

# Berkadia Commercial Mortgage LLC

Berkadia Commercial Mortgage LLC (Berkadia, or the company), a joint venture between Berkshire Hathaway and Jefferies Financial Group Inc. (Jefferies, formerly Leucadia National Corporation), is a CRE lender, broker, servicer and third-party outsource provider of CRE servicing functions. The company maintains three business lines: commercial mortgage banking, investment sales and commercial mortgage servicing. Berkadia originates commercial mortgage loans for government-sponsored entities (GSEs), third parties (such as life companies, private investors and institutional banks) and CMBS transactions, as well as for its own portfolio.

Berkadia's servicing portfolio continues to grow mainly through new third-party clients and internal originations as the company retains approximately 90% of internally originated loans. Since YE 18, Berkadia's overall servicing portfolio grew 4% by loan count as of March 31, 2020; the portfolio also increased 21% by balance, reflecting a continued trend in larger balance loans. As of the same date, 54% (by loan count) of Berkadia's total portfolio was subserviced for third-party clients that include commercial banks, insurance companies, investment banks, private equity firms and other servicers. GSE agency-backed loans make up 19% of the portfolio by loan count, followed by CMBS loans (17%), life company loans (8%) and warehoused loans (1%).

In 2020, Berkadia expanded its single-family rental (SFR) market presence by providing interim and securitized servicing for SFR transactions, and it was recently named primary and master servicer on two SFR transactions collateralized by 216 loans on 4,774 properties totaling \$578 million. Berkadia was also designated as a Freddie Mac small balance loan (SBL) lender in 2019, originating 23 loans totaling \$69.8 million to date.

Berkadia employs 69% of its servicing staff offshore through Berkadia Services India Private Limited (Berkadia India), the company's captive offshore platform for approximately 18 years. This represents the largest percentage of offshore staff members among servicers rated by Fitch Ratings. With the significant investment in Hyderabad, India, the offshore operations center provides Berkadia with flexibility and scalability relative to its servicing volume.

## Servicer Ratings

- Fitch rates primary and master servicers, which protect the interests of the certificateholders in the trust by servicing and administering the mortgage loans.
- The primary servicer is responsible for day-to-day servicing functions, while the master servicer is responsible for monitoring the activities of the primary servicers, investor reporting and timely remittance of funds to trustees.
- Fitch also rates special servicers, which are key to maintaining the credit quality of a pool containing nonperforming commercial mortgages and real estate-owned (REO) assets. The special servicer is responsible for working out loans, foreclosing and liquidating assets.
- In assessing and analyzing the capabilities of primary, master and special servicers, Fitch reviews several key factors, including the management team, organizational structure and operating history, financial condition, information systems and, with respect to the special servicer, workout and asset disposition experience and strategies.
- Fitch rates commercial mortgage primary, master and special servicers on a 1-to-5 scale, with 1 being the highest rating. Within each of these rating levels, Fitch further differentiates ratings by plus (+) and minus (-) along with the flat rating.

## Ratings

Commercial Primary Servicer	CPS1
Commercial Master Servicer	CMS2
Last Rating Action: Affirmed July 31, 2020.	

## Applicable Criteria

Criteria for Rating Loan Servicers (February 2020)

Criteria for Rating North American Commercial Mortgage Servicers (January 2020)

## Related Research

[Fitch Affirms Berkadia's Commercial Servicer Ratings \(July 2020\)](#)

[Fitch Affirms Jefferies Finance's Long-Term IDR at 'BB'; Outlook Revised to Negative \(May 2020\)](#)

[Fitch Affirms Berkshire Hathaway Inc.'s Ratings; Outlook Stable \(April 2020\)](#)

## Analysts

James Bauer  
+1 212 908-0343  
[james.bauer@fitchratings.com](mailto:james.bauer@fitchratings.com)

Dan Stallone  
+1 212 908-0861  
[dan.stallone@fitchratings.com](mailto:dan.stallone@fitchratings.com)

## Key Rating Drivers

**Company/Management:** Berkadia benefits from strong sponsorship support contributing to stable ownership and a growing servicing platform. Berkshire Hathaway and Jefferies each own 50% of the company, which has been servicing commercial mortgages since 1994. Berkadia maintains a well-articulated business plan focused on adding and expanding third-party relationships and retaining internal originations leading to continued growth in commercial mortgage servicing, which remains an integral component of the broader Berkadia platform.

