Presale:

CyrusOne Data Centers Issuer I LLC (Series 2024-1)

March 5, 2024

Preliminary rating

Class	Preliminary rating(i)	Preliminary amount (mil. $)	Maximum LTV ratio (%)(ii)	Anticipated maturity (years)	Legal maturity (years)
A-2	A- (sf)	228.00	70	5	25

Note: This presale report is based on information as of March 5, 2024. The rating shown is preliminary. Subsequent information may result in the assignment of a final rating that differs from the preliminary rating. Accordingly, the preliminary rating should not be construed as evidence of a final rating. This report does not constitute a recommendation to buy, hold, or sell securities. (i)The preliminary rating does not address post-anticipated repayment date additional interest. (ii)The maximum allowable class A LTV ratio, per the transaction documentation. LTV--Loan-to-value.

Profile

Expected closing date	March 20, 2024.
Collateral	Primarily the asset entities' real property interests in the data centers; the personal property and fixtures located on the data centers; tenant leases; reserves and escrows; certain transaction accounts; and the equity interest in each of the asset entities.
Issuer	CyrusOne Data Centers Issuer I LLC.
Manager	CyrusOne L.P.
Servicer	KeyBank N.A.
Indenture trustee	Citibank N.A.
Arrangers	Citigroup Global Markets Inc., KKR Capital Markets LLC, Barclays Capital Inc., and Wells Fargo Securities LLC.

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Request For Comment: Data Center Securitizations: Global Methodology And Assumptions

On Dec. 5, 2023, S&P Global Ratings announced its request for comment on its new proposed criteria framework for rating securitizations backed by income generated from data center operations. Our ratings on the notes could change as a result of that review. The nature of any potential rating changes will depend on the final criteria adopted, as well as our assessment of the transaction. We cannot provide an estimated implementation date for the proposed criteria at this time (see "Request for Comment: Data Center Securitizations: Global Methodology And

Assumptions," published Dec. 5, 2023).

We currently rate data center securitizations under our criteria, "Principles of Credit Ratings," published Feb. 16, 2011, with certain stress assumptions used from our criteria, "Methodology And Assumptions For Rating North American Single-Tenant Real Estate Triple-Net Lease-Backed Securitizations," published March 31, 2016. Although these criteria were partially superseded by our new triple-net criteria, "North American Real Estate Securitizations Backed By Triple-Net Leases: Methodology And Assumptions," published Aug. 24, 2023, we will continue to use them when rating data center securitizations. Wholesale data center leases are not in the scope of our new or old triple-net ABS criteria.

Transaction Overview

CyrusOne Data Centers Issuer I LLC's (CyrusOne's) series 2024-1 class A-2 note issuance is a securitization of real estate and tenant lease payments for space and electrical capacity in CyrusOne L.P.'s (the manager) eight completed and operating data centers located in Sterling, Va., and San Antonio, Texas. Two new data centers, both located in San Antonio, are added to the master trust at closing. The aggregate appraised value increased to approximately $1.97 billion from $1.78 billion compared with the series 2023-2 issuance, driven primarily by the property addition. However, the aggregate appraised value of the six existing data centers declined by 4.5% compared to the previous appraisal reports as of May 2023, partially attributed to increased expense estimates and higher cap rates. As of the statistical closing date, the portfolio has a total of 84 unique hyperscale and enterprise tenants, of which the top five tenants generate 87.1% of the aggregate annualized adjusted base rent of $155.9 million. CyrusOne will use the proceeds from this transaction to acquire the equity interest of the added property, repay outstanding debt, and for general corporate purposes.

The series 2024-1 notes are the third issuance for the master trust, and the collateral will be shared between series 2023-1, series 2023-2, series 2024-1, and any future series. The series 2024-1 class A-2 notes are pari passu to the series 2023-1 and 2023-2 class A-2 notes (collectively, class A notes). The series 2023-1 class B notes are subordinate to the class A notes.

The aggregate critical load power available at the data centers is 127 megawatts (MW). Approximately 64.8% of total leased capacity comes from the Sterling facilities, and the remaining 35.2% is from the San Antonio facilities. Currently, three data centers in Sterling and two data centers in San Antonio are multi-tenant occupied, while the other three buildings (one in Sterling and two in San Antonio), are single-tenant occupied.

All of the data centers in this portfolio are turnkey, in which CyrusOne owns the critical mechanical and electrical infrastructure, and provides space, physical security, power, and cooling, as well as ongoing maintenance of the power and cooling systems. Additionally, modified gross leases are expected to comprise 100% of the annualized adjusted base rent (AABR) generated by the transaction's portfolio as of the closing date. However, this proportion could change over time as capacity is released to future tenants.

Rationale

The preliminary ratings assigned to CyrusOne's data center revenue notes series 2024-1 reflect:

- Our view of the lease portfolio's projected performance;
- The real estate value;

- The experience of the manager and servicer;
- The manager- and indenture trustee-provided advances;
- The estimated closing date debt service coverage ratio (DSCR) of 1.60x;
- The initial liquidity reserve deposit of approximately $17.3 million covering the higher of three months of note interest and 12 months of priority expenses and targeted maintenance capital expenditures; and
- The transaction's structure.

Transaction Strengths

We consider certain factors to be the transaction's strengths:

- The portfolio composition: The portfolio is 100% composed of turnkey data center facilities, where the landlord owns the critical mechanical and electrical infrastructure. The facilities are unlike typical real estate assets because they feature robust physical security, diverse fiber connectivity, and redundant power and cooling systems. They are developed in multiple phases over several years, and the development costs for a data center are exponentially higher than other real estate assets.
- The strong management team: CyrusOne has over 20 years of operating history, and its management team comprises individuals with extensive experience in real estate, REITs, telecommunications, technology, and mission-critical infrastructure industries.
- The markets in which the data centers are located: Four of the properties (61.5% by AABR) are located in Northern Virginia, the largest data center market in the world. The other four properties (38.5% by AABR) are located in San Antonio, where CyrusOne has the largest market share among data center operators as of 2023.
- The underlying tenants' initial credit quality: 79.8% of tenants are investment-grade (rated 'BBB-' and above) by AABR.
- The staggered lease maturities: The expiration dates of leases within the portfolio range from 2023 to 2034.
- Low customer churn rates, supported in part by the high cost of tenant relocation: Based on historical vacancy data provided by the company, six out of eight facilities have experienced 0.0% churn rate since inception.
- The lack of an early termination option for convenience: The majority (over 95% by AABR) of the existing leases do not have early termination options for convenience or may exercise the options by paying termination fees and/or finding replacement tenants.
- The experienced servicer, KeyBank N.A. (KeyBank): S&P Global Ratings' rankings on KeyBank are STRONG as a commercial primary, master, and special servicer.
- The class A loan-to-value (LTV) ratio: The LTV ratio is constrained at 70.0% of the assets' appraised value.
- The transaction's structural features: Performance triggers include scheduled amortization, cash trapping, or early amortization if the DSCR or leased capacity drop below certain minimum thresholds.

