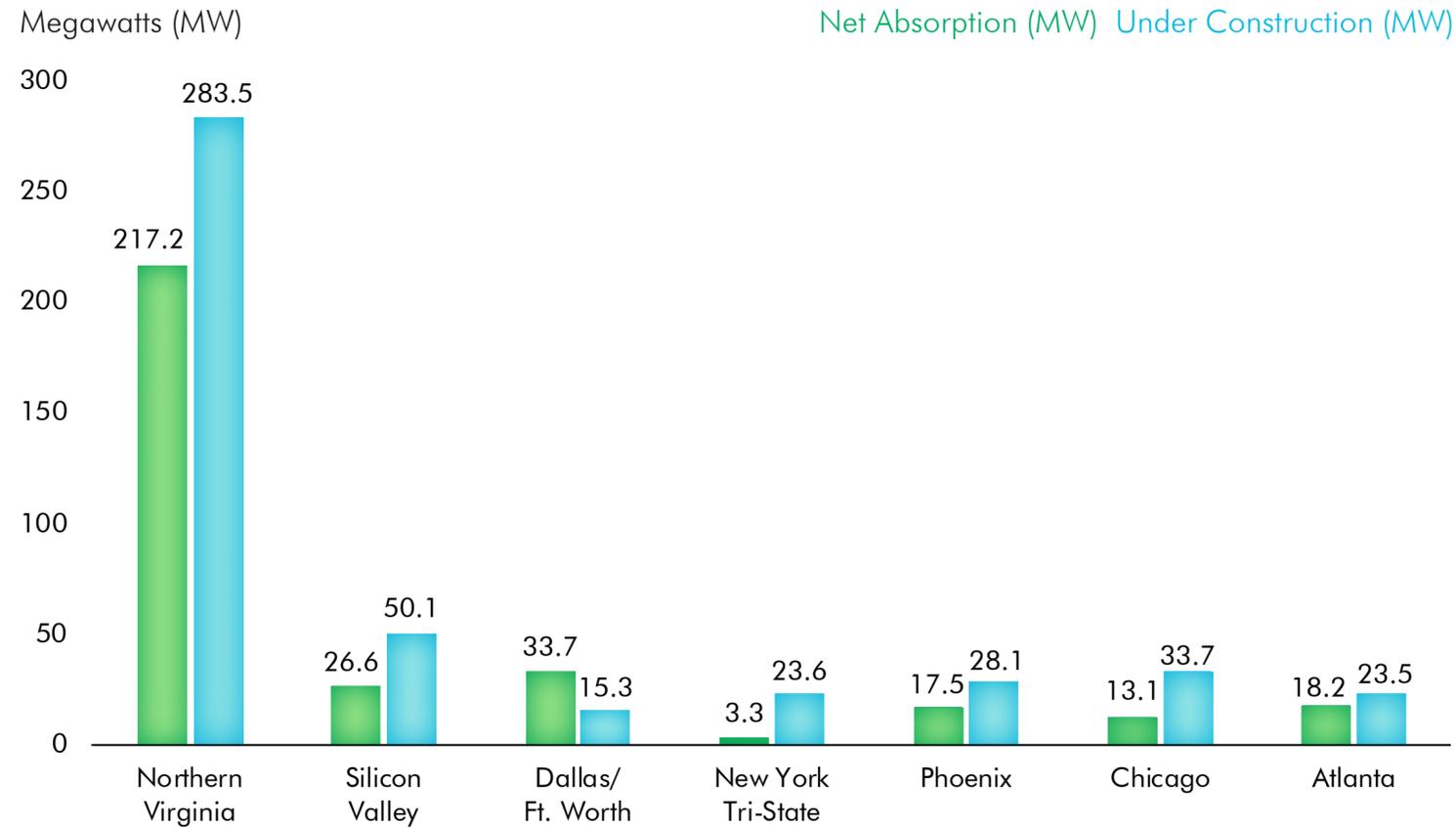
- Net absorption across primary markets in 2020 totaled 329.6 MW, down by 38.5 MW year-over-year. This decrease is not surprising since the recession has led to budget cuts by many companies. Supply pipelines and pent-up demand portend a favorable outlook for data center growth in 2021.
- Secondary markets¹ recorded 31.5 MW of net absorption in 2020, down from 52.8 MW a year ago. These markets are expected to see increased leasing activity in 2021 due to higher prioritization of IT spend by enterprise clients.
- Executing a speed-to-market strategy, hyperscalers and larger providers accounted for the bulk of leasing activity in colocation data centers across the U.S. in 2020. These companies continue to diversify their presence in the market by operating their own facilities and utilizing new and existing colocation data centers. This trend is expected to continue for some time.
- Northern Virginia led all primary markets with 217.2 MW of net absorption in 2020, followed by Dallas (33.7 MW), Silicon Valley (26.6 MW), Atlanta (18.2 MW), Phoenix (17.5 MW), Chicago (13.1 MW) and New York Tri-State (3.3 MW).
- Atlanta continues to draw the interest of large hyperscalers looking to capitalize on affordable land and the prospect of future demand.
- Secondary markets with strong telecommunications, competitive energy, favorable tax structures and strong network connectivity are well positioned to evolve with future technology drivers, paving the way for new edge deployments.

¹ Secondary market totals do not include Canadian markets or CBRE's 2020 additions of Central Washington and Hillsboro.

>>
THE INCREASING PRIORITIZATION OF IT SPEND BY ENTERPRISE CLIENTS SHOULD RESULT IN A SIGNIFICANT UPTICK IN WHOLESALE COLOCATION LEASING ACTIVITY IN 2021.
>>

FIGURE 5

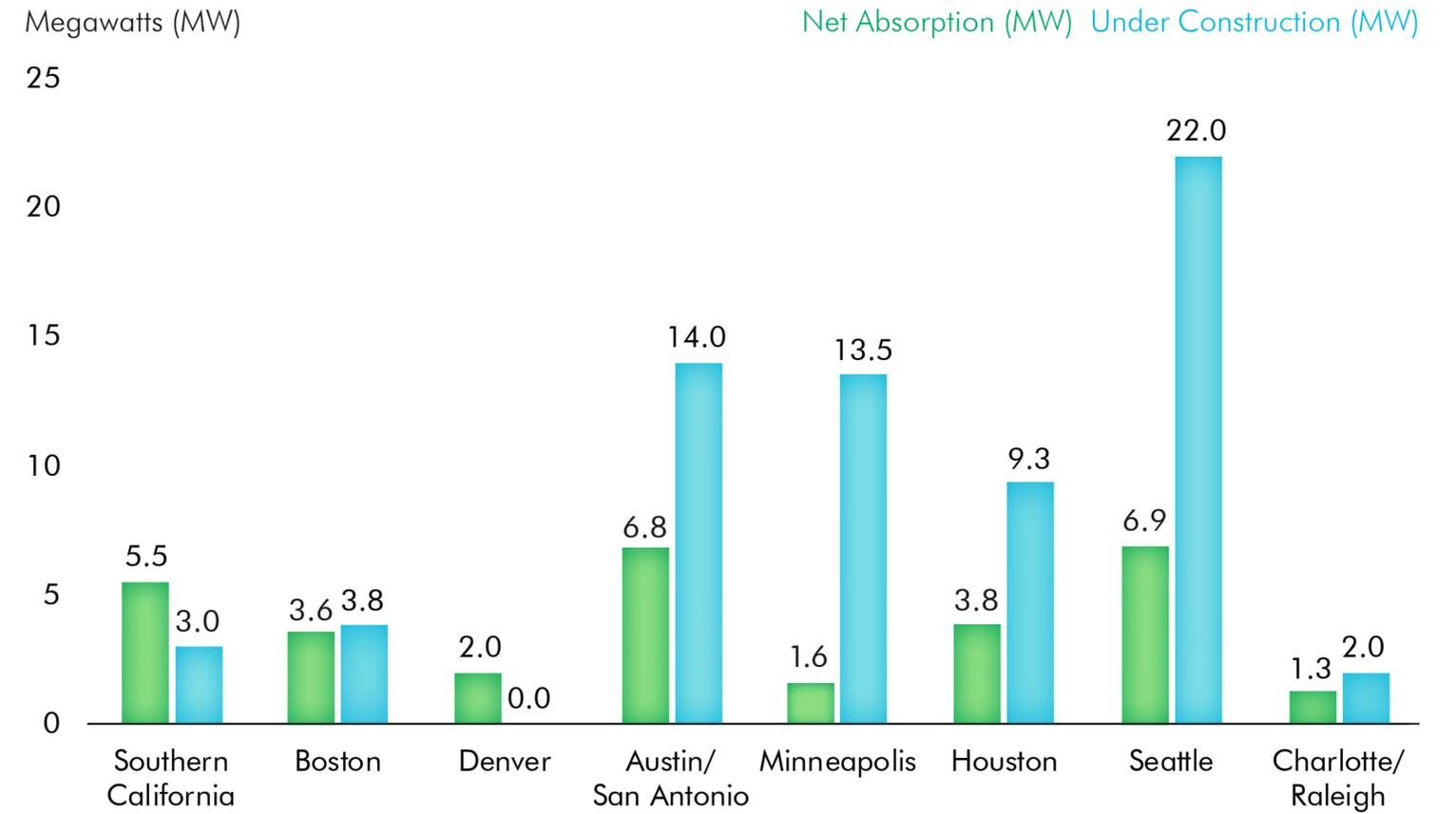
Net Absorption vs. Under Construction by Primary Market, 2020



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

FIGURE 6

Net Absorption vs. Under Construction by Secondary Market, 2020



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

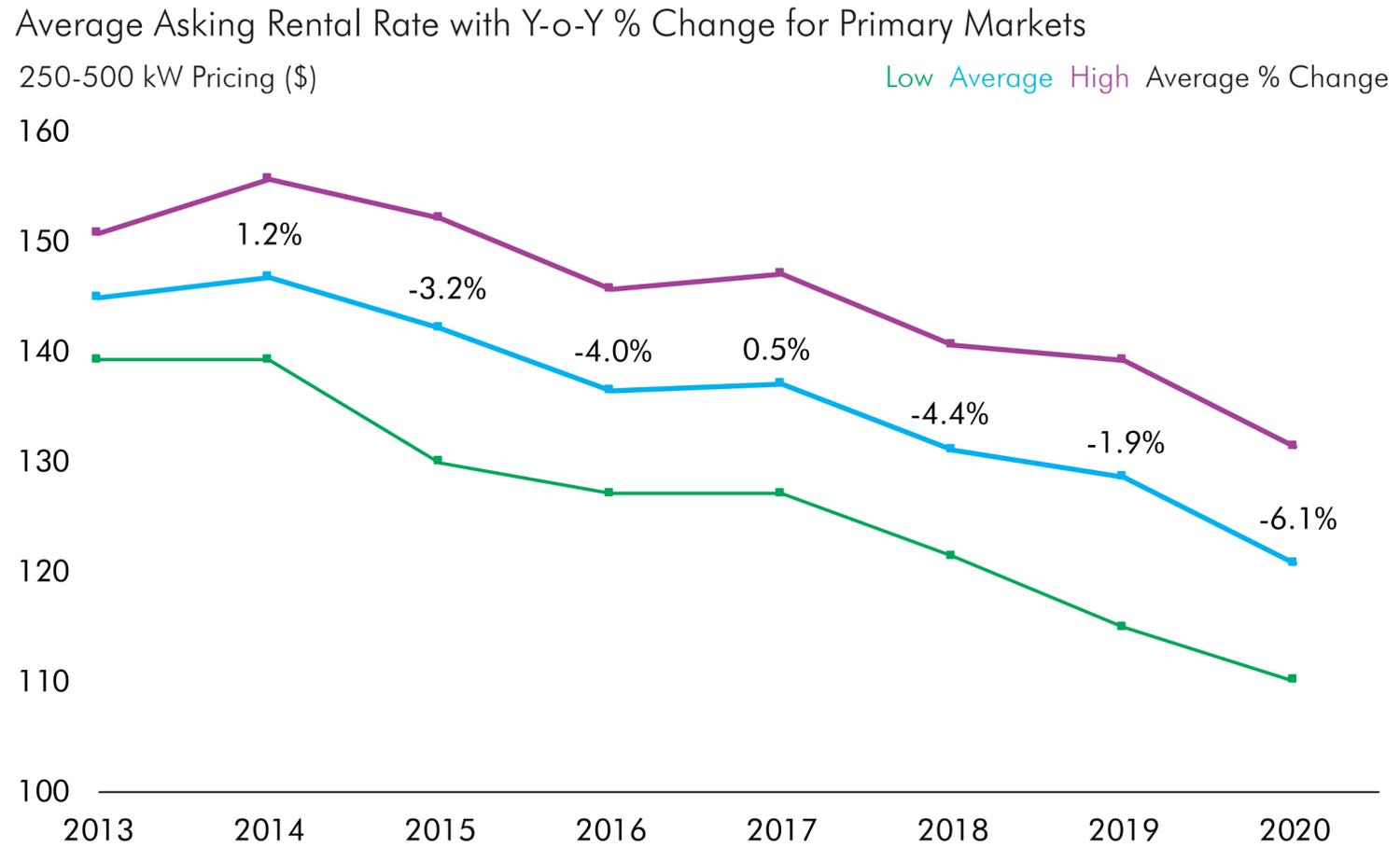
NATIONAL PRICING

- Wholesale colocation asking rates for typical N+1/Tier III requirements in primary markets decreased by 6.1% year-over-year in 2020. Pricing was stable between H1 and H2 2020 at an average asking rate of \$121 kW/month.
- Secondary market pricing fell by 5.6% year-over-year in 2020, but also stabilized between H1 and H2 at \$134 kW/month.
- Colocation providers with highly connected facilities are expected to see more stabilized pricing, while older less-connected assets will continue to see average prices decline.

>>
COLOCATION PROVIDERS WITH
HIGHLY CONNECTED FACILITIES
ARE EXPECTED TO SEE MORE
STABILIZED PRICING, WHILE
OLDER LESS-CONNECTED ASSETS
WILL CONTINUE TO SEE AVERAGE
PRICES DECLINE.

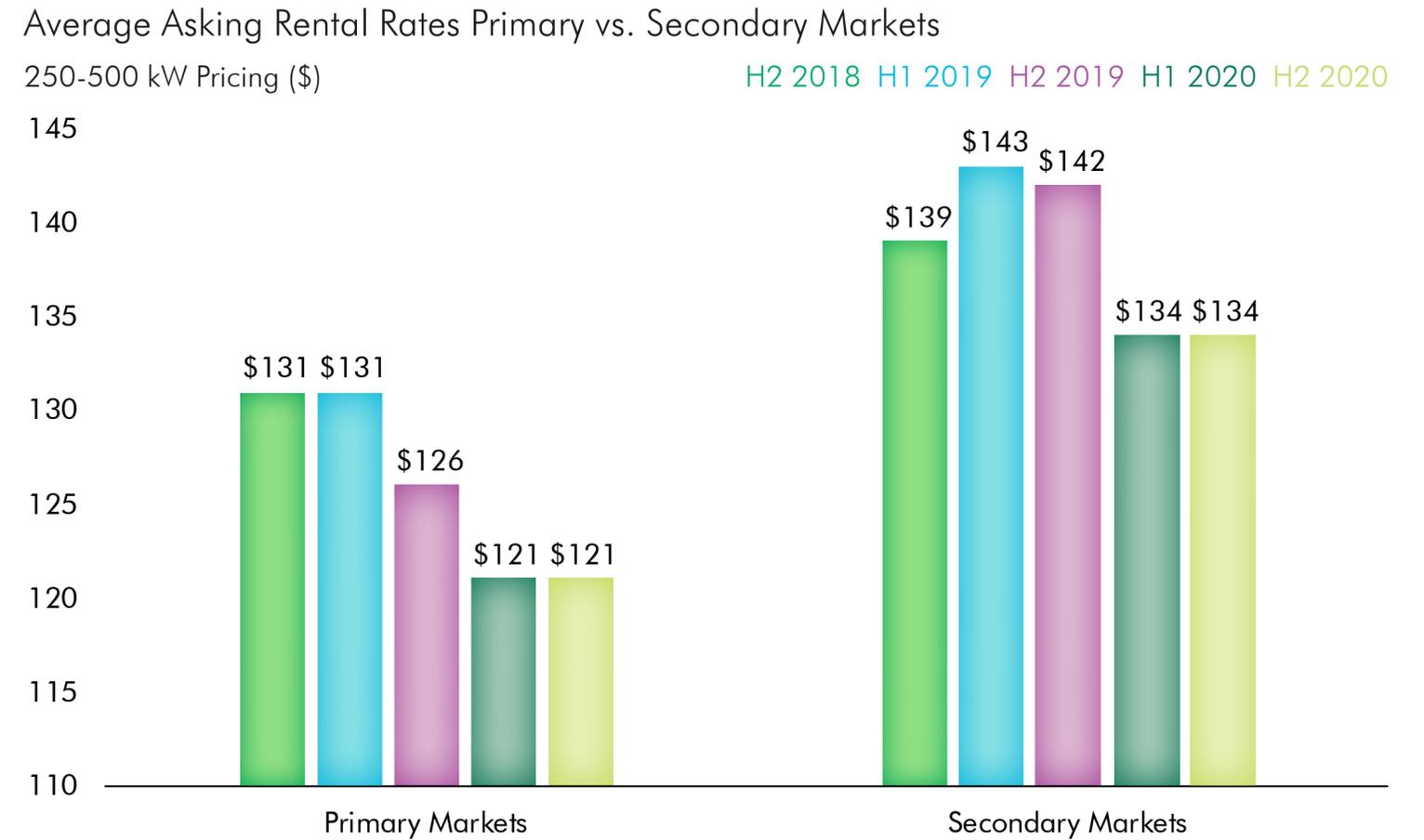
>>

FIGURE 7



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

FIGURE 8



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

CAPITAL MARKETS INSIGHTS

Data centers were the highest performing public real estate sector in 2020, ending the year up 21% overall.² Strong performance of the publicly traded data center providers highlighted the resiliency of the asset class and resulted in an uptick in investor interest. With more investors targeting data centers and limited opportunities of scale, yields compressed compared with capitalization rates for stabilized sales in 2019 and 2018.