**Staffing and Training:** Berkadia employs 69% of its servicing staff through its captive offshore operation, Berkadia India, the largest such percentage among Fitch-rated servicers. Berkadia extensively trains offshore employees and frequently makes training visits to India, in addition to training key Indian personnel in the U.S. Turnover in Berkadia’s Hyderabad office is below the historical averages observed by other servicers with employees in India and the market average of approximately 25% for the financial services industry.

Berkadia maintains a deep and stable management bench of 35 senior and middle managers who collectively average 24 years of experience, along with a highly experienced U.S. servicing staff of 146 employees averaging 18 years of experience. Within the past 12 months, Berkadia’s master and primary servicing platform has experienced 16% overall turnover, down from 18% as of Fitch’s last review, while management turnover was a low 9% during that span. Berkadia maintains a robust training program across the U.S. and India and continues to focus on investing in employee retention through an evolving employee development program.

**Technology:** Berkadia uses McCracken Strategy release 17.6 as its primary servicing application. Although Fitch notes that Berkadia has been on the same version of the application since 2015 while other rated servicers have moved to newer releases of the system, Berkadia has a demonstrated commitment to investing significant resources in technology development. Strategy is integrated with a suite of ancillary applications, and Berkadia maintains extensive development teams in the U.S. and India that are focused on continuous improvements in Berkadia’s proprietary applications.

Berkadia continues to focus on building a single cloud-based database companywide to improve processing times and create a single repository for data, as well as to form the foundation for newer applications. Recent technology initiatives include updating the company’s workflow application for better accuracy and time-tracking of tasks, developing a financial statement analysis tool with robotic process automation (RPA) functionality to reduce the time to spread statements, migrating loan covenant requirements to McCracken’s Process Manager to improve tracking and updating the borrower website to allow for submission of financial statements, reserve requests and insurance policies. Berkadia has also enhanced its proprietary market analysis application to include more local market data and created a market resiliency analysis in response to the coronavirus pandemic.

**Procedures and Controls:** Berkadia maintains a comprehensive reporting process to manage output from its servicing operations, using data validation reports, exception reporting and dashboards. Additionally, the company’s risk, control and compliance department samples servicing functions for compliance with internal policies, regulations and pooling and servicing agreements (PSAs). Berkadia performs annual risk assessments across the company to develop audit plans, and internal audits are performed on a 24-month rotation.

**Loan Administration:** Berkadia has extensive primary servicing experience dating back to 1994, with CRE loans demonstrating the highest performance in servicing ability for a diverse set of loans, properties and clients. Berkadia maintains a quality control-focused platform for primary servicing, predominantly utilizing operational staff in India while maintaining subject-matter expertise in the U.S. The use of its India operations provides the company with significant scale that can facilitate planned future growth while minimizing added costs to the platform.

**Financial Condition:** Fitch views the company’s short-term financial viability as adequate to support the servicing platform and its liquidity as sufficient to meet advancing obligations.

## Company Experience Since:

CRE Servicing	1994
CMBS Servicing	1994
Overseeing Primary Servicers	1994

Source: Berkadia.