Transaction Weaknesses

The transaction's strengths may be offset by certain weaknesses:

- Closing date DSCR: The transaction's estimated closing date DSCR of 1.60x is at the lower end of data center transactions we have rated.
- The limited tenant diversity: Approximately 60.6% of total AABR is attributable to a single tenant, and 87.1% of total AABR is attributable to the top five tenants.
- Current per-kW-per-month rents at the San Antonio data centers are higher than the market average rent for hyperscale leases, as concluded by the appraiser. Given the remaining lease term of 5.5 years, the future contracts may not achieve the same level of price premium as the current in-place rent.
- The limited geographic diversity: Four data centers are located in Sterling (contributing 61.5% of total AABR), and the other four data centers are located in San Antonio (comprising 38.5% of total AABR).
- The liquidity reserves: The reserves could prove insufficient if a disruptive event, such as a natural disaster, renders any of the data center campuses inoperable for an extended period.
- The limited restrictions on the terms of future eligible leases, such as tenant credit quality, contract length, and optional termination features: The terms could cause the overall credit risk profile of the lease portfolio to erode over time.
- The potential for decreased data center demand: Upon lease expiration, tenants with reduced needs could migrate to the public cloud or other retail co-location data centers, while tenants with increased needs could opt to build, own, and operate their own data centers.
- The limited industry diversity: Most tenants are in various subsectors of the technology industry.
- The relatively short historical sector performance data: Approximately 13 years of performance data are available for the wholesale data center segment.
- The supply and demand conditions within the data centers' local markets: Supply and demand could change adversely over time, driving down lease rates or driving up vacancy rates.
- The high current demand for data center operations personnel: It can become expensive to replace current key members of the manager's leadership team, including the chief operating officer and senior engineering team members.
- The potential for early lease termination: A change of control from CyrusOne to certain key tenants' direct competitors could lead to the early termination of some leases.

Mitigants To Transaction Weaknesses

We believe certain factors partly mitigate the transaction's weaknesses:

- The portfolio's weighted average original lease term of 10 years, which is comparable to that of other data center transactions we have rated.
- The scheduled amortization amount of 3.0% per annum of the initial outstanding principal balance of each series' class A-2 notes if the three-month DSCR falls below 1.55x in the respective series' specific scheduled amortization period. Each series' scheduled amortization

period lasts 36 months after 'its closing date (most of the recent data center transactions we have rated have no scheduled amortization).

- The underlying tenants' initial credit quality, with the largest tenant rated 'AAA' and comprising 60.6% of total AABR.
- The high costs for tenants to move to alternative data centers, including time, redundancy (to avoid service interruption), and logistical expenses (moving or duplication of network gear, racks, servers, and related fit-out).
- The requirement that the issuer maintain comprehensive liability, fire, earthquake, extended coverage, business interruption, and rental loss insurance policies, which we expect to be compliant with the minimum requirements of our insurance criteria for U.S. CMBS transactions.
- The decreased wholesale data center demand due to the migration of the manager's smaller tenants to the public cloud or retail co-location may be offset by increased demand from the manager's larger tenants, some of which are themselves retail co-location and public cloud providers.
- Interest expenses, priority operating expenses, and maintenance capital expense advancing by the manager, with a backup obligation by the indenture trustee.
- The stress scenarios performed in our cash flow analysis, which considered the pool's industry concentration, the limited industry history, and the potential for downward migration in average tenant credit quality.
- The timely interest and ultimate principal payments paid on the notes by the legal final maturity under our stress scenarios.
- The change of control could lead to an event of default and rapid amortization of the notes. In addition, the probability of an acquisition by the direct competitors of the key tenants is relatively low, in our view, due to the potential erosion on the data centers' property value if the specified tenant leases were to terminate prior to their contractual expiration.

Environmental, Social, And Governance

Our rating analysis considered the potential exposure of the transaction to environmental, social, and governance (ESG) credit factors. In our view, the exposure to ESG credit factors in this transaction is in line with other transactions in the sector. Data center securitizations typically consist of a pool of data center properties and related leases with tenants.

Data centers are more exposed to environmental risks than other property types because physical climate risk could impact not only the building structure but also access to power. This risk is exacerbated in pools with relatively high concentration by geography and number of properties. Nonetheless, the properties are designed to be resilient to prolonged power outages, and the geographic diversity of the collateral pool may partially mitigate these environmental risks. CyrusOne's collateral pool consists of eight data centers located in two states in the U.S., which is a similar concentration to other rated data center securitizations. To mitigate risks from extreme weather events (such as flood or earthquake), fire, and casualty events, or incidents of terrorism, tenants generally have insurance policies to mitigate the risk of natural disasters and damage-causing events.

Social and governance credit factors do not directly impact our credit analysis for this sector. Data centers are not labor-intensive and are also typically not subject to health and safety risks. Social

trends toward working from home, online shopping, and increased digitization of workstreams all stand to support the growth and stability of data centers.

We considered CyrusOne's strategy, risk management, and internal controls within our operational risk assessment framework. Given that collateral pools are typically static, the roles and responsibilities of each transaction party and the allocation of cash flows are well defined, and transactions are structured to achieve the isolation of the assets from the seller. However, governance weaknesses at the property manager levels could have a negative effect on the rating.

In addition, based on the generally accepted market principles for the classification of securities as "green bonds" published by the International Capital Markets Assn. (ICMA), the issuer expects that the notes will constitute green bonds. The issuer is expected to use the transaction's proceeds to fund future green projects, such as renewable energy development, energy efficiency, climate change adaptation, and sustainable water management. The issuer intends to request assurance by an external auditor or other third-party statement on the allocation of the proceeds to eligible green projects one year after issuance. However, the issuer does not make any representation in the transaction documents regarding the allocation or ongoing compliance with the relevant industry standards (i.e., the 2023 Green Bond Principles).

Industry Characteristics: Data Center Sector

Data centers are real estate facilities that house computer servers and network equipment within a highly secure environment with redundant mechanical, cooling, and electrical power systems and network connections. The data center operator, such as CyrusOne, is responsible for maintaining the facility's infrastructure, providing physical security, and re-leasing the sites' capacity as it becomes vacant.

The vast majority of data centers in this securitized pool (over 94.0% by AABR) are leased by large wholesale tenants, which typically require 500 kWs or more of capacity. Wholesale data centers place the entire responsibility for managing the tenant's network and equipment on the tenant, whereas retail co-location facilities, which tend to support tenants with shorter-term and smaller capacity needs, may offer varying levels of hands-on support and other services. In either the wholesale or retail data center model, the proper provision of uninterruptable power and cooling is critical to avoid any disruption in the tenant's business operations, especially those whose services necessitate consistent connection to their network through these data centers.

Data center leases are structured in various ways, including triple-net, modified gross, or gross leases. Triple-net leases require tenants to reimburse the site manager for costs, including taxes, insurance, operating expenses, and electricity. Modified gross leases, on the other hand, only require the tenants to reimburse the manager for their electricity expense. Enterprise co-location leases are frequently structured to cover all expenses, including electricity. Under most leases, tenants are responsible for all costs related to the provision, installation, and upkeep of their equipment and network connectivity.