Select H2 2020 Investment Activity:

- Blackstone's \$293 million acquisition of 90% interest in eight single-tenant powered shells totaling 1.3 million sq. ft.
- Harrison Street & 1547 Critical Systems Realty's \$326 million acquisition of Pittock Block, a carrier hotel in downtown Portland.
- Equinix's \$780 million acquisition of 13 data centers in Canada totaling 1.2 million sq. ft. from BCE Inc.
- EQT Infrastructure's \$2.75 billion acquisition of EdgeConnex, consisting of more than 40 facilities in 33 markets across North America, Europe and South America.
- DataBank's acquisition of zColo's U.S. and U.K. portfolio, consisting of 44 data centers in 23 markets, for an undisclosed sum.

Increased investor interest will continue to drive yield compression in all market segments. As many new investors enter the data center market, they will pursue partnerships with proven operators to benefit from their operational expertise and relationships. Enterprises looking to expedite cloud outsourcing solutions will seek monetization strategies for existing owned assets.

² Based on 2020 total return for Coresite Realty Corporation (COR), CyrusOne Inc. (CONE), Digital Realty (DLR), Equinix, Inc. (EQIX) and QTS Realty Trust, Inc. (QTS). FTSE Nareit U.S. Real Estate Index Series Daily Returns (December 31, 2020).



VALUATIONS

The data center and digital infrastructure asset class proved its resilience in 2020. The best-performing assets were those that supported modern customer densities and interconnection run by proven operators in primary and secondary markets.

The data center asset class is relatively young, with corresponding evolution in its valuation. The following are several recurring valuation issues encountered in 2020:

- A stark contrast between Class A and Class B assets in terms of capitalization rates, exceeding 150 basis points in some cases.
- A concern by clients over underwriting market rents given multi-year declines, which is typically addressed with below-contract market rent and abated growth rates.
- Distinguishing personal property (FF&E) and real estate in property tax appraisals, typically determined by ownership of specific building systems or the basis for contract rent.

NETWORK

2020 NETWORK TRENDS: INTERCONNECTION IN THE DATA CENTER

“Network is the lifeblood of our organization” – Chief Technology Officer of a large client

An analysis of interconnection revenue from the largest publicly traded data center REITs revealed:

- Interconnection revenue has grown by an annual average of nearly 13% since 2017.
- Interconnection revenue growth has been largely driven by SD-WAN and Cloud.
- Two of the largest global cloud interconnection providers increased their footprints within data centers by more than 175% over the past five years.
- Industry analysts forecast a compound annual growth rate (CAGR) of approximately 13% for data centers over the next five years.

IMPACT OF INTERCONNECTION ON DATA CENTER STAKEHOLDERS

Owners	Occupiers
Stay competitive in the marketplace and attract quality tenants.	Access cloud on-ramps and vital infrastructure.
Continue to grow an increasing portion of revenue.	Optimize real estate and cloud footprints.
Keep tenants in facilities for the long term.	Manage infrastructure spend and digital business with lower latency and more security.

>>
“Data center providers and owners are aggressively seeking to differentiate their assets. Network/interconnection offerings will create incremental value to their portfolios.”

MICHAEL MURPHY,
 EXECUTIVE VICE PRESIDENT, CBRE NETWORK ADVISORY SERVICES

>>

2021 DATA CENTER OUTLOOK

- Investment in data centers is expected to increase based on strong revenue growth projections.
- With a robust supply pipeline of 457.8 MW across primary markets, a significant amount of new data center development is expected to come online in 2021.
- Substantial preleasing indicates increased leasing volume in 2021, largely dominated by hyperscalers and cloud service providers.
- Enterprise leasing is expected to increase across both primary and secondary markets.
- New and evolving technological innovations such as 5G, Edge computing and the ever-growing Internet of Things will increasingly drive interest as providers look to diversify their portfolios and serve the smaller secondary and tertiary markets. Key market drivers remain cost-driven, including energy costs and tax incentives. Secondary markets like Omaha, Des Moines and Columbus likely will see increased activity due to their closer proximity to other Midwestern metros than traditional primary markets.
- Data center demand tied to significant cloud adoption in hybrid-IT environments is expected to remain strong, especially with the explosive growth of data and traffic sharing. Occupiers looking for lower-latency environments will also find options at the Edge. The rise of interconnection within data centers to route traffic, connect business-critical applications and drive revenue will continue.

TRENDS TO WATCH



MARKET EQUILIBRIUM

- What impact will the continued utilization of wholesale colocation data centers by hyperscale clients have on future supply, and will the mix of build-to-suits and speculative development continue to change from market to market?
- What effect will the uptick in land purchases by large hyperscalers in markets like Atlanta have on future deployments in other markets?
- What impact will continually increasing power density and a bottleneck in utility substation delivery have on new developments in markets like Northern Virginia?
- What impact will the environmental targets of large hyperscalers and traditional colocation data center providers have on market selection, power pricing and investments for increased facility efficiencies?
- How will providers modify their facilities to maintain a competitive advantage as the importance of network becomes more critical to the evolution of digital infrastructure?
- What impact will new technological advancements in sectors like finance, life sciences and artificial intelligence have on new data center development, particularly in secondary markets?



PRICING TRENDS

- Will the stabilization of wholesale colocation asking rates in primary markets in H2 continue? Will the difference in asking rates between primary and secondary markets shrink?
- What incentives will be the largest drivers for market selection and future data center deployments? Will large corporations' carbon reduction goals outweigh other incentives, such as tax abatements?
- Will the pricing delta between primary and secondary markets begin to shrink?



THE IMPORTANCE OF CONNECTIVITY

- What new developments will be rolled out to accommodate the ever-growing interest in 5G and Edge computing?
- Will the heightened scrutinization of clients' digital infrastructure change the market equilibrium with regard to provider selection based on elements such as access to cloud on-ramps, interconnection availability and latency reduction?



HYBRID IT

- What implications will large hyperscale and cloud data center providers' continued growth have on traditional wholesale colocation facilities?
- Will the increase in investment capital to data centers accelerate cloud adoption and the ability to develop new cloud-on ramps and network connectivity?
- What strategic changes will occur with regard to smaller enterprise clients reconfiguring their software applications to accommodate hybrid IT infrastructure and become cloud-compatible?

F3

MARKET SPOTLIGHTS

OR - 49990
OP - 33711 | 2
259 | 269

AH - 28409 - 452 - 001
HHD - 002
MR - 054 | 345 - SF

ORT | 234 - 986 - 3481
FY - 1004
NV - 2774

ATLANTA



COLOCATION INSIGHTS

- An increase in enterprise colocation is expected in the first half of 2021.
- Pricing remains higher than the national average due to low inventory and lack of options.

MARKET TRENDS

- Hyperscale companies continue to absorb colocation space and build owned data centers.
- Data center absorption continues to increase, further lowering the vacancy rate.

NOTABLE DEALS

- A large hyperscale company purchased land for a \$420 million data center campus in South Fulton.
- QTS signed an 8 MW lease at Metro 2 with a large hyperscale customer.
- Switch signed an 800 kW lease with a large health care provider.

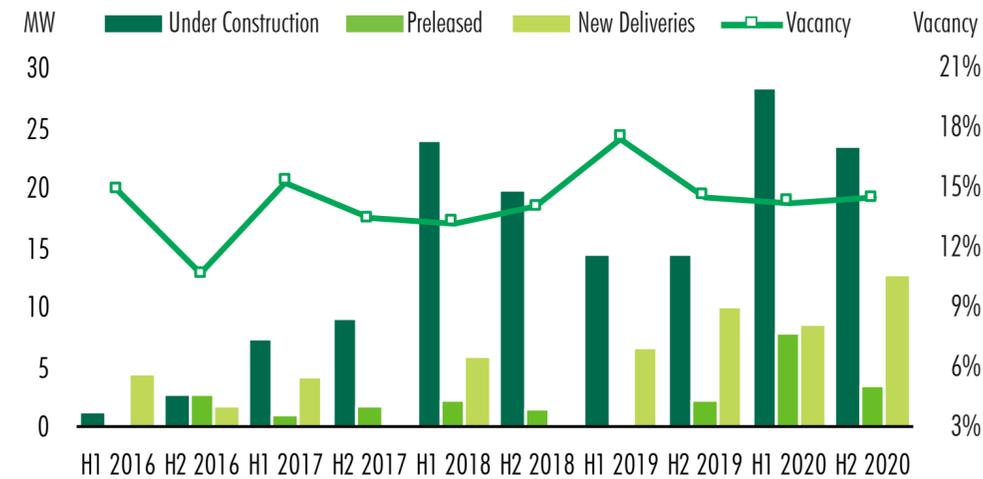
DEVELOPMENT ACTIVITY

- A large social media company is adding three buildings totaling nearly 1.5 million sq. ft. at Newton Campus for a total capital investment of nearly \$1 billion.
- More than 300 acres of land are under contract for new data center development and another 500 acres are in the pipeline for 2021.

LOCAL CONTACTS

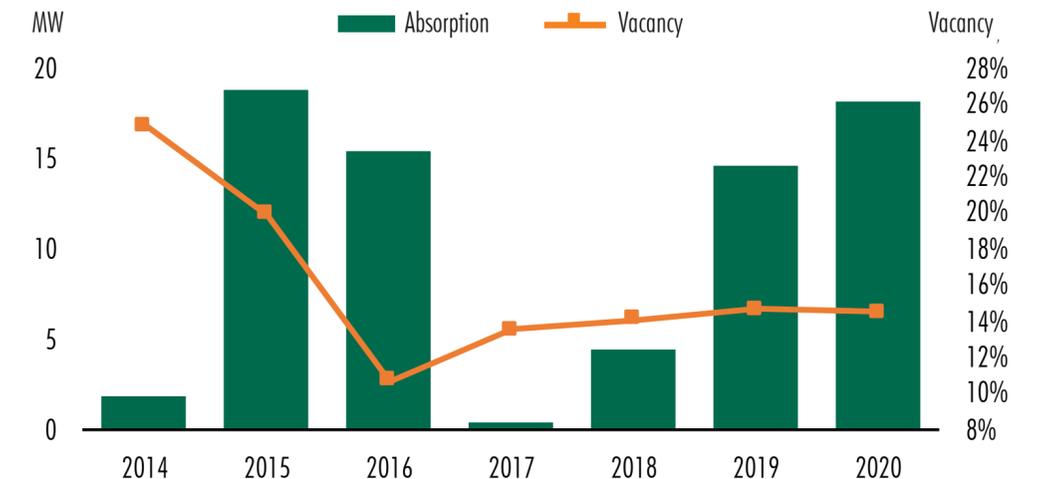
- Tim Huffman | +1 678 549 8939 | tim.huffman@cbre.com
- Mike Lash | +1 678 327 9041 | mike.lash@cbre.com
- Saisha Tsaku | +1 404 504 7894 | saisha.tsaku@cbre.com

HISTORICAL SUPPLY GROWTH



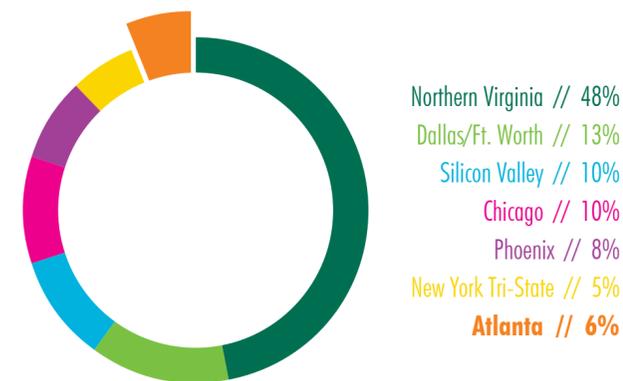
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

HISTORICAL DEMAND GROWTH



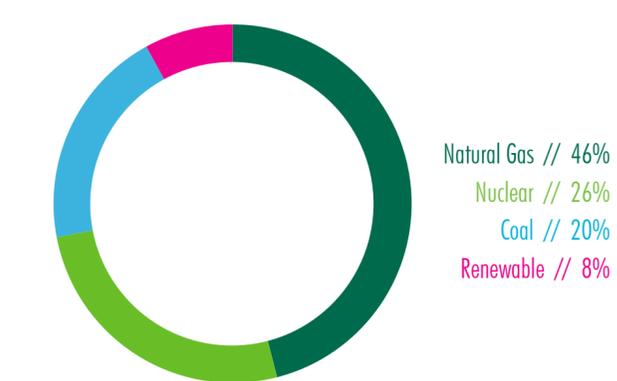
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

% OF PRIMARY MARKET INVENTORY



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET FUEL MIX*



Source: U.S. EIA.

AVERAGE ASKING RATES

	Min	Max
5-10 MW	\$100	\$110
1-4 MW	\$110	\$120
250-500 kW	\$115	\$130

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

*This fuel mix is intended to show the general sources of power generation in an area and doesn't necessarily reflect the offtake of data centers in that market.

AUSTIN/SAN ANTONIO



COLOCATION INSIGHTS

- The market is strapped for competitive supply, creating an opportunity for continued expansion or new entrants.
- Several enterprise users have expressed significant interest in Austin.

MARKET TRENDS

- Wholesale vacancy fell to an all-time low of 2.8% in H2 2020.
- San Antonio has seen a recent increase in potential new activity from several colocation operators.

NOTABLE DEALS

- Data Foundry in Austin had a large wholesale transaction in H2 2020.

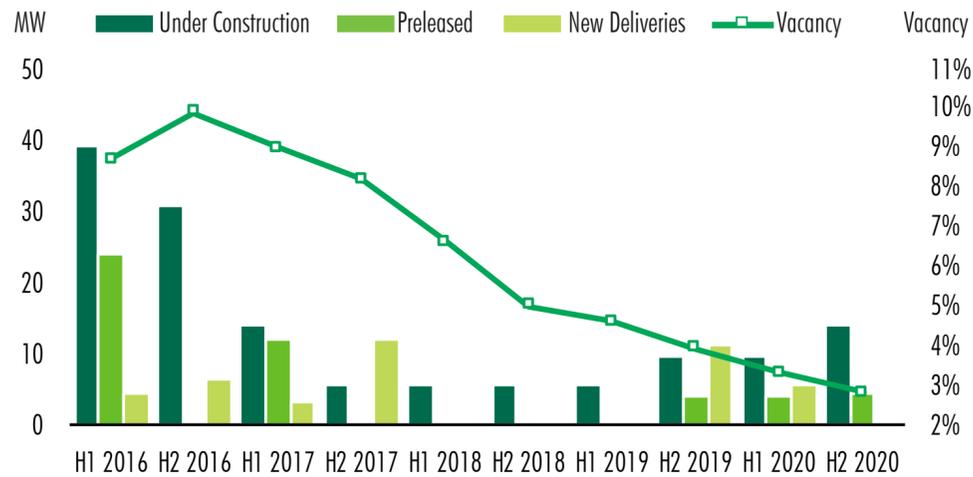
DEVELOPMENT ACTIVITY

- 14 MW is currently under construction by two providers.

LOCAL CONTACTS

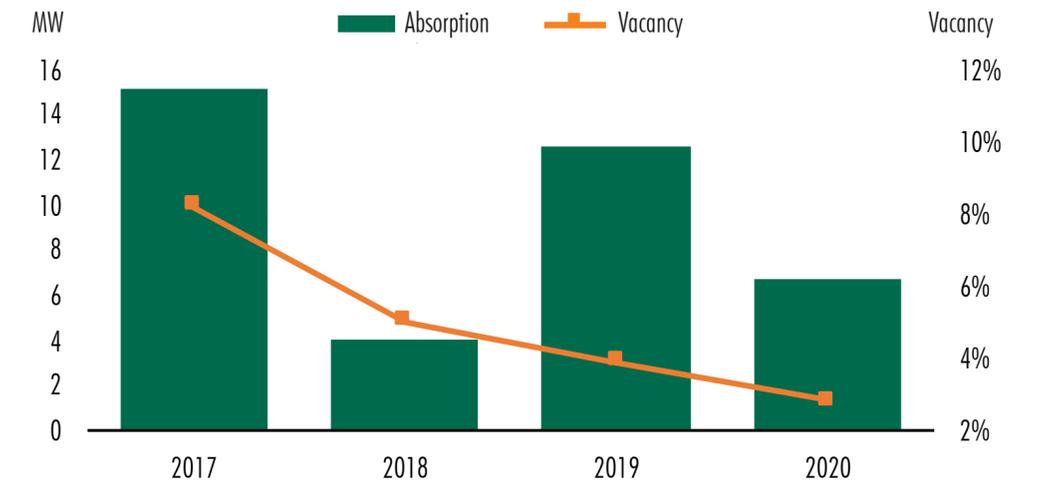
- Brant Bernet | +1 214 979 6570 | brant.bernet@cbre.com
- Chris Herrmann | +1 214 979 6516 | chris.herrmann@cbre.com
- Mikey Jaillet | +1 512 810 1997 | mikey.jaillet@cbre.com

HISTORICAL SUPPLY GROWTH



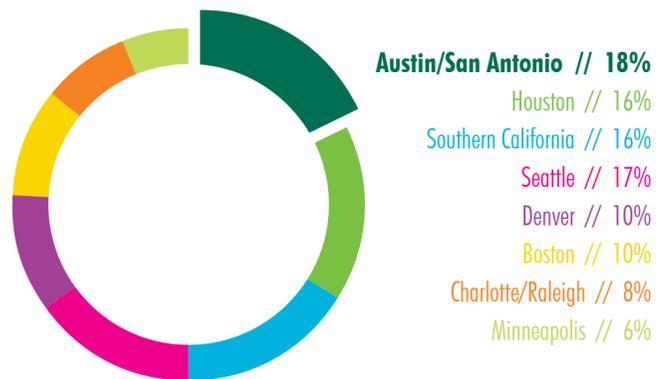
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

HISTORICAL DEMAND GROWTH



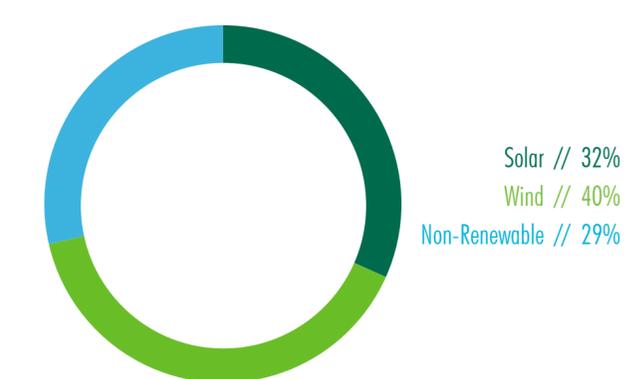
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

% OF SECONDARY MARKET INVENTORY



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET FUEL MIX*



Source: Austin Energy.