## Operational Trends

Business Plan	▲	Growth in portfolio with demonstrated sponsor support investing in servicing infrastructure
Servicing Portfolio	■	Year-over-year loan count change of approximately 10%
Financial Condition	■	Outlook/Trend
Staffing	■	Staffing changed less than 12% +/-
Technology	■	Stable technology platform; system of record significantly behind current releases
Internal Controls	■	Stable control environment; no material audit findings
Servicing Operations	▲	Strong/consistent operations organized around servicing tasks relative to the portfolio; functional growth into new product types or business lines

Source: Fitch Ratings.

# BERKADIA®

## Company Overview

Berkadia is a limited liability company and, through a series of holding companies, is ultimately a joint venture between Jefferies and Berkshire Hathaway Inc. In December 2009, the company began operations as Berkadia by acquiring the commercial mortgage origination and servicing business of Capmark Financial Group Inc. through Capmark's bankruptcy. The platform has been operating since 1994, previously as GMAC Commercial Mortgage.

## Servicing Portfolio Overview

	3/31/20	% Change	12/31/2019	% Change	12/31/2018
<b>Total Servicing</b>					
UPB (\$ Mil.)	285,105.8	2	279,551.8	19	235,880.1
No. of Loans	18,748	1	18,559	3	18,019
<b>Primary Servicing</b>					
UPB (\$ Mil.)	284,706.6	2	279,003.0	19	235,247.1
No. of Loans	18,704	1	18,512	3	17,950
<b>Master Servicing</b>					
UPB (\$ Mil.)	4,599.7	(6)	4,901.7	(31)	7,149.9
No. of Loans	585	(8)	638	(42)	1,106

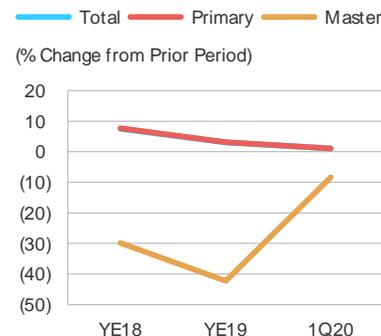
Note: March 31, 2020 primary servicing numbers include 3,466 loans that are limited subservicing.  
UPB - Unpaid principal balance.  
Source: Berkadia.

The company services over 18,400 CRE loans totaling approximately \$268.4 billion across its client base, which includes GSEs, insurance companies, conduits, banks, third parties and its own proprietary portfolio. Berkadia's largest servicing clients include the U.S. Department of Housing and Urban Development (HUD), Freddie Mac and Fannie Mae. As of March 31, 2020, 17% (by loan count) of the total servicing portfolio was in CMBS transactions, while the remainder was weighted toward the company's subservicing for its third-party clients (54%), GSEs (19%) and life companies (8%).

Berkadia's subservicing portfolio consists of 10,130 loans totaling \$166.8 billion, which has grown as the company continues to add new clients and expand relationships with existing clients. Recently, Berkadia added a 50-loan full service portfolio totaling \$2.4 billion on behalf of a new bank client. The company has also maintained a subservicing relationship with KeyBank since 2012 and, as of March 31, 2020, it represented 1,080 loans totaling \$17.3 billion. The KeyBank portfolio represents 11% (by loan count) of the subservicing portfolio for third parties and 6% of Berkadia's total servicing portfolio, down from 12% and 7% as of the last review, respectively. Fitch expects the KeyBank portfolio to continue to decline as runoff exceeds additional assignments.

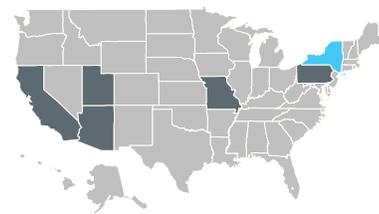
In 2019, Berkadia originated \$26.7 billion in commercial mortgages and an additional \$5.6 billion through March 2020, continuing the overall upward trend from \$26.1 billion originated in 2018, \$25.0 billion in 2017 and \$20.2 billion in 2016. In 2019, the company was the third-largest HUD lender, the second-largest Freddie Mac lender and the fourth-largest Fannie Mae lender. For the 12-month period ended March 31, 2020, Berkadia contributed over \$9.8 billion to Freddie Mac K-series transactions, approximately \$1.6 billion to CMBS conduit transactions and \$425 million to single-asset, single-borrower deals. Berkadia also maintains annual origination volumes of approximately \$3 billion for life companies, as well as roughly \$200 million in annual production for its proprietary balance sheet loan program, which focuses on bridge loans for stabilized properties seeking permanent GSE financing.