Sector outlook

We expect demand for data centers to remain strong in the foreseeable future. The exponential increase in data usage, broad migration to the cloud, adaptation of artificial intelligence, and transition to a fully digitized economy will continue to shape demand for third-party operated data centers. Wholesale data center providers will also benefit from the growth in cloud computing. New data center development is somewhat limited in primary markets due to site availability, lingering supply chain issues, and power constraints, which will support lease rates, occupancy

levels, and valuations.

Over the next five years, retail co-location providers will likely continue to benefit from the enterprise information technology (IT) outsourcing trend. As corporations re-evaluate their IT architecture, most are opting to house certain proprietary applications in dedicated third-party data centers, while other applications are migrating to the cloud. This migration will continue to cause churn for existing applications housed in these facilities. Ultimately, the longer-term outlook for retail co-location is uncertain, in our view.

We also believe the long-term industry risks include shifting technology, cloud service providers insourcing their data center needs, tenant concentration, and weaker pricing trends in hyperscale segments. Nonetheless, market data suggest that the market conditions will remain tight in 2024, and the shortage of co-location space and rising rent in primary data center markets will continue due to the ongoing supply and demand imbalance. The overall vacancy rate reached a near record low level in 2023.

Market summary

Northern Virginia

Northern Virginia is home to the largest data center market in the world in terms of operational square feet and MW, and approximately 70.0% of the world's internet traffic runs through this area. This region has the highest density of dark fiber in the world, providing low latency to the internet backbone. As of September 2023, CBRE estimates that Northern Virginia has more than 2,200MW of capacity inventory and over 900MW of capacity is under construction. The volume of projects under construction remains strong, largely driven by developers fulfilling previously signed forward lease commitments. The market continues to grow due to its relatively low power rates, affordable land, data center-specific tax incentives, general safety from natural disasters, and proximity to a primary internet exchange connectivity point on the East Coast.

More than half of data center development in the U.S. is concentrated in Northern Virginia. In July 2022, Dominion Energy informed developers that it would not be able to provide expected power to some new data center developments and that the delayed delivery of power may last until 2026. The power delays are expected to increase rents and benefit operators with customer leases expiring over the next two years.

San Antonio

San Antonio is considered a secondary data center market. According to the CBRE report published in September 2023, the San Antonio data center market comprises over 160MW capacity inventory with 88MW capacity under construction. Demand primarily comes from cloud users, while other large portions of the tenant share come from health care, financial and insurance, and oil and gas energy companies.

San Antonio benefits from Texas's affordable electric rates, statewide tax incentives, and about 10.0% to 15.0% lower overall costs of operation than other data center markets. Data from 451 Research in 2021 indicated that CyrusOne is the market-share leader in San Antonio with an estimated 80.0% of the built-out net operational space.

Business Description: CyrusOne

CyrusOne, founded in 2001 and headquartered in Dallas, is an owner, operator, and developer of carrier-neutral multi- and single-tenant data center properties. CyrusOne currently operates 55 data centers in North America and Europe and provides services to nearly 800 tenants operating in multiple industries including: IT; financial services; energy, oil, and gas; mining; medical, research, and consulting services; and goods and services. In third-quarter of 2023, CyrusOne leased approximately 103MW of capacity, representing approximately $13 million in monthly recurring rent. As of year-end 2023, CyrusOne had about 1,000MW in service.

CyrusOne's initial public offering occurred on Jan. 24, 2013, and traded on the NASDAQ Exchange under the ticker symbol CONE. On March 25, 2022, funds managed by Kohlberg Kravis Roberts & Co. (KKR) and Global Infrastructure Partners (GIP) took the company private and acquired 100% of CyrusOne's outstanding common equity for approximately $15 billion. On Jan. 12, 2024, BlackRock Inc. (BlackRock) and GIP, jointly announced that they have entered into an agreement for BlackRock to acquire GIP for total consideration of $3 billion of cash and approximately 12 million shares of BlackRock common stock. The transaction is expected to close in the third quarter of 2024 subject to customary regulatory approvals and other closing conditions.

Transaction Structure

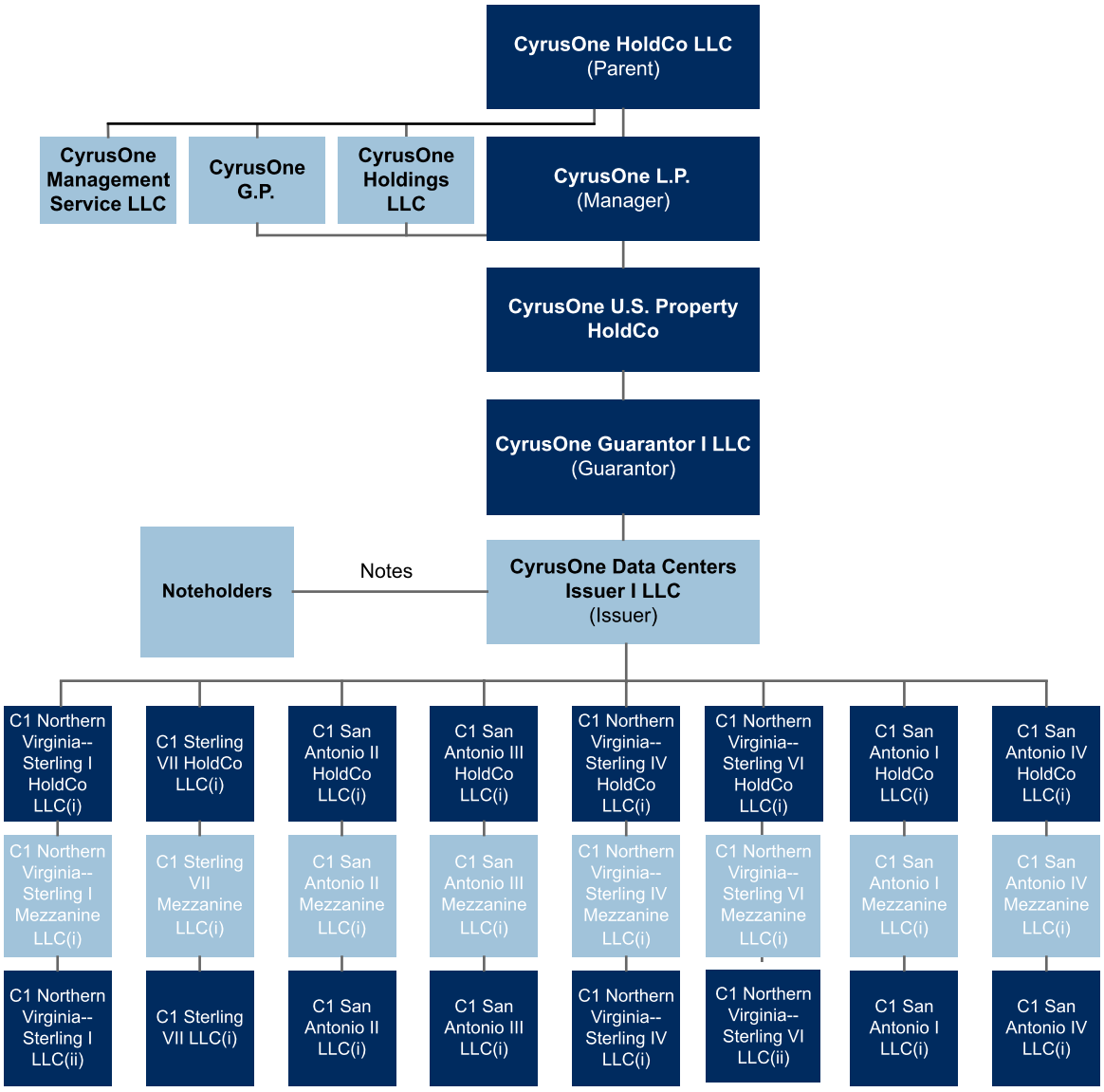
Chart 1 shows an overview of the transaction's structure. The issuer is a bankruptcy-remote Delaware limited liability company formed solely to hold the equity interests and to issue notes. The issuer will be a direct, wholly owned subsidiary of CyrusOne Guarantor I LLC, the guarantor, and an indirect, wholly owned subsidiary of CyrusOne Holdco LLC, the parent. The issuer will grant a security interest in all of the equity interest in each closing date asset entity to the indenture trustee on behalf of the noteholders as collateral security for the notes.