AVERAGE ASKING RATES

Capacity	Min	Max
5-10 MW	\$100	\$110
1-4 MW	\$110	\$120
250-500 kW	\$115	\$130

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

*This fuel mix is intended to show the general sources of power generation in an area and doesn't necessarily reflect the offtake of data centers in that market.

BOSTON



COLOCATION INSIGHTS

- Several major cloud providers plan to provide local cloud resources in Greater Boston that could make them the dominant consumers of space in 2021 and beyond.
- A third subsea cable is scheduled to go live in Q1 2022. Increased connectivity and localized peering in Boston could lead to incremental colocation growth and increased interconnection.

MARKET TRENDS

- Pricing is stabilizing after several years of decline. Expected returns by investors and operators are starting to match those of more traditional commercial real estate sectors.
- A minimal amount of new construction is underway. Providers are expected to concentrate on filling vacant space with existing customer expansions and continued outsourcing of legacy data centers.

NOTABLE DEALS

- A large content company expanded by 500kW, likely due to subsea cable activity.

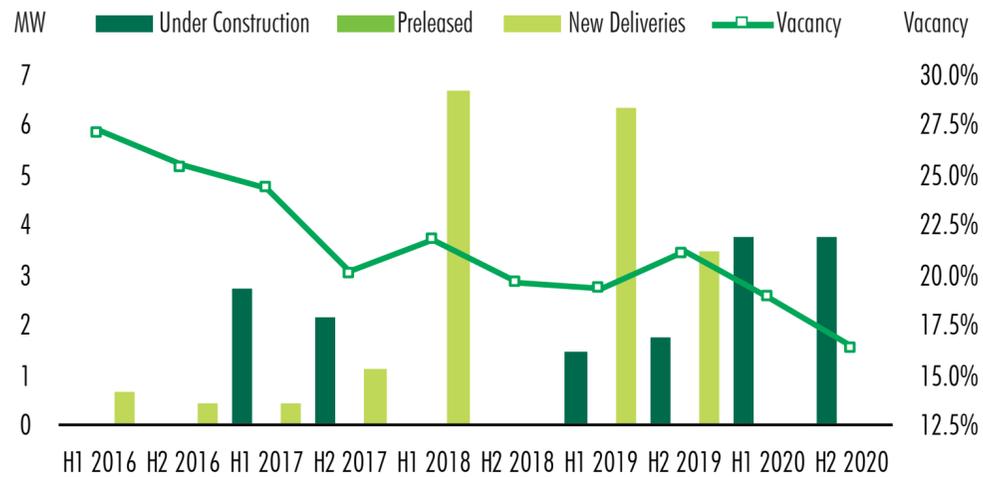
DEVELOPMENT ACTIVITY

- Data center development activity was stagnant in H2 2020.

LOCAL CONTACTS

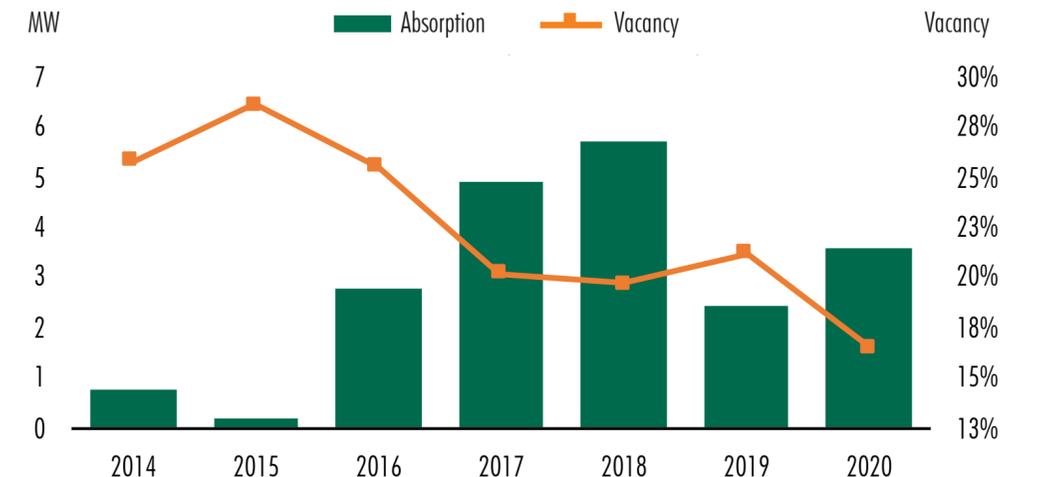
- Rich Modliszewski | +1 617 447 0946 | richard.modliszewski@cbre.com

HISTORICAL SUPPLY GROWTH



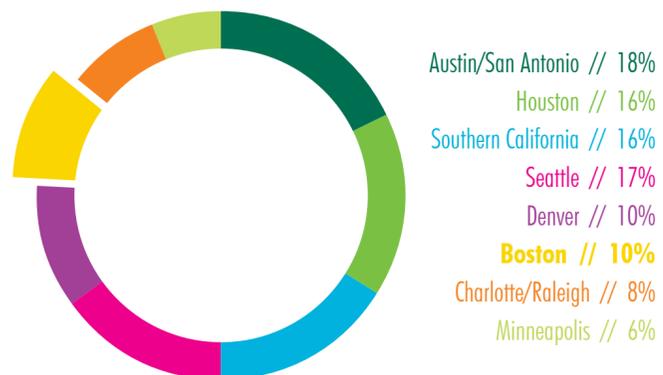
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

HISTORICAL DEMAND GROWTH



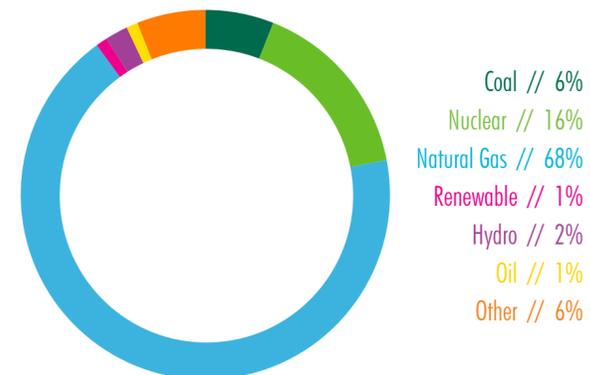
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

% OF SECONDARY MARKET INVENTORY



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET FUEL MIX*



Source: U.S. Department of Energy for State, Massachusetts.

AVERAGE ASKING RATES

	Min	Max
500+ KW	\$100	\$160
250-499 KW	\$125	\$180
100-249 KW	\$135	\$180

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

*This fuel mix is intended to show the general sources of power generation in an area and doesn't necessarily reflect the offtake of data centers in that market.

CHARLOTTE/RALEIGH



COLOCATION INSIGHTS

- There was little leasing activity in H2 2020 due to COVID-related budget constraints.
- An uptick in leasing activity is expected in 2021.

MARKET TRENDS

- Charlotte was a relatively quiet market in 2020. There were no significant newcomers and a few clients that vacated space.
- An uptick in life sciences enterprise use is expected.

NOTABLE DEALS

- While absorption remains positive, North Carolina saw no sizable deals in H2 2020.

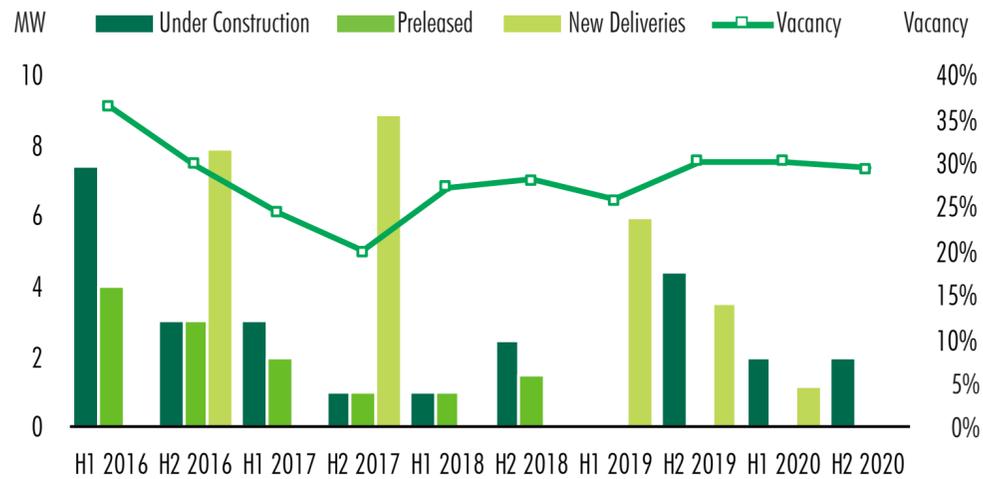
DEVELOPMENT ACTIVITY

- There were no new deliveries in H2 2020.
- 2 MWs of new inventory are planned at an enterprise asset that's expected to sell.
- DeepEdge Technologies has additional capacity in the development pipeline.

LOCAL CONTACTS

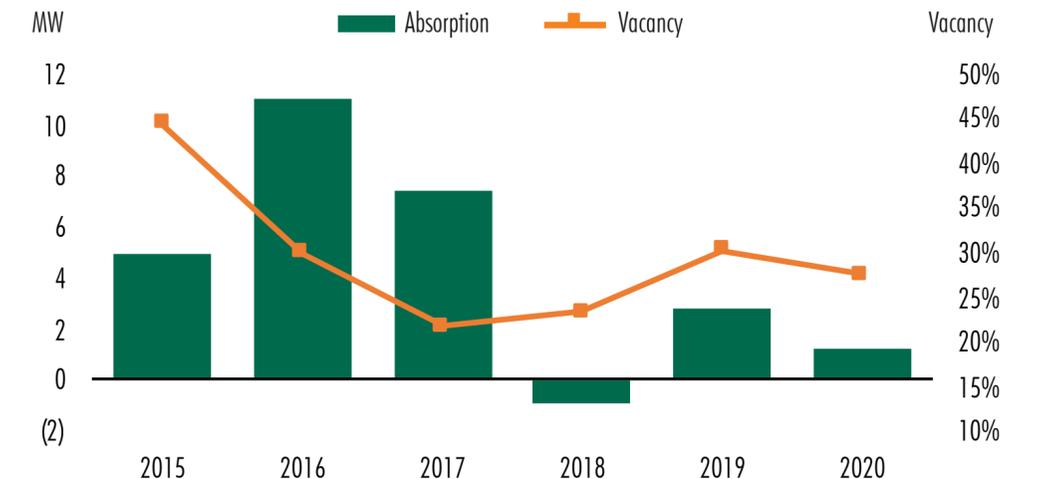
- Ben Rojahn | +1 704 331 1207 | ben.rojahn@cbre.com

HISTORICAL SUPPLY GROWTH



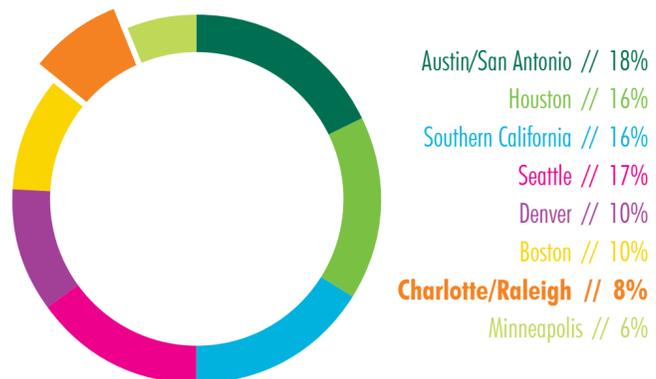
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

HISTORICAL DEMAND GROWTH



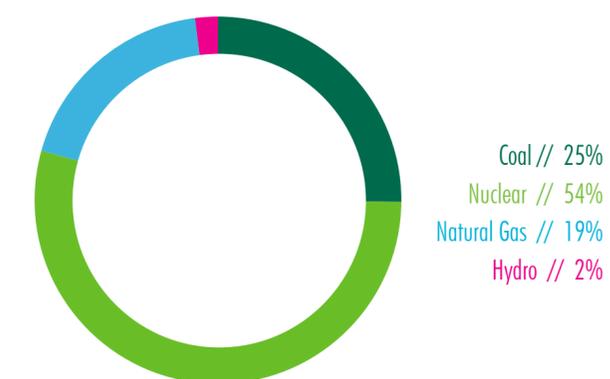
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

% OF SECONDARY MARKET INVENTORY



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET FUEL MIX*



Source: Duke Energy.

AVERAGE ASKING RATES

	Min	Max
5-10 MW	\$100	\$110
1-4 MW	\$110	\$120
250-500 kW	\$115	\$130

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

*This fuel mix is intended to show the general sources of power generation in an area and doesn't necessarily reflect the offtake of data centers in that market.

CHICAGO



COLOCATION INSIGHTS

- Enterprise and hyperscale users, anticipating an end of the pandemic, have increased their activity.
- High demand from hyperscalers likely will cause the vacancy rate to drop. There has been a spike in preleasing activity.

MARKET TRENDS

- Hyperscale activity is increasing as users and colocation providers take advantage of new tax incentive programs.
- Due to tax incentives, Chicago is becoming a destination for large hyperscale colocation deployments and builds.

NOTABLE DEALS

- Stream Data Centers has fully leased its shell building in Elk Grove Village to a single hyperscaler.
- STACK Infrastructure has fully leased the 12 MW of its Phase I build at CH2 to a single hyperscaler.

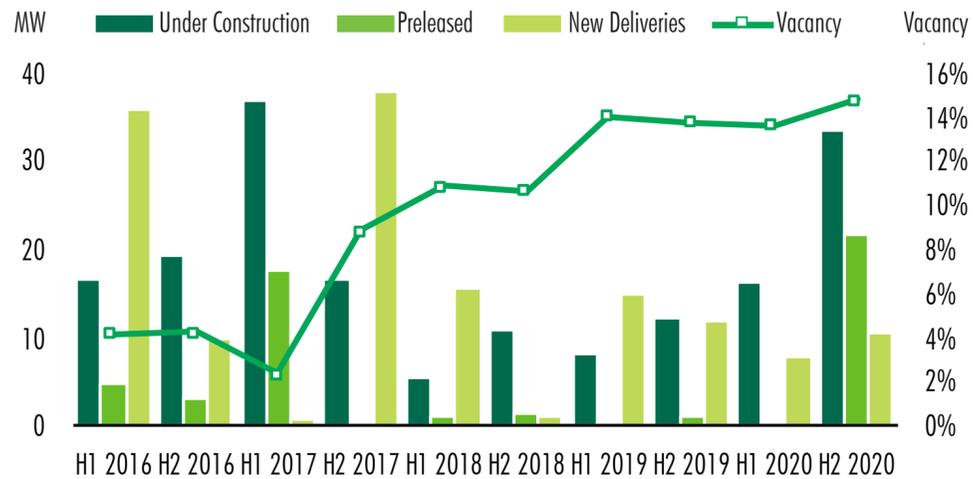
DEVELOPMENT ACTIVITY

- RagingWire will deliver its 6 MW Phase I Itasca build in Q1 2021.
- CoreSite delivered 6 MW in its downtown Chicago CH2 facility.
- Digital Crossroads delivered 3.2 MW of capacity at its new facility in Hammond, IN.

LOCAL CONTACTS

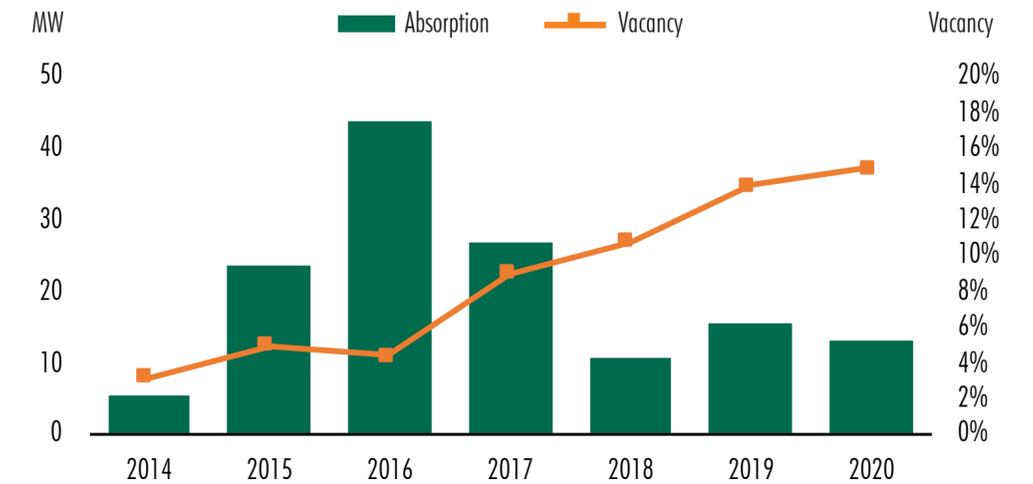
- Jordan Thompson | +1 312 416 3063 | jordan.thompson@cbre.com

HISTORICAL SUPPLY GROWTH



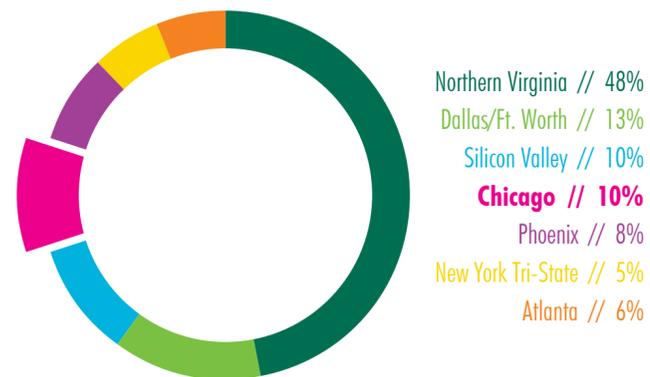
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

HISTORICAL DEMAND GROWTH



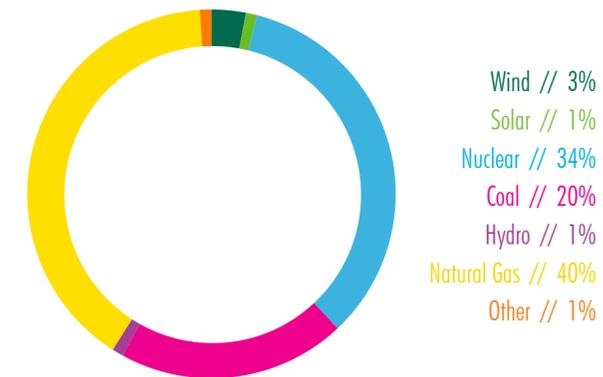
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

% OF PRIMARY MARKET INVENTORY



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET FUEL MIX*



Source: Commonwealth Edison Company.