## Servicing Portfolio



Source: Berkadia.

## Office Locations



Primary Office: New York City.

The company maintains a well-articulated business plan focused on adding and expanding third-party relationships and retaining internal originations, which are diversifying in product types. Since Fitch's last review, Berkadia has added a \$2.4 billion full-service bank portfolio, has begun interim servicing for SFR loans pre-securitization, was recently named the primary and master servicer on two SFR transactions totaling \$578 million and became a designated Freddie Mac SBL lender.

Approximately one-half of the servicing portfolio is subserviced on behalf of third parties (54% by loan count), of which Berkadia performs full subservicing for 66% (by loan count) and noncashing subservicing for 34%. Noncashing subservicing refers to a select number of servicing functions performed by Berkadia.

Berkadia is headquartered in New York City. It maintains its U.S. servicing operations in Ambler, PA and its offshore operations in Hyderabad, India. The company has servicing staff based in New York City, Irvine, CA, St. Louis, Midvale, UT and Scottsdale, AZ. Berkadia continues to place investment sales and mortgage banking personnel together to help improve customer service and expand business lines.

## Financial Condition

Fitch does not maintain a credit rating for Berkadia; however, Fitch performed a financial assessment of the company and determined its short-term financial viability to be adequate to support the servicing platform. Financial condition carries greater weight in master servicer ratings given a master servicer's need to advance payments for securitized loans. In contrast to its master servicing peers, which are typically divisions of investment-grade banks or insurance companies, and while Berkadia is not publicly rated and has a smaller balance sheet, it maintains sufficient liquidity to meet advancing obligations.

Fitch's assessment of Berkadia noted continued profitability, larger scale relative to its peers, decreasing leverage and significant management experience. Fitch also noted Berkadia's reliance on short-term secured funding and historically high dividend payout rates of over 100%. A stress analysis of Berkadia's master servicing portfolio was performed to assess advancing and indicated third-party credit facilities, cash and liquid investments on the company's balance sheet and the financial benefits of its parent's investment in the platform, providing liquidity to support advancing obligations in a market downturn.

Berkadia's primary servicing platform relies on operational staff in India while maintaining subject-matter expertise in the U.S. The company has over 18 years of CRE operations in India (among the most mature offshore operations of Fitch-rated servicers), and it extensively trains its employees and monitors the operations of its captive offshore subsidiary via frequent training visits between the U.S. and India.

## Employees

As of March 31, 2020, Berkadia maintained a master and primary servicing staff of 566 employees, up from 519 in 2019. Berkadia had 391 employees in the Hyderabad office and 175 in the U.S. as of the aforementioned date, compared with 351 in Hyderabad and 168 in the U.S., respectively, in 2019. During the past 12 months, Berkadia's master and primary servicing platform has experienced 16% overall turnover, down from 18% and 21% as of Fitch's two prior reviews. Berkadia had 86 employee departures as of Fitch's most recent review (68 in India and 18 in the U.S.), down from 98 (74 in India and 24 in the U.S.) and 122 (91 in India and 31 in the U.S.) departures for Fitch's last two reviews.