Each closing date asset entity will be a direct or indirect wholly owned subsidiary of the issuer. Each owner asset entity is a special-purpose entity (SPE) that owns no assets other than the data centers, tenant leases, and related assets.

Series 2024-1 will be the third issuance for this issuer. The issuer may issue additional series of notes (subject to the satisfaction of certain conditions, including DSCR and LTV ratio tests) that are secured by the entire collateral pool. Future series issuance will share collateral within this master trust.

Chart 1

Transaction structure



(i)Closing date holding company asset entity. (ii)Closing date owner asset entity. Both closing date holding company asset entity and closing date owner asset entity are referred to as closing date asset entities.

Pool And Structural Characteristics

CyrusOne Data Centers Issuer I LLC's data center revenue notes series 2024-1 is a securitization of fee-simple ownership interests in eight completed and operating data centers, four located in San Antonio and four in Northern Virginia. The data centers represent a total of 127.18MW of critical IT load available to tenants to operate their servers and computing equipment.

Table 1 provides a comparison of the pool of data centers and their respective leases.

Table 1

Pool characteristics

	CyrusOne 2024-1	CyrusOne 2023-2	Aligned 2023-2	Stack 2023-3(i)	VDCR 2023-1/2023-2	Sabey 2023-1	Vantage 2023-1	Compass 2022-1
Appraised value of data centers (mil. $)	1,967	1,780	4,258	2,544	2,068	2,144	3,718	1,131
No. of data center campuses	8	6	7	8	8	6	13	13
No. of tenants	84	54	33	24	11 (not including enterprise tenants)	109	18 (not including enterprise tenants)	5
S&P Global Ratings' value (mil. $)(ii)	1,042	923	2,132	1,445	1,138	936	1883	452
S&P Global Ratings' weighted average cap rate (%)(iii)	8.6	8.6	8.6	8.72	8.83	8.72	8.83	9.1
CLP leased (kW)	128,454	109,983	323,836	136,965	169,173	94,774	174,422	43,525
Capacity ramped (kw)	128,454	109,983	246,258	129,500	152,674	79,498	163,071	34,911
Total potential CLP (kw)	127,180	110,250	323,836	147,130	169,173	94,774	176,100	43,525
AABR (mil. $)	155.9	130.4	346.3	187.4	159.0	137.4	272.9	55.1
Turnkey (%)(iii)	100.0	100.0	100.0	100.0	100(iv)	83.2	100.0	100.0
Powered shell (%)(iii)	0.0	0.0	0.0	0.0	0.0	16.8	0.0	0.0
% leases triple-net(iii)	0.0	0.0	0.0	38.7	4.5	16.8	0.0	32.8
% leases modified gross(iii)	100.0	100.0	100.0	61.3	95.5(iv)	83.2	100.0(iii)	67.2
Weighted average original lease term (years) (weighted by AABR)	10.0	10.3	7.6	10.9	8.1	11.8	11.8	10.0
Weighted average remaining lease (years) (weighted by AABR)	5.5	6.0	5.8	6.3	6.6	6.3	7.7	5.6
Range of original lease (mos.)	12-183	12-183	36-180	36-206	36-180	7-420	36-240	53-182
Range of remaining lease (mos.)	1-124	1-134	3-176	4-133	3-173	1-199	2-163	3-168
Closing date DSCR	1.6	1.6	2.56	1.96	1.64	1.92	2.47	2.22

Table 1

Pool characteristics (cont.)

	CyrusOne 2024-1	CyrusOne 2023-2	Aligned 2023-2	Stack 2023-3(i)	VDCR 2023-1/2023-2	Sabey 2023-1	Vantage 2023-1	Compass 2022-1
% of investment-grade tenants(iii)	79.8	77.2	79.0	92.2	94.2	78	89.2	67.2
Largest five tenants (% of AABR)	87.1	88.3	79.5	80.5	93.1	49.2	83.3	100.0
Largest five tenants(iii)	Tenant 1 (60.6%), tenant 2 (13.2%), tenant 3 (5.7%), tenant 4 (4.7%), and tenant 5 (2.9%)	Tenant 1 (56.7%), tenant 2 (15.8%), tenant 3 (6.8%), tenant 4 (5.7%), and tenant 5 (3.4%)	Tenant 1 (28.6%), tenant 2 (25.2%), tenant 3 (11.3%), tenant 4 (9.0%), and tenant 5 (5.4%)	Tenant 1 (42.0%), tenant 2 (20.2%), tenant 3 (8.2%), tenant 4 (5.0%), tenant 5 (5.0%)	Tenant 1 (31.1%), tenant 2 (22.9%), tenant 3 (21.9%), tenant 4 (12.7%), and tenant 5 (4.5%)	Tenant 1 (19.9), tenant 2 (11.2), tenant 3 (7.9), tenant 4 (5.3), tenant 5 (4.9)	Tenant 1 (57.3%), tenant 2 (12.4%), tenant 3 (4.8%), tenant 4 (4.7%), and tenant 5 (4.0%)	Tenant 1 (54.2%), tenant 2 (22.1%), tenant 3 (6.7%), tenant 4 (4.0%), and tenant 5 (12.9%)
Largest three business sectors(iii)	IT (90.9%), Other (5.4%) and financials (2.9%)	IT (91.9%), Other (5.3%) and financials (2.2%)	Tech (40.3%), cloud (38.1%), and financial services (13.4%)	Big data (53.1%), Media (20.2%), Telecommunications (12.6%)	Cloud (42.9%), software (31.1%), and social media (22.9%)	Technology (73.5), telecom (6.3), health care (5.3)	Cloud (60.6%), tech hardware (16.4%), and software (6.3%)	Hyperscaler (67.2%), colocation datacenter (28.8%), and enterprises (4.0%)
State concentrations (iii)	Virginia (61.5%), and Texas (38.5%)	Virginia (73.1%), and Texas (26.9%)	Virginia (38.6%), Arizona (28.0%), Utah (19.9%), Illinois (9.7%), and Texas (3.7%)	California (33.4%), Texas (18.2%), Oregon (17.3%), Illinois (15.2%), Virginia (10.0%), Georgia (5.1%), Ohio (0.8%)	Virginia (57.6%) and Canada (42.4%	Washington (77.7), Virginia (14.7), and New York (7.6)	California (71.5%), Washington (11.8%), and Quebec (16.7%)	Quebec (54.2%), Ontario (12.9%), Texas (8.0%), Tennessee (7.3%), North Carolina (7.2%), Minnesota (6.7%), and Oklahoma (3.6%)