AVERAGE ASKING RATES

	Min	Max
5-10 MW	\$80	\$100
1-4 MW	\$90	\$110
250-500 kW	\$100	\$120

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

*This fuel mix is intended to show the general sources of power generation in an area and doesn't necessarily reflect the offtake of data centers in that market.

DALLAS/FT. WORTH



21.5 MW
Net Absorption
in H2 2020



360.9 MW
Total Inventory



15.3 MW
Under Construction



\$0.0325-\$0.06
Power Rate



18.0%
Vacancy

COLOCATION INSIGHTS

- Enterprise users executed on requirements that were previously on hold due to the pandemic.
- DFW saw more than 34 MW of absorption in H2 2021.

MARKET TRENDS

- Dallas remains a robustly supplied market with nearly 50 MW of Class A colocation space.
- Dallas is a highly competitive market due to a large amount of vacancy. Pricing is at an all-time low.

NOTABLE DEALS

- Equinix had significant leasing activity at its new DA11 facility.
- Databank and Digital Realty closed several large deals in H2 2020.

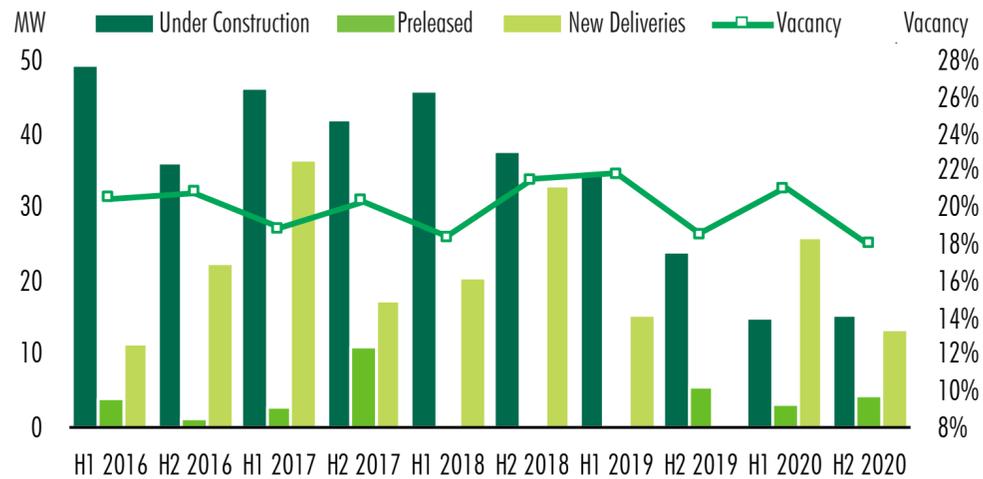
DEVELOPMENT ACTIVITY

- Flexential announced an expansion of its Plano campus.
- A large social media company will add 170,000 sq. ft. to its Ft. Worth data center campus.

LOCAL CONTACTS

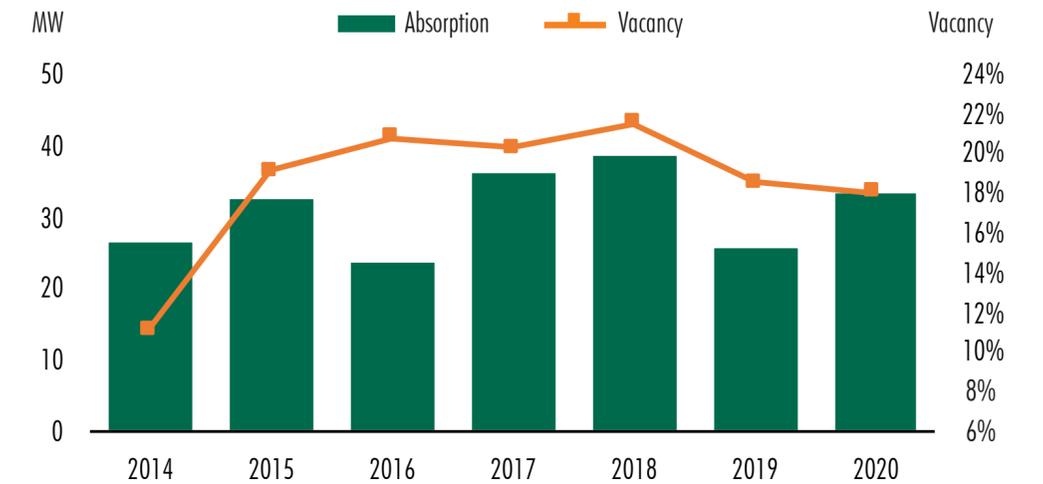
- Brant Bernet | +1 214 979 6570 | brant.bernet@cbre.com
- Chris Herrmann | +1 214 979 6516 | chris.herrmann@cbre.com
- Mikey Jaillet | +1 512 810 1997 | mikey.jaillet@cbre.com

HISTORICAL SUPPLY GROWTH



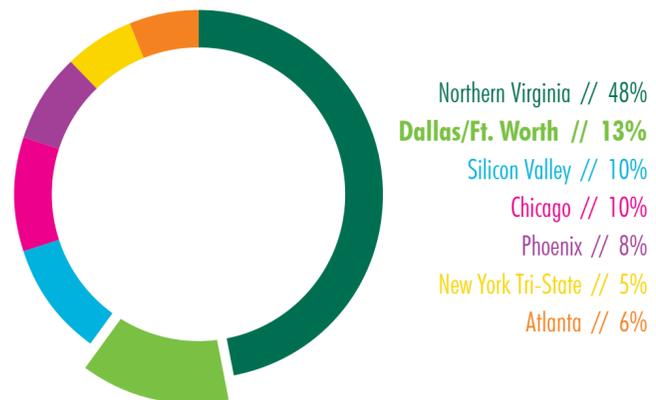
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

HISTORICAL DEMAND GROWTH



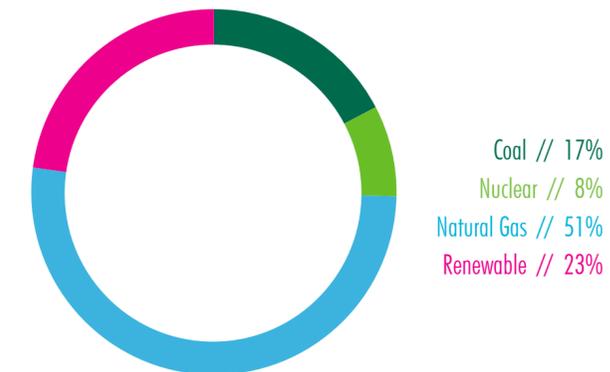
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

% OF PRIMARY MARKET INVENTORY



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET FUEL MIX*



Source: U.S. EIA.

AVERAGE ASKING RATES

	Min	Max
5-10 MW	\$75	\$100
1-4 MW	\$85	\$110
250-500 kW	\$100	\$140

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

*This fuel mix is intended to show the general sources of power generation in an area and doesn't necessarily reflect the offtake of data centers in that market.

DENVER



COLOCATION INSIGHTS

- Edge deployments by hyperscalers accounted for the majority of absorption.
- Retail colocation remains steady and demand for hybrid solutions strengthened.
- Flexential decommissioned a small data center in downtown Denver that reduced the total inventory in the Denver market and negated what would have been positive absorption in H2 2020.

MARKET TRENDS

- Xcel Energy and certain municipalities are implementing incentives to attract data centers to the metro Denver area.
- There is an increasing pipeline of 250 kW to 1MW colocation deals that should transact in H1 2021.
- Aerospace and defense contractors are expanding in Colorado, which may result in increased data center demand.

NOTABLE DEALS

- Denver is beginning to see hyperscale edge deployments.

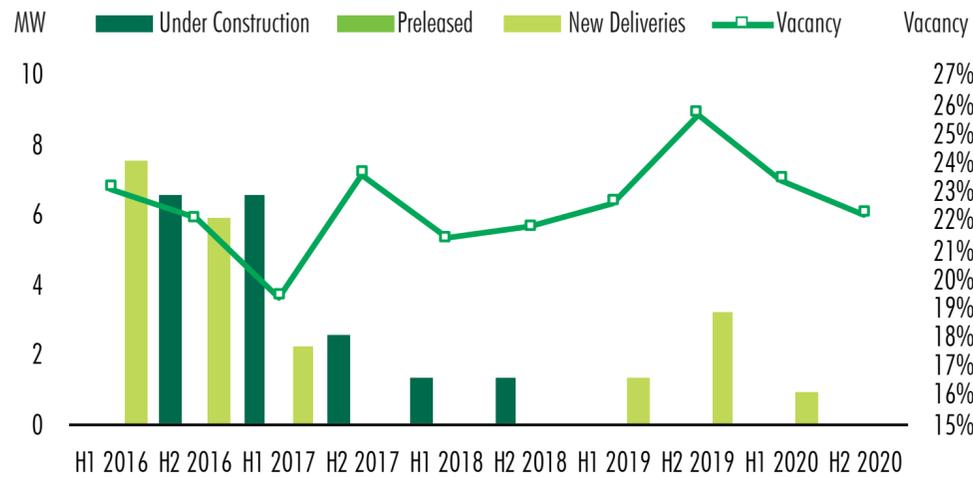
DEVELOPMENT ACTIVITY

- Several new development sites are attracting large data center deals in Aurora and Colorado Springs.
- A large colocation provider has secured land in Aurora for a large data center campus.

LOCAL CONTACTS

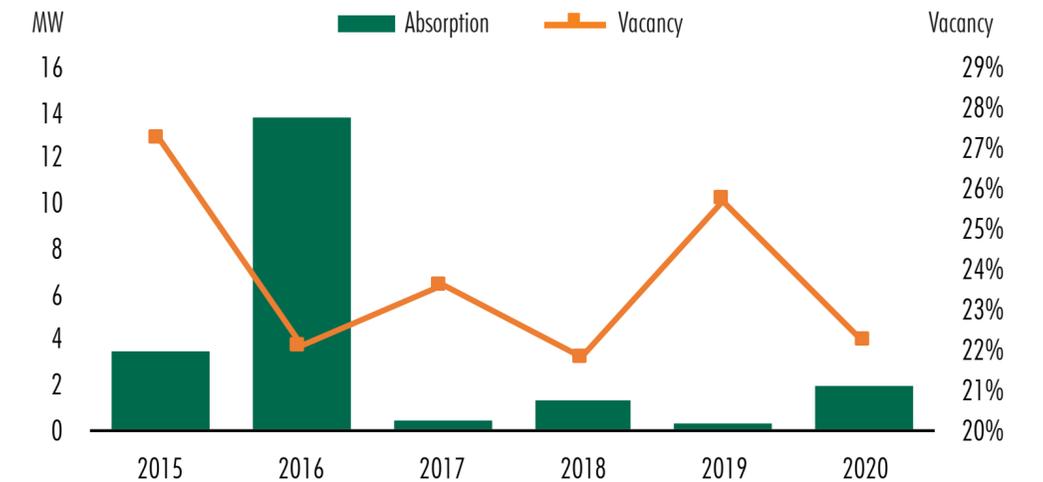
- Greg Vernon | +1 303 583 2027 | greg.vernon@cbre.com

HISTORICAL SUPPLY GROWTH



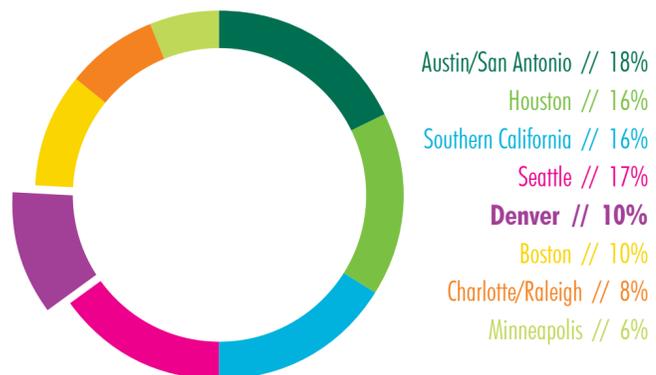
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

HISTORICAL DEMAND GROWTH



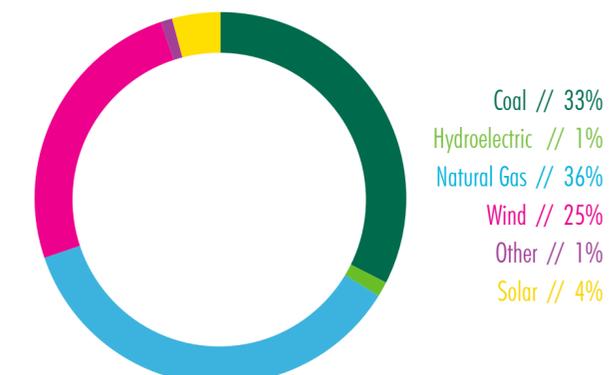
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

% OF SECONDARY MARKET INVENTORY



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET FUEL MIX*



Source: Xcel Energy.

AVERAGE ASKING RATES

	Min	Max
5-10 MW	\$100	\$115
1-4 MW	\$110	\$125
250-500 kW	\$125	\$140

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

*This fuel mix is intended to show the general sources of power generation in an area and doesn't necessarily reflect the offtake of data centers in that market.

HOUSTON



COLOCATION INSIGHTS

- Houston's data center market remains dominated by international energy companies, finance companies and regional health care providers.
- Demand is mainly driven by locally headquartered companies that want to deploy their colocation requirements in the same city.

MARKET TRENDS

- Slow business activity due to pandemic and the state of the oil and gas industry resulted in very little net absorption in H2 2020.
- The vacancy rate in Houston has slowly decreased over the past several years.

NOTABLE DEALS

- A large colocation data center was sold.

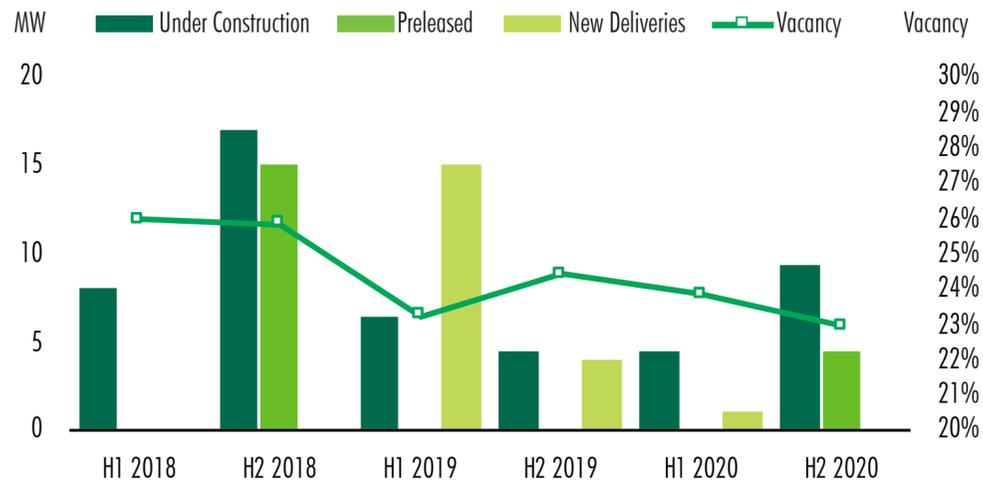
DEVELOPMENT ACTIVITY

- Two providers had 9.3 MW under construction in H2 2020.

LOCAL CONTACTS

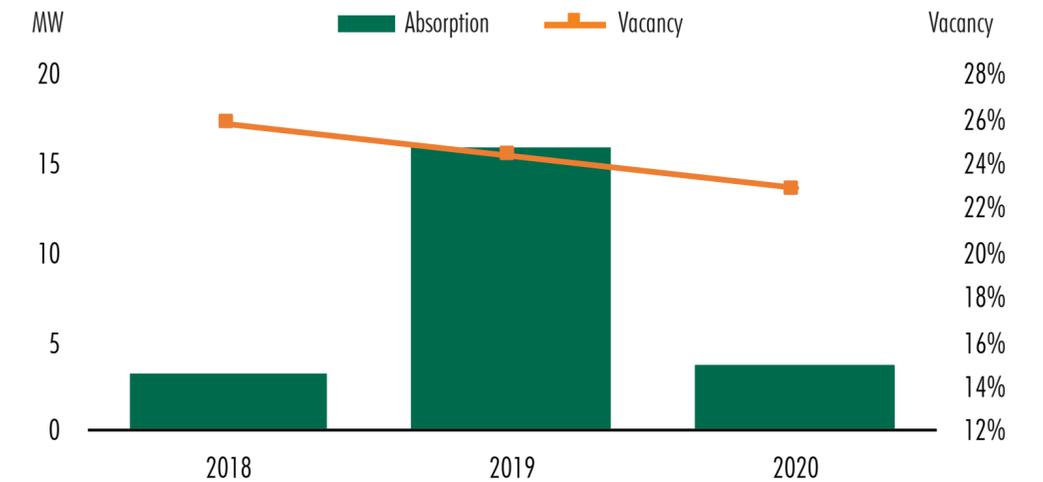
- Brant Bernet | +1 214 979 6570 | brant.bernet@cbre.com
- Chris Herrmann | +1 214 979 6516 | chris.herrmann@cbre.com
- Mikey Jaillet | +1 512 810 1997 | mikey.jaillet@cbre.com

HISTORICAL SUPPLY GROWTH



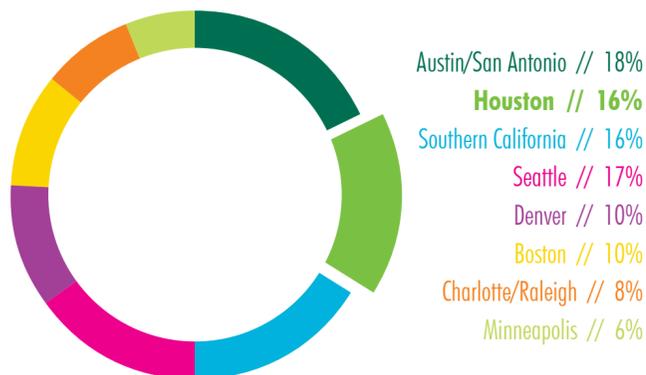
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

HISTORICAL DEMAND GROWTH



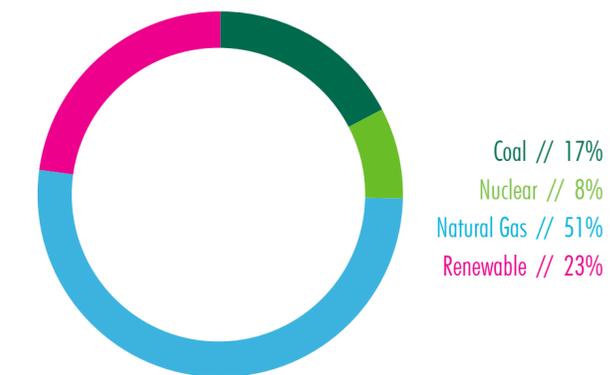
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

% OF SECONDARY MARKET INVENTORY



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET FUEL MIX*



Source: EIA.