## Employee Statistics

	2020				2019			
	No. of Employees	Average Years Industry Experience	Average Years Tenure	% Turnover	No. of Employees	Average Years Industry Experience	Average Years Tenure	% Turnover
<b>Domestic Primary/ Master Servicing</b>								
Senior Management	7	26	16	0	6	28	17	0
Middle Management	22	23	16	9	22	24	18	5
Servicing Staff	146	18	10	11	140	18	12	16
<b>Total</b>	<b>175</b>	<b>—</b>	<b>—</b>	<b>10</b>	<b>168</b>	<b>—</b>	<b>—</b>	<b>14</b>
<b>Offshore Primary/ Master Servicing</b>								
Senior Management	5	18	12	22	4	17	14	44
Middle Management	1	15	14	0	1	14	13	0
Servicing Staff	385	5	5	18	346	6	5	20
<b>Total</b>	<b>391</b>	<b>—</b>	<b>—</b>	<b>18</b>	<b>351</b>	<b>—</b>	<b>—</b>	<b>20</b>
<b>Total Primary/ Master Servicing</b>	<b>566</b>	<b>—</b>	<b>—</b>	<b>16</b>	<b>519</b>	<b>—</b>	<b>—</b>	<b>18</b>

Source: Berkadia.

In the U.S., overall turnover was 10%, down from 14% and 18% as of Fitch's previous two reviews. The India servicing operations experienced 18% overall turnover, mainly at the staff level, down from 20% and 22% overall turnover as of Fitch's last two reviews and comparable to market turnover. In India, the primary drivers of turnover remain a combination of departures for other job opportunities, family reasons and educational aspirations.

Berkadia maintains an experienced and tenured domestic and offshore management team. In the U.S., seven senior managers average 26 years of industry experience and 16 years with the company, while five senior managers in India average 18 years of experience and 12 years with Berkadia. Recent additions to the senior management team were due to one internal promotion and one new hire in India. Supporting senior management comprises 22 middle managers in the U.S. averaging 23 years of experience and 16 years of company tenure, along with one middle manager in India with 15 years of experience and 14 years with the company.

In the past 12 months, management turnover among senior and middle managers in the U.S. and India remained low at 9%, up slightly from 4% as of the last review yet below 29% as of Fitch's 2018 review. There was one voluntary senior manager departure in India and two middle manager departures in the U.S. The senior manager departure in India resulted in 22% senior manager turnover, which is high owing to the small size of the group.

In India, Berkadia employs a senior management team to lead the offshore platform. The team comprises a site director who has 29 years of experience with leading U.S. investment banks; the senior vice president of servicing operations, who has 21 years of experience and 11 years of company tenure; and four other senior managers from outside servicing.

Berkadia maintains a highly experienced U.S. servicing staff of 146 employees that average 19 years of experience and 10 years of tenure. Staff are structured on a functional basis for specific tasks that include asset management, taxes and insurance and investor reporting. Client services serves as the main point of contact for servicing clients. There is also a separate life company servicing group. The India servicing staff averages eight years of experience and five years of tenure and supports all aspects of servicing, including investor reporting, bank reconciliations, cash-managed loans, reserves, new loan boarding, Uniform Commercial Code (UCC) processing, taxes and insurance, escrow analysis and financial statement analysis.

Berkadia also maintains a small balance servicing platform in Hyderabad staffed by three employees who handle approximately 106 loans. While Berkadia does contact borrowers from India, Fitch was unable to assess the quality of these calls relative to other offshore operations. Borrower contact from India is historically limited (less than 5% of all calls to borrowers).

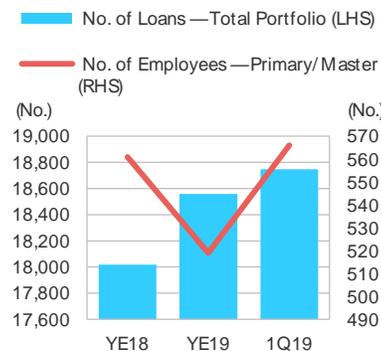
### Training

Fitch found Berkadia's training program to be comprehensive, allowing for employee development in the U.S. as well as in India. Required training hours are based on a tiered approach relative to employee experience and tenure. The maximum required training hours are 50. In 2019, primary and master servicing staff averaged 50 hours of training per employee, down from 56 hours averaged the prior year. The averages for U.S.-based and Hyderabad-based employees were 49 hours and 51 hours, respectively. Training courses offered in the past year include employee development, communication, working virtually, insurance and investor reporting. The company encourages employees to enroll in the Mortgage Bankers Association's commercial mortgage servicer programs. Approximately 23% of Berkadia's servicing employees were enrolled in these programs, according to the latest figures.