(i)Distressed tenant leases are excluded. (ii)Represents the liquidation value estimated in accordance with "CMBS Global Property Evaluation Methodology," published Sept. 5, 2012. (iii)By annualized adjusted base rent. (iv)Including 0.9% etnerprise leases. (v)Including 2.0% enterprise leases. Aligned--Aligned Data Centers Issuer LLC. Sabey- Sabey Data Center Issuer LLC. Compass--Compass Datacenters Issuer LLC. Stack--Stack Infrstrastructure Issuer LLC. Vantage--Vantage Data Centers Issuer LLC. VDCR--Retained Vantage Data Centers Issuer LLC CLP--Critical load power. DSCR--Debt service coverage ratio. kW--Kilowatt. AABR--Annualized adjusted base rent. IT--Information technology.

Charts 2-5 provide additional details about the underlying portfolio as of the statistical cutoff date.

Chart 2

Portfolio distribution by tenant

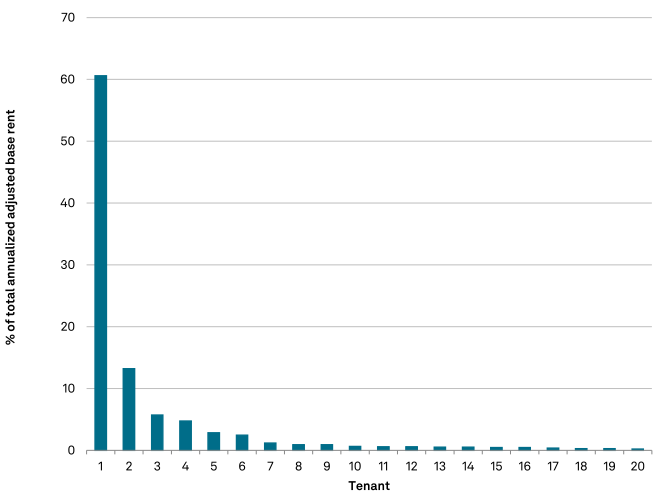


Chart 3

Tenant credit rating
(% of total annualized adjusted base rent)

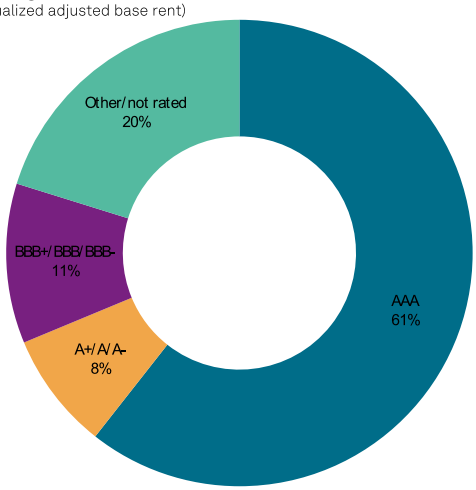
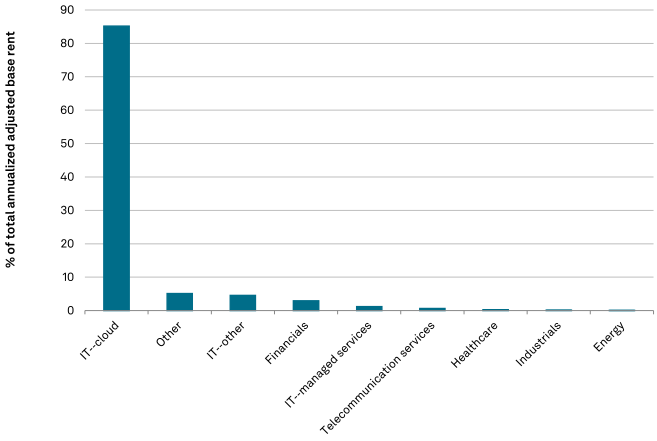


Chart 4

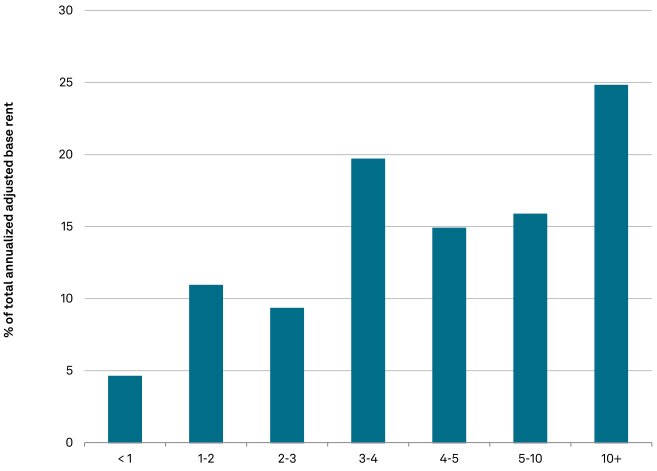
Portfolio distribution by industry



IT--Information technology.

Chart 5

Portfolio distribution by remaining term (years)



Manager Operating Duties

The manager will have certain operating duties specified in the management agreement. These duties include:

- Marketing the data center space to new tenants;
- Negotiating and executing new tenant leases and renewals;
- Administering tenant leases, including invoicing rent and other receipts, and managing

delinquencies and defaults;

- Maintaining insurance, including property, casualty, and business interruption insurance;
- Paying real and personal property taxes;
- Keeping the data centers in compliance with applicable laws and regulations;
- Providing for necessary maintenance and arranging for utilities (including electricity), services, equipment, and supplies;
- Providing physical security to the data centers, including guards, fingerprint monitors, fencing, and other mechanisms that provide for the physical safety of tenants' infrastructure;
- Managing capital improvements and other construction in connection with the leasing of site space; and
- Making debt service advances and property protection advances.

The issuer will pay the manager a monthly management fee equal to 3.0% of the aggregate base rent (not including the operating and maintenance capital expenses) as compensation for those duties.

Manager Performance Obligation

Because all arrangements in the portfolio are turnkey, the tenant leases include service-level agreements (SLAs) that require the manager to provide uninterrupted levels of electricity, access, and cooling to the tenant. In support of that requirement, the manager maintains, as part of the data center infrastructure, backup batteries and generators that provide uninterrupted power in the event of temporary electric utility outages.