AVERAGE ASKING RATES

	Min	Max
5-10 MW	\$90	\$115
1-4 MW	\$95	\$120
250-500 KW	\$120	\$140

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

*This fuel mix is intended to show the general sources of power generation in an area and doesn't necessarily reflect the offtake of data centers in that market.

MINNEAPOLIS



COLOCATION INSIGHTS

- Minneapolis has seen continued demand from local enterprise users in banking, health care and insurance.
- Many users have secured smaller deployments at interconnection sites, partly due to pandemic-related needs.
- Providers with diverse cloud connectivity options are seeing more interest.

MARKET TRENDS

- Activity increased in H2 2020 with approximately 1.1 MW of net absorption.
- New construction and planned expansions totaling approximately 15 MW will be delivered in 2021.

NOTABLE DEALS

- Transactions in H2 were all under 700 kW and primarily with two providers.

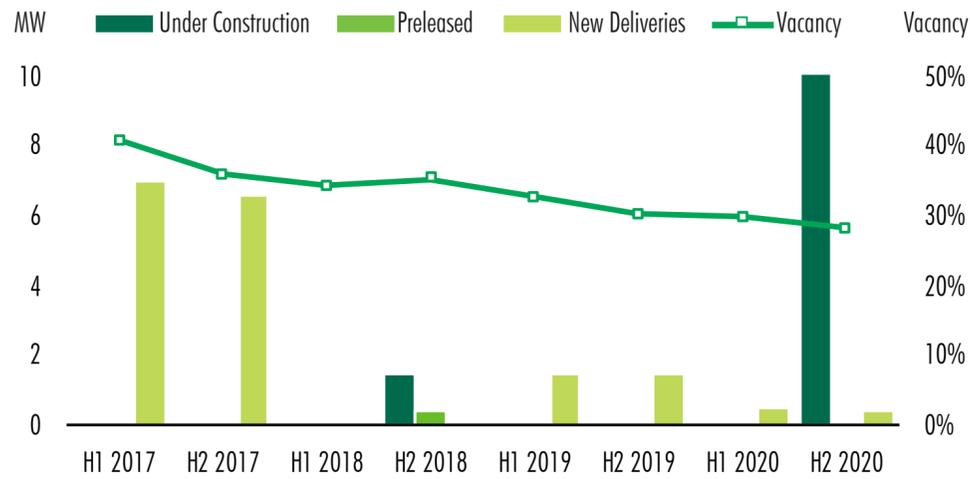
DEVELOPMENT ACTIVITY

- Databank has broken ground on a new site in Brooklyn Park.
- Flexential is expanding in Chaska.
- A powered shell with up to 5 MW capacity in downtown Minneapolis is expected to be delivered in 2021.

LOCAL CONTACTS

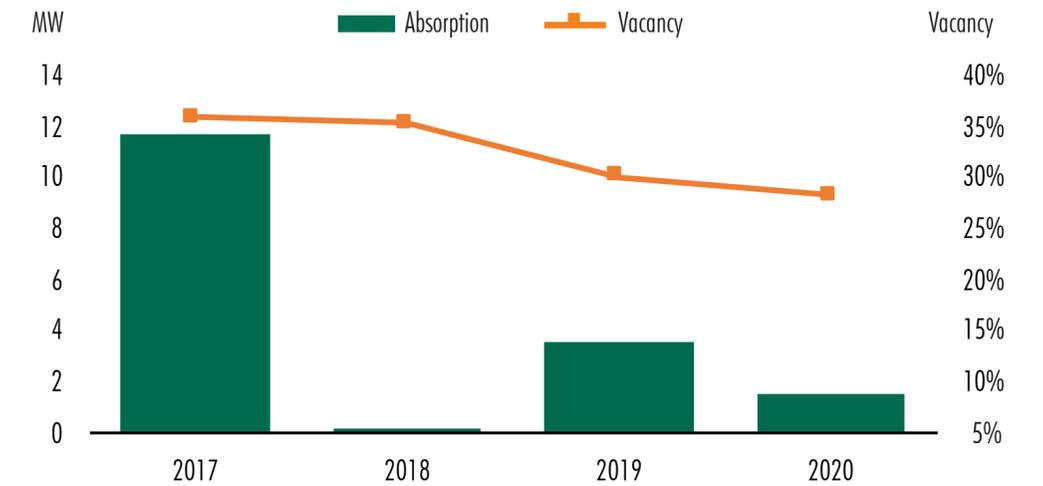
- Dan Peterson | +1 612 336 4295 | dan.peterson@cbre.com

HISTORICAL SUPPLY GROWTH



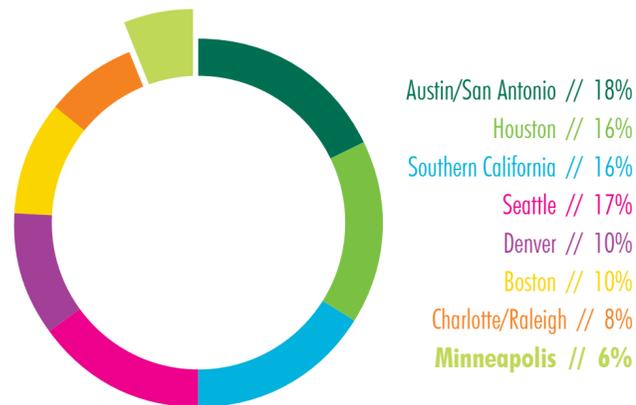
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

HISTORICAL DEMAND GROWTH



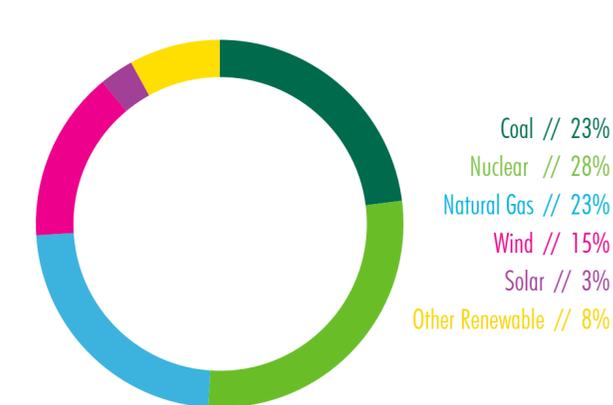
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

% OF SECONDARY MARKET INVENTORY



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET FUEL MIX*



Source: Xcel Energy.

AVERAGE ASKING RATES

	Min	Max
5-10 MW	\$90	\$110
1-4 MW	\$110	\$120
250-500 kW	\$115	\$135

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

*This fuel mix is intended to show the general sources of power generation in an area and doesn't necessarily reflect the offtake of data centers in that market.

MONTREAL



COLOCATION INSIGHTS

- There is a discernible uptick in enterprise demand due to pandemic response and hybrid IT solutions.
- There is continued absorption from gaming and visual effects rendering clients as both grow their footprints in Montreal.

MARKET TRENDS

- Pricing for hyperscale transactions is decreasing as single-tenant facilities are increasingly priced to compete with self-performed data centers.
- Montreal is starting to see preleased development deals after being primarily a spec market to date.

NOTABLE DEALS

- Vantage Data Centers' acquisition of Hypertec's hyperscale data center business increased its total footprint in Quebec to 81MW of IT capacity across three campuses.
- The purchase includes expansion capacity of 24 MWs, which Vantage plans to start building immediately

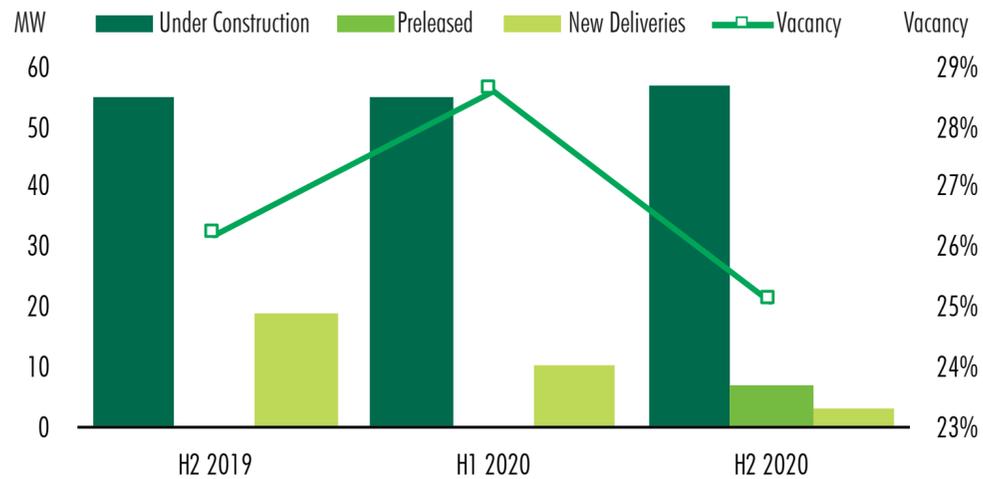
DEVELOPMENT ACTIVITY

- Land acquisition on the Island of Montreal is a significant hurdle for the data center sector as the over-heated industrial market quickly absorbs land for building opportunities.
- Off-island nodes are receiving increased attention as future landing spots for data center development

LOCAL CONTACTS

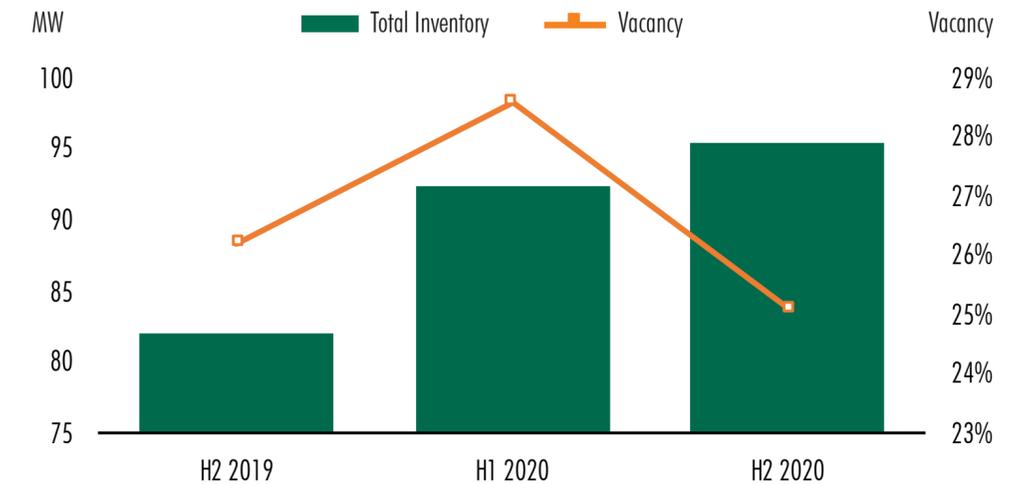
- David Cervantes | +1 514 906 1056 | david.cervantes@cbre.com

MARKET DEVELOPMENT INFORMATION



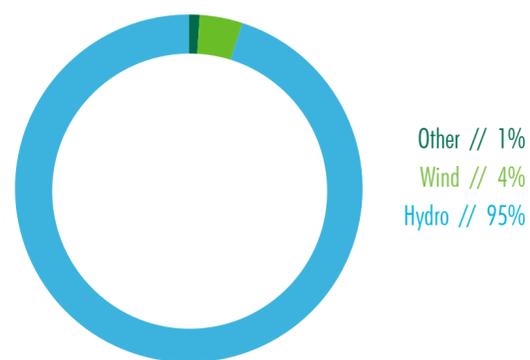
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET INVENTORY & VACANCY



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET FUEL MIX*



Source: Hydro Quebec.

AVERAGE ASKING RATES

	Min	Max
5-10 MW	\$90	\$100
1-4 MW	\$100	\$115
250-500 KW	\$115	\$130

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

*This fuel mix is intended to show the general sources of power generation in an area and doesn't necessarily reflect the offtake of data centers in that market.

NEW YORK TRI-STATE



COLOCATION INSIGHTS

- Interest from cloud providers has increased over the past six months and one major company is close to finalizing a data center transaction.

MARKET TRENDS

- Capital markets remain consistently active for both sale-leaseback and net-lease opportunities.
- Vacancy in the Tri-State data center market remains near all-time lows.
- The addition of the aforementioned cloud provider's new data center should improve the limited availability to diverse cloud environments.

NOTABLE DEALS

- Health care and financial service companies continue to lead the absorption of turnkey space.
- A large NYC health care provider leased about 750 kW in Piscataway, NJ.
- A major social media company that committed to space earlier in the year is expected to expand.

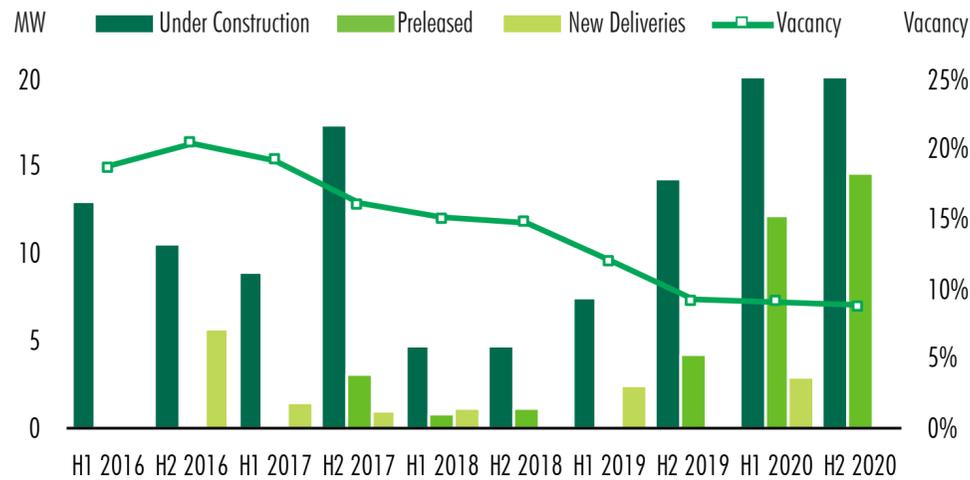
DEVELOPMENT ACTIVITY

- Digital Realty has begun construction of its 600,000-sq.-ft. Totowa, NJ campus.
- A major global bank is nearing completion of a 250,000-sq.-ft. purpose-built facility in Northern New Jersey.

LOCAL CONTACTS

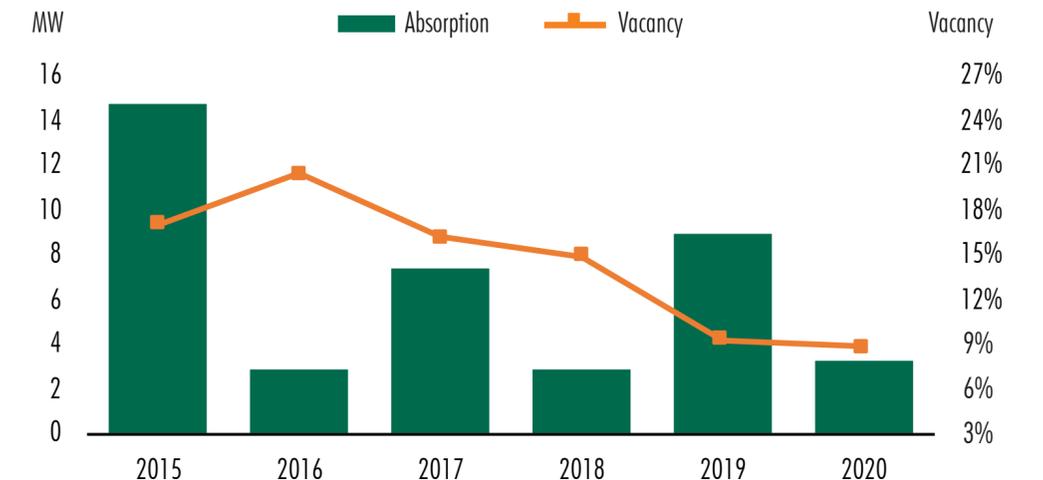
- Rob Meyers | +1 212 984 6623 | robert.meyers@cbre.com
- William Hassan | +1 201 712 5675 | william.hassan@cbre.com
- Jon Meisel | +1 732 509 2870 | jonathan.meisel@cbre.com

HISTORICAL SUPPLY GROWTH



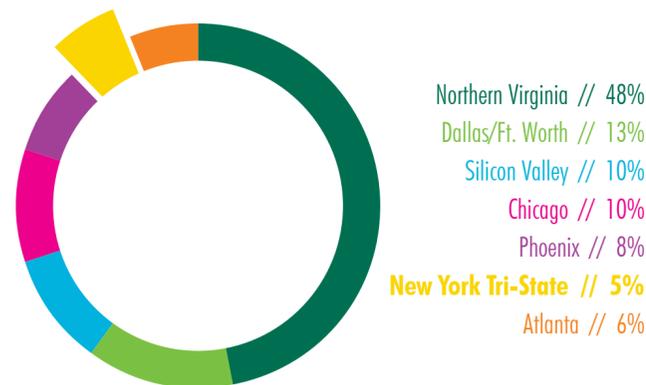
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

HISTORICAL DEMAND GROWTH



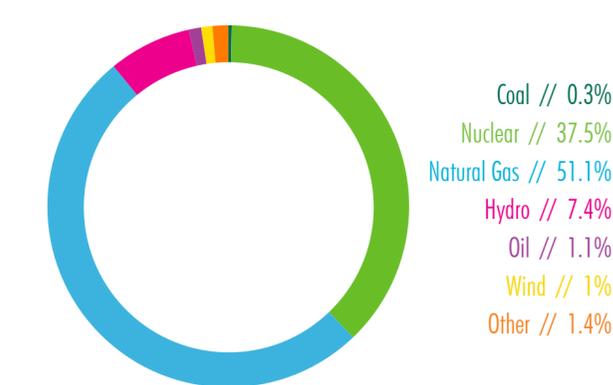
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

% OF PRIMARY MARKET INVENTORY



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET FUEL MIX*



Source: Consolidated Edison.