Most SLAs provide remedies for the prolonged or repeated interruption of critical services. These remedies are generally limited to the reimbursement of a portion of already paid rent in proportion to the duration of the outage (although, in practice, no cash flows would be paid back to the tenant and would merely be netted against future rent obligations). Based on our assessment of the manager's operational procedures, the experienced management team, and the negligible number of SLA breaches during its operating experience, we believe SLA breaches represent a minimal risk to the cash flows.

Transaction Expenses

Transaction expenses, other than the management fee, fall into the three categories summarized in table 2.

Table 2

Expenses

Expense category	Payment priority	Expenses covered	Monthly budgeted expense amount(i)
Priority expenses	First payment in the application of funds	Taxes, insurance premiums, electricity (subsequently charged to the tenants), and, if applicable for future series, rents payable relating to any data center, including any ground rents(i).	Included in budgeted operating expenses.

Table 2

Expenses (cont.)

Expense category	Payment priority	Expenses covered	Monthly budgeted expense amount(i)
Operating expenses	Seventh payment in the application of funds (following the payment of note interest)	Site labor operations, repairs and preventative maintenance, utilities (excluding electricity), and security.	Inclusive of priority expenses, the greater of $18 million, and 22.7% of revenue of the eight underlying assets. The annual escalator of operating expenses is 2.0%.(ii)
Maintenance capital expenses	Seventh payment in the application of funds (following the payment of note interest)	Maintenance and replacement of batteries; capacitors (uninterruptable power supply), electrical switches, and generators; chiller plants; cooling towers, motors, and compressors; and other infrastructure components.	$3.50 per kW of critical load power of completed data center, subject to an annual 2.0% escalator.

(i)The issuer has fee-simple ownership over all real estate. (ii)The 22.7% is calculated based on each property's operating expense budget weighted by AABR. kW--Kilowatt. AABR--Annualized adjusted base rent.

The operating expense budget is specified in the transaction documents based on the manager's estimates, which are the expense estimates provided by the independent engineering report in conjunction with the data center appraisals. Each data center has its own expense estimates, as follows, subject to an expense floor for the portfolio.

Table 3

Data center expense estimates

Facility	Operating expense percentage of revenue (%)
Sterling I (NVA1)	27.0
Sterling IV (NVA4)	27.0
Sterling VI (NVA6)	15.0
Sterling VII (NVA7)	27.0
San Antonio I (SAT1)	25.0
San Antonio II (SAT2)	27.0
San Antonio III (SAT3)	27.0
San Antonio IV (SAT4)	25.0

Based the historical operating performance, we assumed an operation expense ratio of 27.0% for the two newly added properties (SAT1 and SAT4) for cash flow analysis, in line with the other San Antonio properties in the portfolio, rather than 25.0% specified in the document. Inclusive of priority expenses, the operating expenses are floored at $18 million.

Furthermore, in the Sensitivity Analysis section, we assessed the break-even increase in operating and maintenance capital expenses (beyond the 2.0% annual escalation currently budgeted for in the transaction documentation) that the transaction can withstand while still paying timely interest and ultimate principal.

Payment Priority

On each distribution date, the available funds will be used to pay expenses, interest, and principal in the priority shown in table 4. There is no variable-funding note in the transaction.

Table 4

Waterfall

Priority	Payment
1	Priority expense reserve.
2	Prior payment dates' unpaid indenture trustee, servicing, and other servicing fees; then, unreimbursed indenture trustee advances and interest; then, current payment date's indenture trustee, servicing, and other servicing fees; and then unreimbursed manager advances and interest.
3	Additional issuer expenses to the indenture trustee, servicer, and/or other applicable person so as not to exceed the annual additional issuer expense limit; and then the VFN agent fee (if applicable).
4	Accrued note interest for all notes, accrued and unpaid commitment fees, and other fees, expenses, and other amounts due to the VFN notes (if applicable), including LOC fees.
5	Monthly expense amount to the obligors in excess of amounts drawn from the liquidity reserve for operating and maintenance capital expenditures or liquidity LOC; and then any pass-through data center operating expenses.
6	Unpaid management fee to the manager.
7	Operating expenses and maintenance capital expenditures for current calendar month in excess of amounts drawn from the liquidity reserve account or liquidity LOC, not including servicer-approved monthly expense amounts.
8	Required liquidity reserve amount.
9	If an amortization period is not then in effect and no event of default has occurred and is continuing, an amount equal to any class A LTV ratio test sweep amount as of the application date.
10	If an amortization period is not then in effect and no event of default has occurred and is continuing, an amount equal to the scheduled amortization amount and to the extent not previously paid for all prior payment dates.
11	If an amortization period is not then in effect, a cash trap condition is not then in effect, and no event of default has occurred and is continuing, an amount equal to the class A-2 monthly amortization amount for any class A-2 notes of a series for the relevant payment date.
12	If an amortization period is not then in effect and no event of default has occurred and is continuing, the additional principal payment amount together with any applicable prepayment consideration.
13	If, after the ARD for any series of outstanding VFN or term notes, an amortization period is not in effect and no event of default has occurred and is continuing, the aggregate unpaid principal balance of such outstanding VFN notes or term notes.
14	If a cash trap condition is continuing and no event of default has occurred and is continuing, the remaining amount of available funds to the cash trap reserve account; and then, if an amortization period is not in effect, to the debt service account, an amount equal to the class A-2 monthly amortization amount for any class A-2 notes of a series for the relevant payment date.
15	During an amortization period or continuation of an event of default, the principal balance of all outstanding notes.
16	To the debt service account until the amount on deposit is equal to the amount of contingent interest, deferred contingent interest, post-ARD additional interest, and deferred post-ARD additional interest due to the notes for the relevant payment date.
17	Additional issuer expenses not paid in item 3 due to the annual additional issuer expense limit plus accrued interest to the indenture trustee, servicer, and/or other applicable person.
18	Operating expenses and maintenance capital expenditures of the asset entities not paid related to items 5 and 7 with amounts drawn from the liquidity reserve account.
19	To the executed forward starting lease reserve account and/or qualified new lease reserve account at the manager's direction.

Table 4

Waterfall (cont.)

Priority	Payment
20	Optional payments on the principal to the class A-1 noteholders at the direction of the issuer.
21	Manager-determined amounts to the capital expenditures reserve account.
22	Unreimbursed discretionary advances, including advance interest, to the manager.
23	Subordinated notes sweep amount subject to annual cap.
24	The remaining available funds to the issuer to be used for any purpose not prohibited under the transaction documents.

VFN--Variable-funding note. LOC--Letter of credit. LTV--Loan-to-value. ARD--Anticipated repayment date.

In the payment priority, the class A notes interest is senior to the class B notes interest, and the class A notes principal is senior to the class B notes principal.

Liquidity reserve account

The transaction features a liquidity reserve account of approximately $17.2 million at closing, funded by the issuance proceeds. The liquidity reserve is sized to cover the greater of three months of note interest or 12 months of priority expenses and targeted maintenance capital expenses.