AVERAGE ASKING RATES

	Min	Max
5-10 MW	\$100	\$110
1-4 MW	\$110	\$120
250-500 KW	\$120	\$130

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

*This fuel mix is intended to show the general sources of power generation in an area and doesn't necessarily reflect the offtake of data centers in that market.

NORTHERN VIRGINIA



COLOCATION INSIGHTS

- Northern Virginia had another strong year for absorption and new construction, furthering its position as the largest data center market in the world.
- Throughout the COVID-19 pandemic, the market met construction timelines and supported increased cloud, bandwidth and other computing requirements.
- Demand outpaced new supply in 2020, keeping the vacancy rate at less than 8%.

MARKET TRENDS

- A large amount of preleasing in H2 2020 will contribute to strong 2021 supply and demand figures.
- There were 12 land transactions related to data center development in Northern Virginia last year, contributing to a dwindling supply of developable land.
- Data center providers continued to build speculative capacity to compete for large colocation requirements.

NOTABLE DEALS

- A global technology company continued its exponential growth in Northern Virginia, leasing 38 MW in H2 2020.

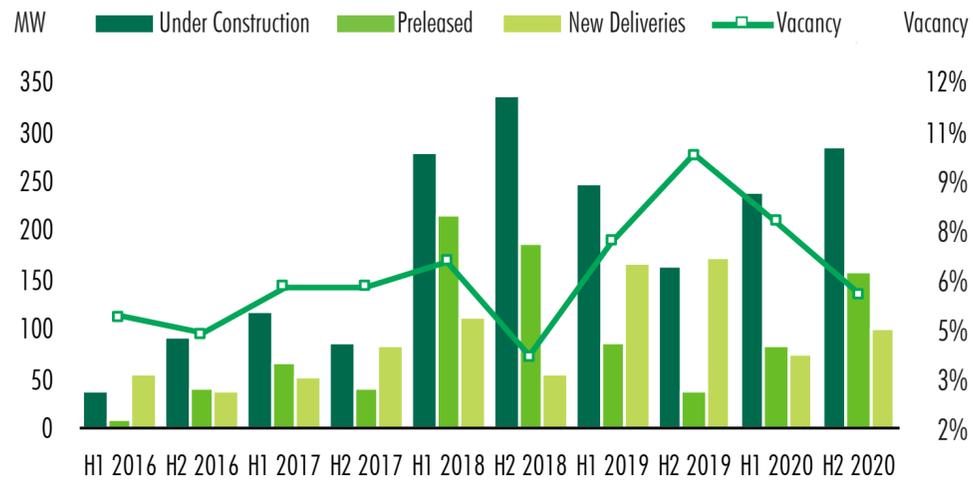
DEVELOPMENT ACTIVITY

- Aligned, Cloud HQ, Digital Realty, Iron Mountain and Vantage all delivered capacity in H2 2020.

LOCAL CONTACTS

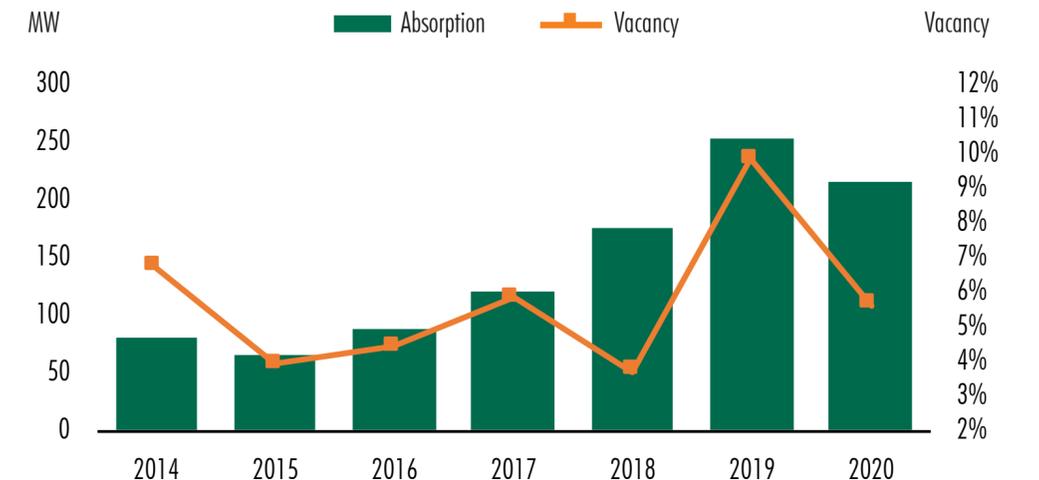
- Rob Faktorow | +1 703 905 0205 | rob.faktorow@cbre.com
- Jamie Jelinek | +1 703 905 0291 | jamie.jelinek@cbre.com
- Josh Greenberg | +1 703 905 0206 | joshua.greenberg@cbre.com

HISTORICAL SUPPLY GROWTH



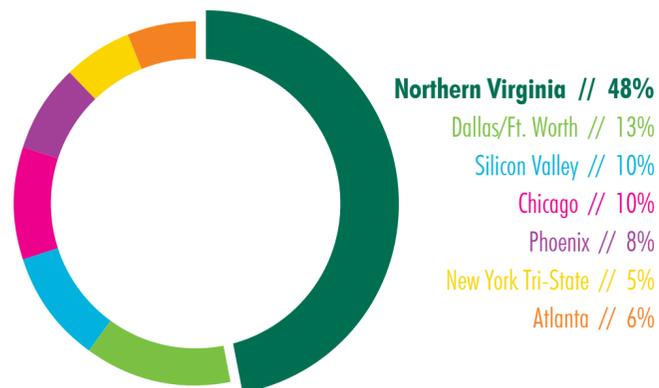
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

HISTORICAL DEMAND GROWTH



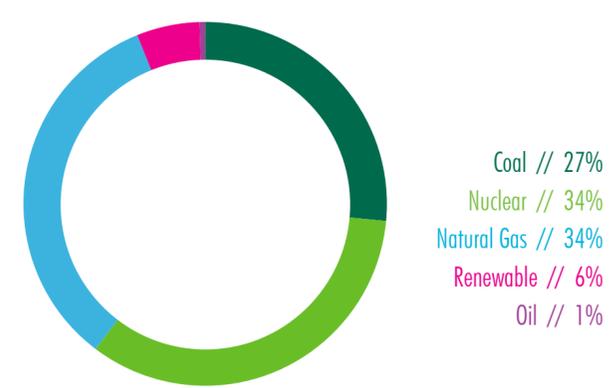
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

% OF PRIMARY MARKET INVENTORY



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET FUEL MIX*



Source: Dominion Power.

AVERAGE ASKING RATES

	Min	Max
5-10 MW	\$70	\$90
1-4 MW	\$75	\$95
250-500 KW	\$85	\$120

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

*This fuel mix is intended to show the general sources of power generation in an area and doesn't necessarily reflect the offtake of data centers in that market.

PHOENIX



COLOCATION INSIGHTS

- Leasing activity significantly increased in H2 2020.
- Four major colocation providers accounted for 90% of all leasing transactions last year.

MARKET TRENDS

- Phoenix is seeing increased demand to buy or develop freestanding data centers.
- Transaction size increased from recent years.
- Large enterprise customers are looking throughout the city to purchase assets.

NOTABLE DEALS

- A major cloud service provider and a large computer technology corporation both made big investments in the market, accounting for the bulk of the leasing activity.

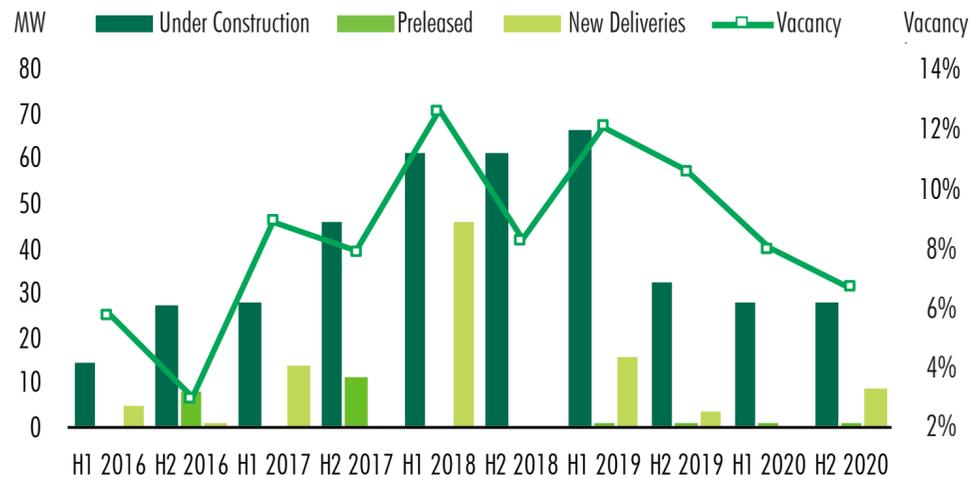
DEVELOPMENT ACTIVITY

- Compass Data Centers delivered new product for lease in Goodyear.
- Two top 10 technology companies are purchasing 250 acres and 50 acres for new development in Mesa.
- A large hyperscale company is starting construction on a new 180-acre development in Mesa.

LOCAL CONTACTS

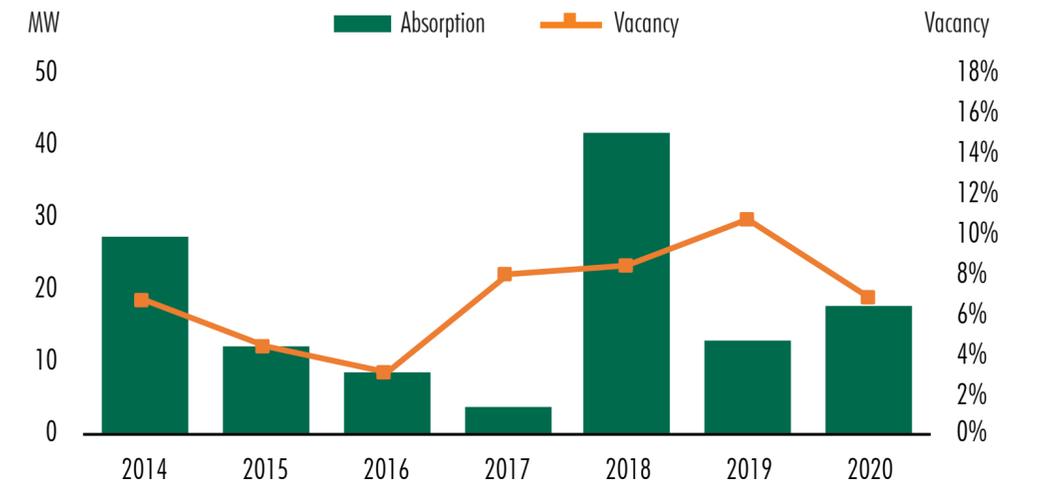
- Mark Krison | +1 602 735 5670 | mark.krison@cbre.com

HISTORICAL SUPPLY GROWTH



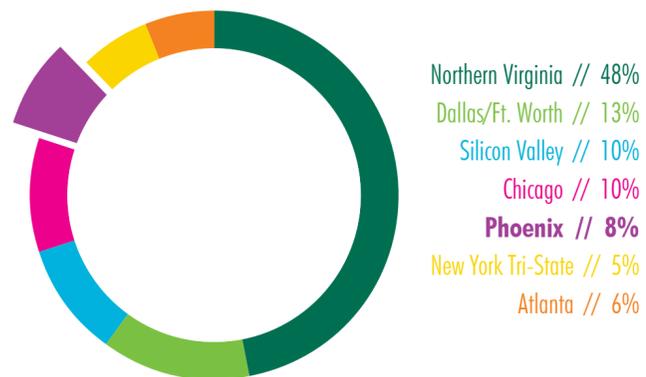
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

HISTORICAL DEMAND GROWTH



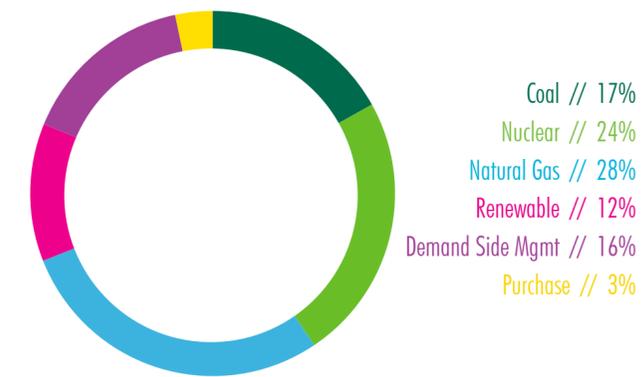
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

% OF PRIMARY MARKET INVENTORY



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET FUEL MIX*



Source: Arizona Public Service.

AVERAGE ASKING RATES

	Min	Max
5-10 MW	\$90	\$100
1-4 MW	\$100	\$110
250-500 kW	\$115	\$130

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

*This fuel mix is intended to show the general sources of power generation in an area and doesn't necessarily reflect the offtake of data centers in that market.

SEATTLE



COLOCATION INSIGHTS

- The Seattle colocation market is seeing increased demand driven by COVID, the ever-growing digital economy and the need for companies to have a cost- and security-effective balance between colocation and cloud solutions.
- Colocation users are actively updating their equipment, bifurcating existing apps and installing new ones, many of which are hybrid IT.

MARKET TRENDS

- Seattle has pent-up demand by data center users.
- The market continues to see Edge data center growth and 5G network expansion.
- Geopolitical demand and changes for social network platforms are driving change to data center dynamics.
- The Seattle region is among the top-three-rated tech talent markets in North America and has seen extraordinary levels of commitment for future office space locations from large hyperscalers, which will in turn drive data center demand.
- Seattle continues to attract data center companies with renewable green energy.

NOTABLE DEALS

- Digital Fortress, a Seattle-based colocation provider, has expanded its national offerings with the January 2021 purchase of Oregon-based Atmosera.

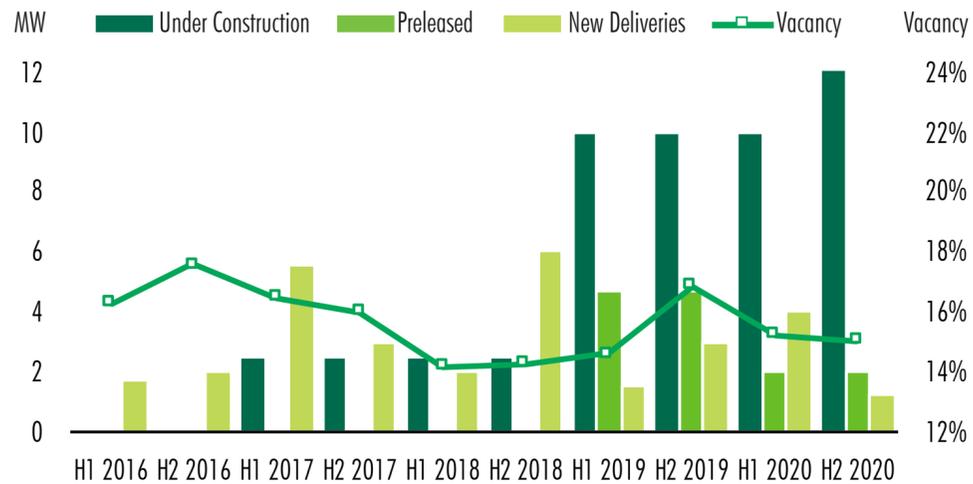
DEVELOPMENT ACTIVITY

- Digital Realty's buyout of its joint venture partner at the Westin Exchange (the Northwest's largest global interconnection hub and carrier hotel) in February 2020 foreshadows an expected increased commitment for data center investment in the Seattle area by the REIT.

LOCAL CONTACTS

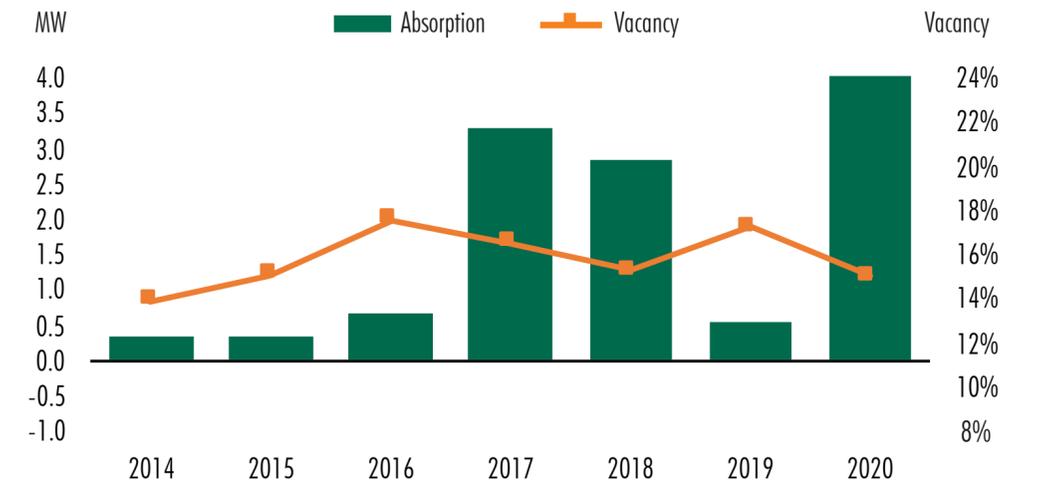
- Jane Blair | +1 206 292 6125 | jane.blair@cbre.com

HISTORICAL SUPPLY GROWTH



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

HISTORICAL DEMAND GROWTH



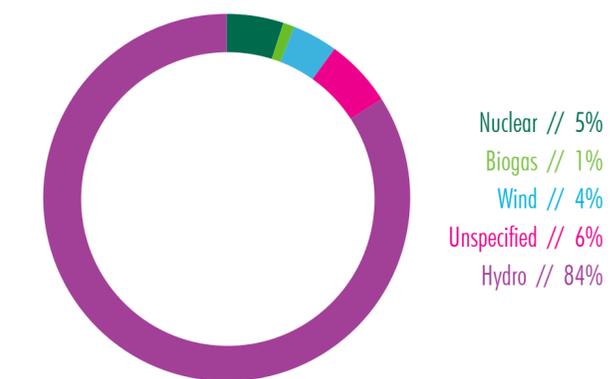
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

% OF SECONDARY MARKET INVENTORY



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET FUEL MIX*



Source: Seattle City Lights.

AVERAGE ASKING RATES

	Min	Max
5-10 MW	\$100	\$110
1-4 MW	\$100	\$120
250-500 kW	\$110	\$135

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

*This fuel mix is intended to show the general sources of power generation in an area and doesn't necessarily reflect the offtake of data centers in that market.

SILICON VALLEY



COLOCATION INSIGHTS

- Hyperscale and enterprise companies accounted for significant preleasing activity in 2020.
- Pricing has remained stable due to near-term space constraints.
- Silicon Valley's data center inventory has grown by more than 117% since 2015.

MARKET TRENDS

- The vacancy rate dropped to an all-time low of 2.3% (6.8 MW availability), the lowest in North America.
- Large blocks of availability declined, as 72% of the 50 MW under construction has been preleased.
- Tight market conditions will continue over the short term (six to eight quarters).

NOTABLE DEALS

- A retail colocation provider signed a long-term lease for a 9 MW build-to-suit facility in Santa Clara.
- A cloud service provider preleased 32 MW at Stack Infrastructure, currently under construction in San Jose.
- A large cloud-based company signed a 4.5 MW lease at CoreSite's Santa Clara campus.
- A managed hosting provider signed a 2.25 MW lease with Digital Realty in Santa Clara.

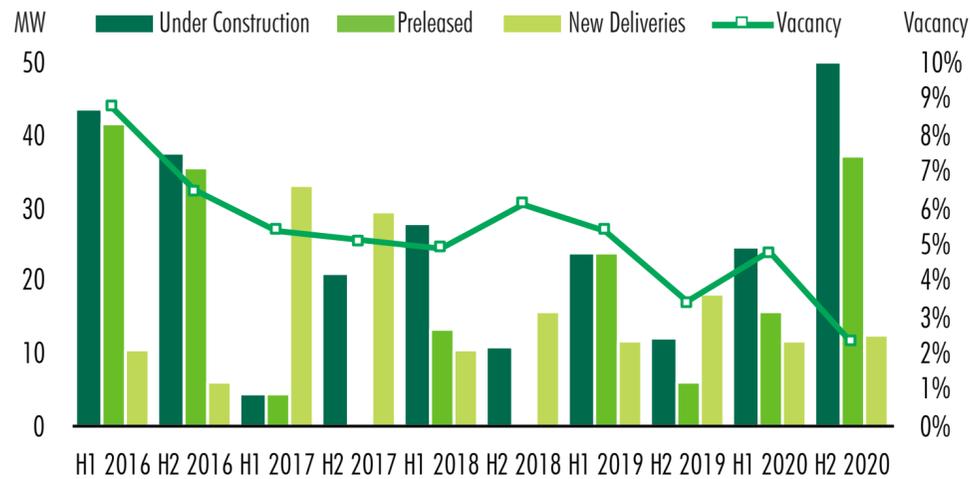
DEVELOPMENT ACTIVITY

- Data center operators are experiencing continued construction delays due to government regulation and constraints expected to continue over the next several years.
- EdgeConnex purchased its existing Santa Clara facility to secure and make way for master planned future campus development with expansion capabilities.
- NTT Global Data Centers is scheduled to deliver its first Silicon Valley building in Q1 2021.

LOCAL CONTACTS

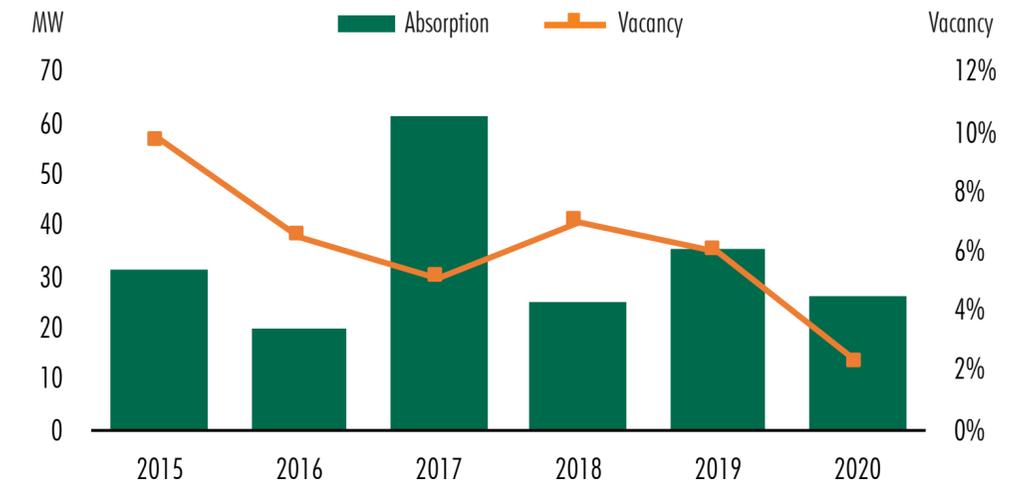
- Bill Dougherty | +1 925 202 7333 | bill.dougherty@cbre.com
- Jennie Karnes | +1 813 727 6001 | jennie.karnes@cbre.com
- Jerry Inguagiato | +1 408 453 7462 | jerry.ing@cbre.com

HISTORICAL SUPPLY GROWTH



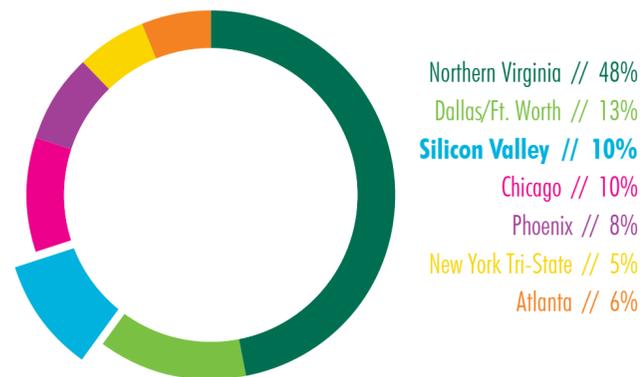
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

HISTORICAL DEMAND GROWTH



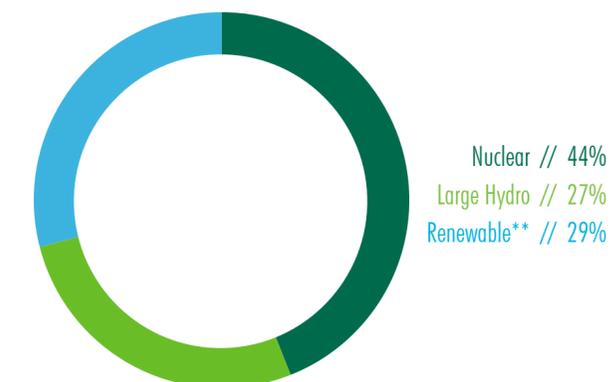
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

% OF PRIMARY MARKET INVENTORY



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET FUEL MIX*



**Includes solar, wind, geothermal, biomass and small hydro.
Source: PG&E.

AVERAGE ASKING RATES

	Min	Max
5-10 MW	\$100	\$110
1-4 MW	\$125	\$135
250-500 KW	\$135	\$150

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

*This fuel mix is intended to show the general sources of power generation in an area and doesn't necessarily reflect the offtake of data centers in that market.

SOUTHERN CALIFORNIA



COLOCATION INSIGHTS

- CoreSite completed the first phase of LA3, a 6.0 MW buildout, allowing it to leverage both the connectivity from LA1 (One Wilshire) and existing customer base in LA1 & LA2.

MARKET TRENDS

- Pricing is holding firm in the Los Angeles downtown core due to limited availability, while pricing in the suburbs has dropped slightly.
- The LA market remains dominated by traditional retail colocation, though new capacity being brought online is expected to change this dynamic.

NOTABLE DEALS

- Pent-up hyperscale demand led to significant preleasing in H2 2020.

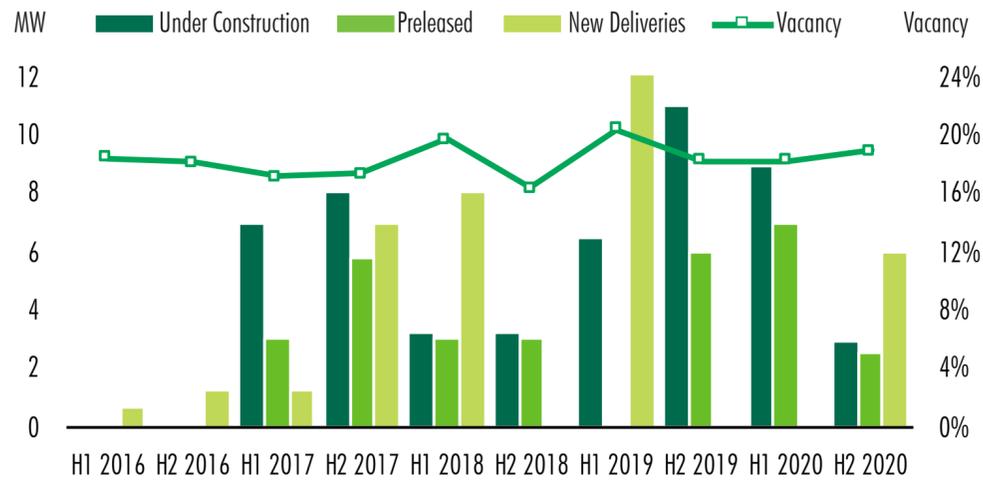
DEVELOPMENT ACTIVITY

- CoreSite is expected to deliver significant capacity following positive leasing momentum in its new building.
- The Southern California market anticipates growth in surrounding suburban areas.

LOCAL CONTACTS

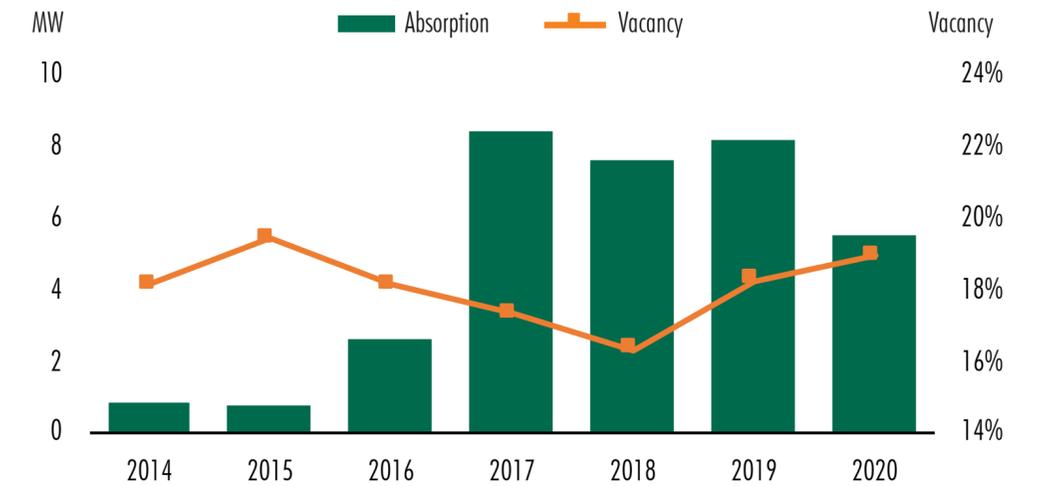
- Jennie Karnes | +1 813 727 6001 | jennie.karnes@cbre.com

HISTORICAL SUPPLY GROWTH



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

HISTORICAL DEMAND GROWTH



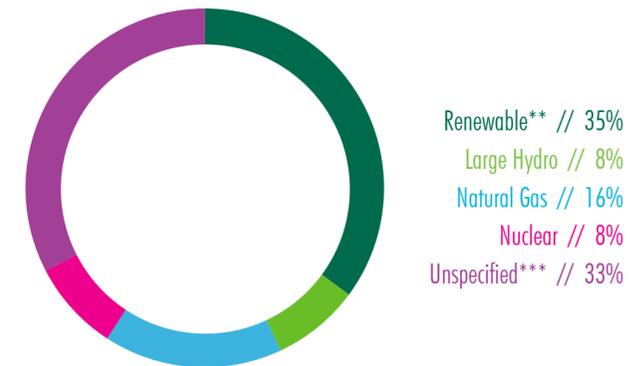
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

% OF SECONDARY MARKET INVENTORY



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET FUEL MIX*



Source: Southern California Edison.
 **Includes solar, wind, geothermal, biomass and small hydro.
 ***Includes Open Market.

AVERAGE ASKING RATES

	Min	Max
5-10 MW	<\$100	\$115
1-4 MW	\$100	\$130
250-500 KW	\$125	\$155

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

*This fuel mix is intended to show the general sources of power generation in an area and doesn't necessarily reflect the offtake of data centers in that market.

TORONTO



COLOCATION INSIGHTS

- Enterprise demand increased with an emphasis on hybrid solutions, forging a higher percentage of retail colocation.
- Demand for on-ramp portals for large cloud service providers significantly increased with small-scale solutions becoming a challenge for retailers to achieve.

MARKET TRENDS

- Power costs in Ontario have been reduced to \$0.115 from \$0.14 per kW for larger users.
- The industrial vacancy rate hit an all-time low with e-commerce and last-mile fulfillment absorbing new product, forcing hyperscale developers to look for large-scale land leases.
- Challenging construction timelines from large cloud providers are forcing self-performing solutions.

NOTABLE DEALS

- Digital Realty has committed to developing retail solutions within its portfolio with a 1 MW pod in Vaughan and new solutions for a downtown location.
- Coloware leased approximately 30,000 sq. ft. at 151 Front Street West with Allied Properties.
- Digital Realty is completing 6 MW of speculative development at 1 Century Place.

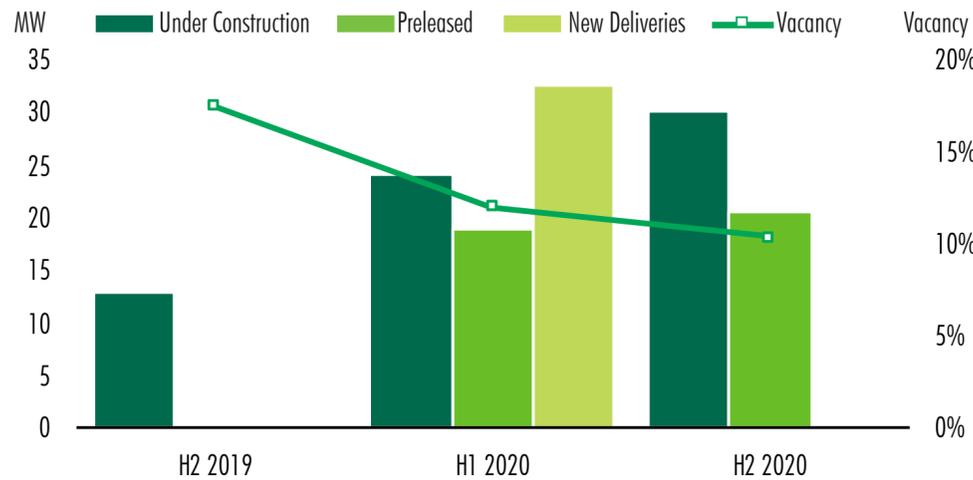
DEVELOPMENT ACTIVITY

- Due to the complications of COVID-19 and disrupted construction timelines, there was a delay in finalizing approximately 24 MW of solutions in Toronto last year.
- European and Korean entries to the Canadian market are expected to be announced in Toronto in 2021.

LOCAL CONTACTS

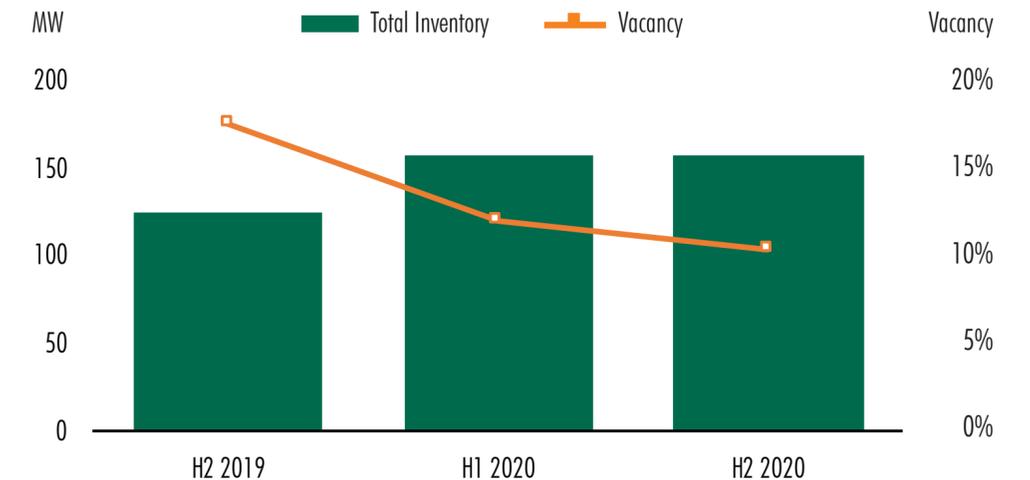
- Scott Harper | +1 416 815 2365 | scott.harper@cbre.com

MARKET DEVELOPMENT INFORMATION



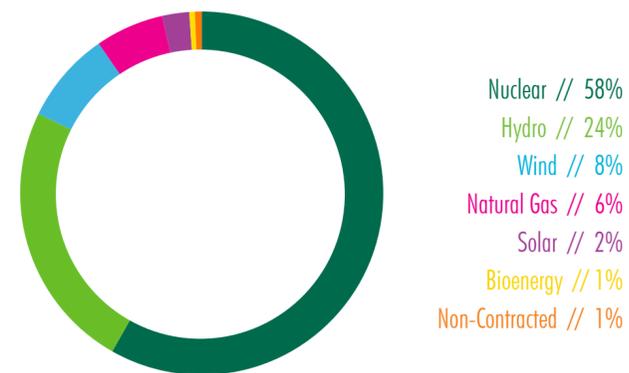
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET INVENTORY & VACANCY



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET FUEL MIX*



Source: Toronto Hydro.