Performance triggers

Class A-2 notes' scheduled amortization will occur as of the end of any calendar month until April 2027 with respect to the series 2023-1 notes; December 2027 with respect to the series 2023-2 notes; and April 2028 with respect to the series 2024-1 notes if the three-month average DSCR is less than 1.55x, and it will continue until it is above 1.55x as of the last day of such calendar month. During a scheduled amortization period, 0.25% per month of the initial outstanding principal balance of the class A-2 notes will be applied to pay the aggregate unpaid principal amount of the class A-2 notes. If the available amount is insufficient to cover all scheduled amortization amount due, any unpaid portion will be paid in the subsequent periods.

A cash trap condition will occur if the three-month average DSCR is less than 1.35x, and it will continue until it is above 1.35x as of the last day of two consecutive months. During a cash trap condition, all excess cash will be diverted to the cash trap reserve. All funds in the cash trap reserve will be deposited into the available amount if a cash trap condition is ongoing for nine consecutive months or an amortization period commences.

An amortization period will occur if the three-month average DSCR is less than 1.20x, and it will continue until it is above 1.20x as of the last day of two consecutive months. An amortization period will also commence and remain in effect if the net capacity reduction percentage remains greater than 10.0% as of the previous nine months, and it will continue until the three-month average DSCR is above 1.20x as of the last day of two consecutive months, provided that if the three-month average DSCR is not less than 1.20x as of the last day of any of the nine consecutive months prior to the capacity reduction date, and no amortization period will have commenced. During an amortization period, all excess cash flow will be applied to the aggregate unpaid principal amount of the notes sequentially across class A, then class B.

The DSCR is calculated as the ratio of the excess of annualized adjusted net operating income over the annualized targeted maintenance capital expenditure to mandatory debt service, where mandatory debt service consists of interest on the class A and B notes to be paid over the succeeding 12 payment dates and the amount of indenture trustee fees and servicing fees due during such period.

The net capacity reduction percentage is calculated as the sum of the aggregate amount of reduction in leased capacity and the aggregate amount of leased capacity allocated to defaulted tenants divided by the greater of the aggregate amount of leased capacity as of the most recent issue date and the aggregate amount of leased capacity as of the last day of any calendar month.

Debt service advance

The manager must make interest advances on the notes if the funds are deemed recoverable. The advances are meant to cover any shortfalls resulting from timing mismatches because of missed lease payments and any interest shortfalls. This requirement excludes make-whole amounts, post-anticipated repayment date (ARD) additional interest, deferred post-ARD additional interest, and principal and reserves held by or on behalf of the indenture trustee. If the manager fails to make an advance, the indenture trustee must make the debt service advance in its place. These requirements for advances serve as a form of liquidity for the notes; however, we do not rely on advances in our cash flow projection.

S&P Global Ratings' Stress Scenario Assumptions

To determine the appropriate preliminary ratings for the series 2024-1 notes, we analyzed the transaction's cash flows utilizing stress assumptions derived in part from our criteria for rating single-tenant real estate triple-net lease-backed securitizations. We ran various cash flow scenarios to test the transaction's sensitivity to changes in default timing, given the transaction's credit enhancement (see "Methodology And Assumptions For Rating North American Single-Tenant Real Estate Triple-Net Lease-Backed Securitizations," published March 31, 2016).

In our opinion, the risk to the cash flow generated from the portfolio of data centers and their associated leases can be attributed to certain major factors:

- Defaults of the initial pool of tenants (the lessees);
- The property manager's ability to fill the vacant space at a comparable lease rate upon a lessee default or lease expiration;
- The lease terms for new tenants (rental rate and lease term);
- The credit profile of new tenants; and
- The liquidation value of the data centers toward the legal final maturity of the transaction.

Our cash flow analysis includes the following key cash flow assumptions:

- All leases are rejected in the bankruptcy proceedings for defaulted tenants, given the lack of historical observations of defaulted wholesale data center tenants.
- No property liquidations until the disposition period defined in the transaction documents. We believe it would likely be more economical for the manager to continue operating the centers rather than liquidate them, even during periods of high vacancy rates.
- We assume 'CCC-' issuer credit ratings for tenants not rated by S&P Global Ratings, based on

the lack of performance data for the wholesale data sector.

- That the average credit quality of the tenant pool will have migrated to 'CCC-' by the start of our second default wave, if applicable, from its current 'AA-', given the limited eligibility requirements for future tenants' credit quality.
- We applied re-lease haircuts for both performing and defaulted leases that are consistent with those that are one rating category above the haircut rates specified in the 2016 triple-net lease criteria, given the limited history of wholesale data center lease rates and the uncertainty around future supply and demand conditions. For example, at the 'A' rating category, we would assume a 20.0% loss in rental income upon lease renewal for a performing lease rather than the 15.0% specified in the criteria. Similarly, at the 'A' rating category, we would assume a 35.0% haircut to re-lease rental rates post-default for defaulted leases rather than the 30.0% specified in the criteria.

We applied two waves of default and used S&P Global Ratings' CDO Evaluator to determine the initial collateral pool's scenario default rate, with certain assumptions:

- S&P Global Ratings' issuer credit rating on the initial lessee for the first default wave, 'CCC-' for unrated lessees, and 'CCC-' for the entire portfolio for the second default wave;
- The allocated collateral value per lease, calculated as each lease's total remaining scheduled payments;
- The current remaining terms of the leases; and
- The higher of portfolio default rate and the largest obligor default rate.

We determined the portfolio's property liquidation value using our commercial real estate methodology (see "CMBS Global Property Evaluation Methodology," published Sept. 5, 2012). We assumed rental income based on the in-place leases, the appraiser's estimate of market rent and recent leasing data from the market, and then applied a vacancy deduction to the potential gross income. We estimated expenses and expense reimbursements based on information from the appraisal reports and comparable properties. These expenses included fixed items (such as real estate tax and insurance), estimated management fees, and variable expenses, which were reimbursed in our income projections. We determined net cash flow after deducting estimated leasing commissions, tenant improvement expenses, and capital reserves and expenditures based on projected lease roll assumptions. We selected direct capitalization rates based on factors such as appraisal and market capitalization rates, property performance and tenant strengths, and property location.

Based on the most recent appraisal reports as of February 2024, we adjusted our expense assumptions for the six existing data centers, which resulted in a 3.6% reduction in the liquidation procced assumption compared to the assumption for series 2023-2.

Table 5 shows a summary of stress assumptions.

Table 5

Cash flow assumptions

Stress level	A-	BBB-
Standard scenario default rate		
Portfolio scenario default rate (default wave 1) (%)(i)	21.3	13.4
Portfolio scenario default rate (default wave 2) (%)(i)	96.8	94.5

Table 5

Cash flow assumptions (cont.)