AVERAGE ASKING RATES

	Min	Max
5-10 MW	\$100	\$125
1-4 MW	\$125	\$145
250-500 KW	\$155	\$170

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

*This fuel mix is intended to show the general sources of power generation in an area and doesn't necessarily reflect the offtake of data centers in that market.

CENTRAL WASHINGTON NEW MARKET SPOTLIGHT



COLOCATION INSIGHTS

- There is increasing colocation demand with little current availability in a region dominated by single-tenant data centers.

MARKET TRENDS

- Washington (Quincy, Moses Lake and East Wenatchee) attracts data center customers seeking lowest total costs of occupancy (TCO) with abundant, reliable, inexpensive (\$.03 per kWh) and renewable green (hydro) power.
- Washington state's rural area 100% sales and use tax abatement on data center equipment and buildings provides qualifying providers and tenants a competitive advantage.
- The region provides excellent fiber connectivity with long haul and metro networks.

NOTABLE DEALS

- Actapio (Yahoo Japan) vacated space in Wenatchee and moved to its new purpose-built 16 MW data center in East Wenatchee.
- Vantage entirely preleased Building 2 of its Quincy campus, with Building 3 planned.

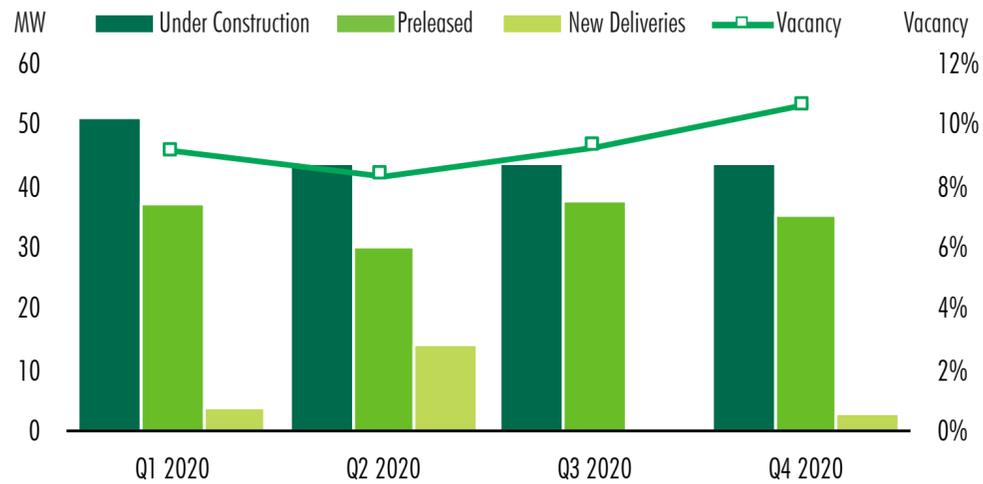
DEVELOPMENT ACTIVITY

- Grant County PUD is planning to build 230 KVA transmission lines to service Quincy.
- A global hyperscaler continues to grow its dominant footprint in Quincy with its largest building ever under construction.
- A global hyperscaler purchased 59 undeveloped acres in East Wenatchee.
- Sabey continues to expand its Intergate.Quincy campus to meet demand with construction of Building D as well planning for Building E.
- Sabey's Intergate.Columbia Building D is adding 3.6 MW of power to accommodate demand.

LOCAL CONTACTS

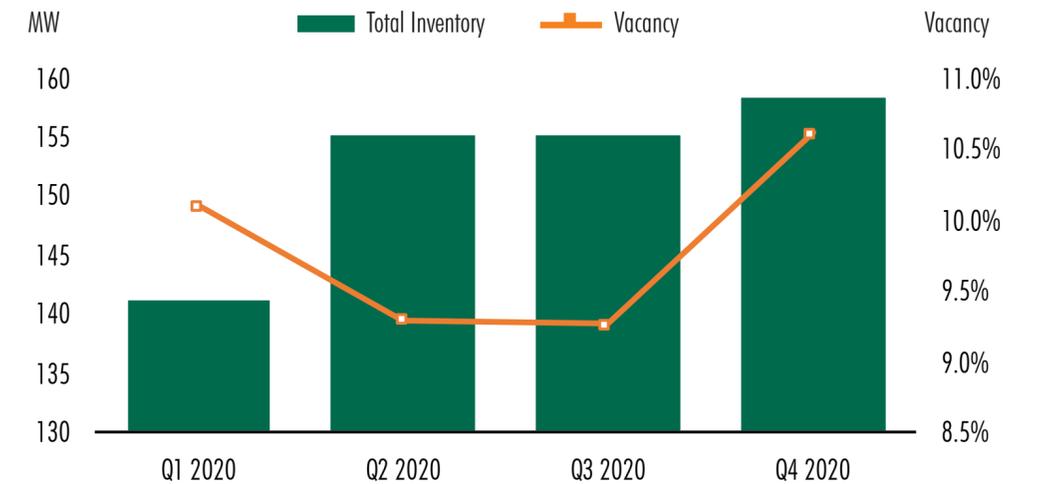
- Jane Blair | +1 206 292 6125 | jane.blair@cbre.com

NEW MARKET DEVELOPMENT INFORMATION



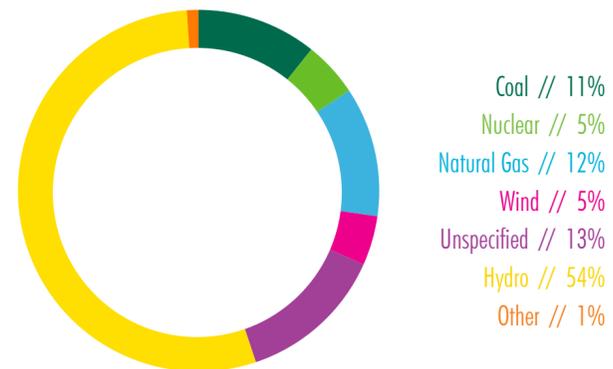
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

NEW MARKET INVENTORY & VACANCY



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET FUEL MIX*



Source: Washington State Department of Commerce.

AVERAGE ASKING RATES

	Min	Max
5-10 MW	\$90	\$110
1-4 MW	\$100	\$120
250-500 KW	\$110	\$135

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

*This fuel mix is intended to show the general sources of power generation in an area and doesn't necessarily reflect the offtake of data centers in that market.

HILLSBORO, OR

NEW MARKET SPOTLIGHT



-0.56 MW
Net Absorption
in H2 2020



69.4 MW
Total Inventory



40.5 MW
Under Construction



\$0.05-\$0.07
Power Rate



23.6%
Vacancy

COLOCATION INSIGHTS

- Total inventory increased by almost 10% in H2 2020.
- The current under-construction capacity is more than 40 MW.

MARKET TRENDS

- Pricing is holding firm for wholesale requirements.
- Demand lagged that of primary markets in H2 2020.

NOTABLE DEALS

- Leasing activity continued from enterprise and technology companies.

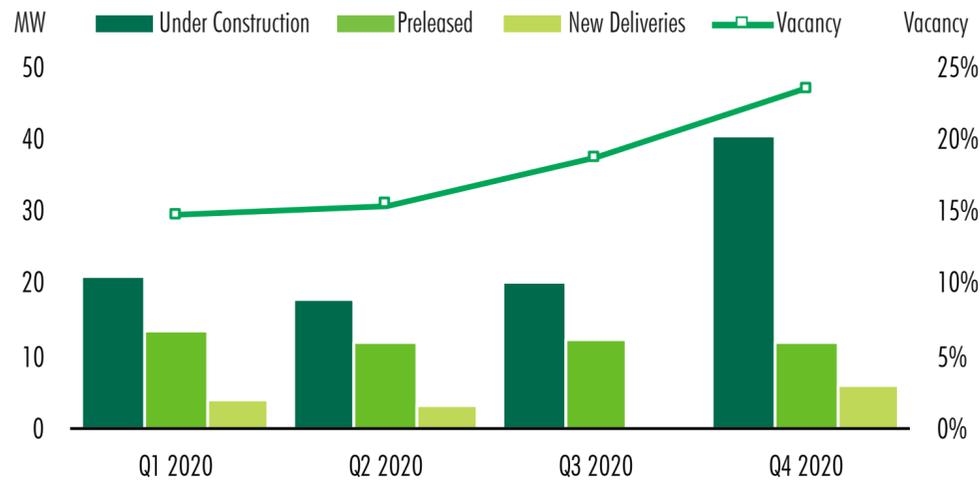
DEVELOPMENT ACTIVITY

- NTT Global Data Centers completed its initial build and delivered 6 MW.
- T5 completed its shell build with the ability to deliver turnkey capacity within four months.
- Stack began construction of its new 24 MW campus in Q4 2020.

LOCAL CONTACTS

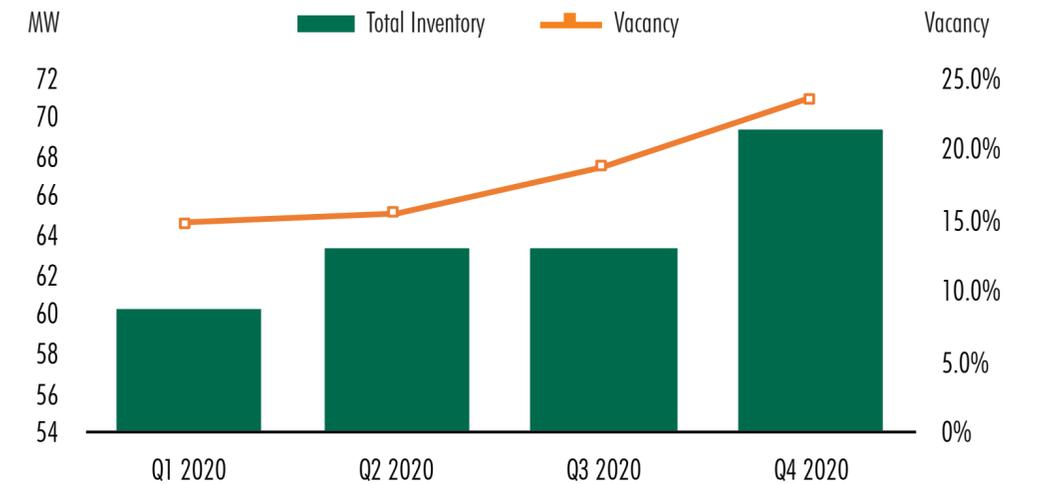
- Jennie Karnes | +1 813 727 6001 | jennie.karnes@cbre.com
- Carlo Castoro | +1 503 221 4839 | carlo.castoro@cbre.com

NEW MARKET DEVELOPMENT INFORMATION



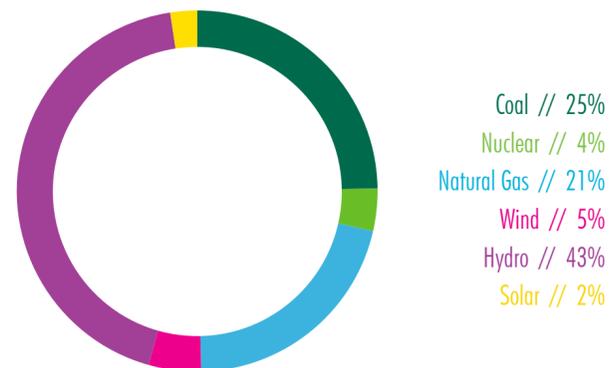
Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

NEW MARKET INVENTORY & VACANCY



Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

MARKET FUEL MIX*



Source: State of Oregon.

AVERAGE ASKING RATES

	Min	Max
5-10 MW	\$90	\$110
1-4 MW	\$100	\$120
250-500 KW	\$110	\$130

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

*This fuel mix is intended to show the general sources of power generation in an area and doesn't necessarily reflect the offtake of data centers in that market.

F3

OR - 49990
OP - 33711 | 2
259 | 269

APPENDIX

AH - 28409 - 452 - 001
HHD - 002
MR - 054 | 345 - SF

ORT | 234 - 986 - 3481
FY - 1004
NV - 2774

Market Definitions

Term	Definition
Powered Shells	Purpose built or hardened shell; power and fiber to site; no equipment included.
Hyperscale Cloud Service Provider	Multi-megawatt user, typically 5+ MW and larger.
Wholesale Colocation	Building shell & infrastructure to PDU providing space, power & cooling; generally in demised suites above 250 KW.
Retail Colocation	Building shell & infrastructure in shared environment, space generally divided by racks or cages; may include IT hardware as well as a menu of services.
Hybrid IT	A combination of cloud services, third-party colocation and owned, on-premise infrastructures.
Cloud On Ramp	A connection service inside a data center that provides direct connectivity to a cloud provider.
Enterprise Data Centers	Hardened data centers; houses “mission-critical” operations of individual companies.
Data Center Net Absorption	Net change in existing/commissioned wholesale power capacity.
Data Center Power	Measured in kilowatts (kW) and megawatts (MW).

Source: CBRE Research, CBRE Data Center Solutions, H2 2020.

CONTRIBUTORS

ATLANTA

Tim Huffman
+1 678 549 8939
tim.huffman@cbre.com

Mike Lash
+1 678 327 9041
mike.lash@cbre.com

Saisha Tsaku
+1 404 504 7894
saisha.tsaku@cbre.com

BOSTON

Rich Modliszewski
+1 617 447 0946
richard.modliszewski@cbre.com

CHARLOTTE/RALEIGH

Ben Rojahn
+1 704 331 1207
ben.rojan@cbre.com

CHICAGO

Jordan Thompson
+1 312 416 3063
jordan.thompson@cbre.com

DALLAS/FT. WORTH, AUSTIN/SAN ANTONIO, HOUSTON

Brant Bernet
+1 214 979 6570
brant.bernet@cbre.com

Chris Herrmann
+1 214 979 6516
chris.herrmann@cbre.com

Mikey Jaillet
+1 512 810 1997
mikey.jaillet@cbre.com

DENVER

Greg Vernon
+1 303 583 2027
greg.vernon@cbre.com

HILLSBORO/PORTLAND

Jennie Karnes
+1 813 727 6001
jennie.karnes@cbre.com

Carlo Castoro
+1 503 221 4839
carlo.castoro@cbre.com

MINNEAPOLIS

Dan Peterson
+1 612 336 4295
dan.peterson@cbre.com

MONTREAL/TORONTO

David Cervantes
+1 514 906 1056
david.cervantes@cbre.com

Scott Harper
+1 416 815 2365
scott.harper@cbre.com

NEW YORK TRISTATE

Rob Meyers
+1 212 984 6623
robert.meyers@cbre.com

Jon Meisel
+1 732 509 2870
jonathan.meisel@cbre.com

William Hassan
+1 201 712 5675
william.hassan@cbre.com

NORTHERN VIRGINIA

Rob Faktorow
+1 703 905 0205
rob.faktorow@cbre.com

Jamie Jelinek
+1 703 905 0291
jamie.jelinek@cbre.com

Josh Greenberg
+1 703 905 0206
joshua.greenberg@cbre.com

PHOENIX

Mark Krison
+1 602 735 5670
mark.krison@cbre.com

SEATTLE, CENTRAL WASHINGTON

Jane Blair
+1 206 292 6125
jane.blair@cbre.com

SILICON VALLEY

Jerry Inguagiato
+1 408 453 7462
jerry.ing@cbre.com

Bill Dougherty
+1 825 202 7333
bill.dougherty@cbre.com

Jennie Karnes
+1 813 727 6001
jennie.karnes@cbre.com

SOUTHERN CALIFORNIA

Jennie Karnes
+1 813 727 600
jennie.karnes@cbre.com

CAPITAL MARKETS

Kristina Metzger
+1 949 874 1024
kristina.metzger@cbre.com

NETWORK ADVISORY SERVICES

Michael Murphy
+1 508 523 4627
michael.murphy3@cbre.com

Michael Kane
+1 303 717 9284
michael.kane@cbre.com

Rich Modliszewski
+1 617 447 0946
richard.modliszewski@cbre.com

VALUATIONS

Chris Fudacz
+1 419 902 6633
christopher.fudacz@cbre.com

LOCATION INCENTIVES

John Lenio
+1 602 735 5514
john.lenio@cbre.com

CONTACTS

To learn more about CBRE Research, or to access additional research reports, please visit the Global Research Gateway at www.cbre.com/researchgateway.

Additional U.S. Research from CBRE can be found *here*.

FOR MORE INFORMATION ABOUT THIS REPORT, PLEASE CONTACT:

Richard Barkham, Ph.D., MRICS

*Global Chief Economist &
Head of Americas Research*

+1 617 912 5215

richard.barkham@cbre.com

Edward Socia

*Associate Director of Research
Data Center Solutions*

+1 303 583 2053

edward.socia@cbre.com

Spencer Levy

*Chairman of Americas Research &
Senior Economic Advisor*

+1 617 912 5236

spencer.levy@cbre.com

Follow Spencer on Twitter: [@SpencerGLevy](https://twitter.com/SpencerGLevy)

Wei Luo

*Associate Director
Global Research*

+1 212 984 8153

wei.luo@cbre.com

Julie Whelan

*Vice President
Head of Global Occupier Thought Leadership*

+1 508 789 7085

julie.whelan@cbre.com

Molly Sackles

*Senior Business Development Associate
Data Center Solutions*

+1 303 583 2048

molly.sackles@cbre.com

Pat Lynch

*Senior Managing Director
Data Center Solutions*

+1 303 628 1765

pat.lynch@cbre.com

Eleanor Fisher

*Client Services Coordinator
Data Center Solutions*

+1 303 583 2042

eleanor.fisher@cbre.com



Disclaimer: Information contained herein, including projections, has been obtained from sources believed to be reliable. While we do not doubt its accuracy, we have not verified it and make no guarantee, warranty or representation about it. It is your responsibility to confirm independently its accuracy and completeness. This information is presented exclusively for use by CBRE clients and professionals and all rights to the material are reserved and cannot be reproduced without prior written permission of CBRE.

LP - 1010110
20 | 20 HP - 329 847 398
H - 998
U - 209

IT - 367
RF - 873

P - 476 - 895 - 238
NU - 387 - 298
PRO - 589
B - 1 | 4 - S - RT 10100