Largest-obligor test		
Portfolio scenario default rate (default wave 1) (%)(i)	22.3	20.9
Portfolio scenario default rate (default wave 2) (%)(i)	97.4	96.1
Non-defaulting leases		
Lease rate credit upon renewal (%)	81.7	86.7
Defaulting leases		
Accepted in bankruptcy (%)	0.0	0.0
Rejected in bankruptcy and re-leased (%)	100.0	100.0
Re-lease lag (months)	12	12
Lease rate credit (%)	66.7	71.7
Liquidation proceeds ($)	1,042,469,811	1,042,469,811

(i)We select the higher of the standard default rate and the largest-obligor test for each wave.

Cash Flow Analysis

To determine whether the available credit support is sufficient to withstand the assumed losses, we examined various simulated cash flow scenarios. In each scenario, the cumulative effects of the assumptions we detailed above were applied. In the first four scenarios, we applied the first four default timing curves (curves 1-4; see table 6), where the first default wave starts in year one, the second default waves starts in year 11, and final liquidation starts one year before the earliest outstanding series notes' (series 2023-1 notes) legal final maturity date. The second default wave was applied sooner than we would typically apply it for other data center transactions because CyrusOne's portfolio has a shorter weighted average remaining lease term of 5.5 years as of statistical disclosure date (not considering renewal options), compared with the average seven- to nine-year remaining lease terms we have seen in other data center lease portfolios. However, the portfolio's weighted average original lease term of 10.0 years is similar to other data center portfolios' original lease term.

Table 6

Default curves

Year	Curve 1 (%)	Curve 2 (%)	Curve 3 (%)	Curve 4 (%)	Curve 5 (%)(i)
1	40	10	10	15	40
2	10	10	10	15	30
3	10	10	10	15	20
4	10	40	10	15	10
5	10	10	10	15	0
6	10	10	10	15	0
7	10	10	40	10	0

(i)Sensitivity run 4.

In each rating scenario (curves 1-4), the notes pay timely interest and full principal by their rated final maturity, and there were no deferred expenses (priority, operating, or maintenance capital expenses). Although the transaction documents require the manager or indenture trustee to make advances on interest payments (if deemed recoverable), no advances were assumed in the cash flow modeling scenarios. We also tested curve 5 as part of the sensitivity analysis in the following section.

Sensitivity Analysis

Assuming a base-case scenario in which we assumed contractual cash flows with no losses and one renewal at the same lease rate following the initial lease term, we ran several break-even cash flow runs (sensitivity runs 1 through 3) to measure the transaction's ability to withstand decreases in revenue or increases in expenses.

Sensitivity run 1: gross revenue reduction stress

We found that the class A and B notes could withstand a 27.0% and 26.0%, respectively, reduction in monthly gross revenue and still pay timely interest and full principal by the rated final maturity.

Sensitivity run 2: maintenance capital expense stress

We found that the class A and B notes could withstand a 8.2x and 7.8x, respectively, increase in monthly budgeted maintenance capital expenses and still pay timely interest and full principal by the rated final maturity.

Sensitivity run 3: priority expense, operating expense, and maintenance capital expense stress

We found that the class A and B notes could withstand an 10.0% annual escalation of priority expenses, operating expenses, and maintenance capital expenses (instead of the 2.0% assumed in the rating scenario) and still pay timely interest and full principal by the rated final maturity.

Sensitivity run 4: curve 5 default pattern

To address the renewal risk and potential tenant credit migration due to the transaction's shorter remaining term, we ran a more stressful front-loaded default timing curve (curve 5 in table 5) as a sensitivity analysis, with the second default wave commencing in year 8 and liquidation in year 15. We found that neither class A notes and class B notes pass this scenario at their respective stress levels.

Events Of Default

Under the transaction documents, each of the following constitutes an event of default, subject to applicable cure conditions:

- A failure to pay timely interest on class A and B notes.
- A failure to pay principal on any notes by legal final maturity.

- A failure to pay any other amount, to the extent that on the payment date there are funds available in the transaction accounts.
- A failure to comply with financial reporting requirement.
- A failure to comply with the covenants in the indenture or transaction documents, where a failure is likely to cause a material adverse effect.
- A breach of representations and warranties that is likely to cause a material adverse effect.
- The obligor or guarantor being subject to involuntary bankruptcy proceedings.
- The obligor or guarantor initiating voluntary bankruptcy proceedings.
- A change of control resulting in the specified tenant's lease termination.
- The guarantor ceasing to own 100% of the issuer, or the issuer ceasing to own 100% of any asset entity.
- A division of the obligor or guarantor into two or more limited liability companies under the Delaware code.

Legal Matters

We expect the issuers' SPE provisions to be consistent with our bankruptcy-remoteness criteria. In rating this transaction, we will review the legal matters that we believe are relevant to our analysis, as outlined in our criteria.

Surveillance

We will maintain active surveillance on the rated notes until the notes mature or are retired. The purpose of surveillance is to assess whether the notes are performing within the initial parameters and assumptions applied to each rating category. The transaction terms require the issuer to supply periodic reports and notices to S&P Global Ratings for maintaining continuous surveillance on the rated notes.

Related Criteria

- Criteria | Structured Finance | ABS: Advance Notice Of Proposed Criteria Change: Data Center Securitizations, Jan. 18, 2023
- General Criteria: Environmental, Social, And Governance Principles In Credit Ratings, Oct. 10, 2021
- Criteria | Structured Finance | General: Global Framework For Payment Structure And Cash Flow Analysis Of Structured Finance Securities, Dec. 22, 2020
- Criteria | Structured Finance | Legal: U.S. Structured Finance Asset Isolation And Special-Purpose Entity Criteria, May 15, 2019
- Criteria | Structured Finance | General: Counterparty Risk Framework: Methodology And Assumptions, March 8, 2019
- Criteria | Structured Finance | ABS: Methodology And Assumptions For Rating North American Single-Tenant Real Estate Triple-Net Lease-Backed Securitizations, March 31, 2016

- Criteria | Structured Finance | General: Global Framework For Assessing Operational Risk In Structured Finance Transactions, Oct. 9, 2014
- General Criteria: Global Investment Criteria For Temporary Investments In Transaction Accounts, May 31, 2012
- General Criteria: Principles Of Credit Ratings, Feb. 16, 2011

Related Research

- U.S. Economic Forecast Update: A Sturdy Job Market Keeps Growth Going, Feb 21, 2024
- Economic Outlook U.S. Q1 2024: Cooling Off But Not Breaking, Nov. 27, 2023
- Credit FAQ: How U.S. Data Centers Are Navigating Inflation And Recession Risks, July 21, 2022
- ESG Credit Indicator Report Card: Real Estate, Dec. 14, 2021
- Field Of Data Streams: If You Build It, They Will Come, Sept. 20, 2019
- Cloud Disruption: Cloud Adoption And Digital Transformation Are Positives For The Data Center Industry, Sept. 7, 2018
- Despite Continued Growth, U.S. Data Centers May Face Long-Term Risks From Financial Pressures And Uncertain Tech Developments, Oct. 30, 2017
- Global Structured Finance Scenario And Sensitivity Analysis 2016: The Effects Of The Top Five Macroeconomic Factors, Dec. 16, 2016
- Credit FAQ: Analyzing The Real Estate Characteristics Of Data Centers, July 25, 2016