In 2019, Berkadia made 32 training-related trips between the U.S. and India, with two additional trips during 1Q20 to include quarterly functional training in India conducted by U.S.-based personnel and audio/videoconference training. Berkadia has a corporate trainer responsible for both the U.S. and India.

Berkadia continues to implement its employee development program that seeks to provide an organizational foundation that supports learning and higher performance. As part of this program, Berkadia created four modules focusing on constructive feedback for employees, coaching, aligning expectations and developing employee capabilities. The company maintains Berkadia University, which provides on-the-job training and formalized classes. Berkadia also partners with a business school to provide leadership training for current and future leaders of the company.

### Loan and Employee Counts



Source: Berkadia.

Berkadia maintains a deep and stable management bench, with 35 senior and middle managers collectively averaging 24 years of experience and 15 years of company tenure. Management turnover was 9% over the past 12 months, consisting of three departures.

Berkadia reallocated resources internally as a result of an increase in borrower requests and consent work related to the coronavirus pandemic, which peaked in late April and early May.

Berkadia maintains a robust training program led by a corporate trainer. The company makes available a diverse program of training courses for its employees, both in the U.S. and India. The company mandates that each servicing employee complete training hours commensurate with their industry experience.

---

## Operational Infrastructure

### Offshore Operations

Fitch periodically reviews commercial mortgage servicers' offshore captive affiliates or outsource firms that perform various servicing functions or portions of servicing functions to assess the effectiveness of processes and controls. As Berkadia's business model relies heavily on its captive offshore resources, Fitch performed an onsite review of the company's commercial loan servicing operations in Hyderabad in March 2019.

Fitch met with Berkadia's U.S. senior managers and members of the India leadership team responsible for commercial loan servicing to understand: the infrastructure and role of the India operations within the broader company; employee training, education, experience and turnover; the company's disaster recovery and technology infrastructure; and the implementation and oversight of Berkadia policies and procedures for commercial loan servicing. In addition, senior Fitch analysts toured the facilities in Hyderabad and spent time with frontline employees as they performed servicing functions.

Berkadia has over 20 years of offshoring experience through its captive affiliate, Berkadia Services India, and its prior platform located in Ireland. The company's 853 offshore employees are grouped among day (58%), evening (21%), sunrise (4%), split (13%) and rotational (5%) shifts, maintaining continuous operations in a 115,000 square-foot, dedicated office space.

Nearly all servicing functions can be performed in the Hyderabad office, and employees there service loans using a server farm in Ambler, providing greater security and efficiency from a centralized platform. Servicing functions performed offshore include loanboarding, loan administration, escrow account administration, payoff quotes, bank reconciliations, payment processing and financial statement and rent roll analysis. While these servicing functions are predominately performed offshore, Berkadia maintains subject matter experts in the U.S. who are responsible for oversight and quality control, using a mix of technology and ongoing training. In addition to performing servicing functions, the Hyderabad staff supports back-office corporate functions such as: IT development and support, finance and accounts payable, production operations and proprietary lending.

Fitch observed firsthand servicing functions performed by offshore staff and found no discernable differences between domestic and offshore functions, which Fitch attributes to extensive employee training and domestic and offshore management teams that are highly engaged with staff. Fitch also observed the significant role technology plays in supporting offshore operations, such as Berkadia's proprietary Mega Work Flow application and realtime dashboard trending that measures and tracks touchtimes specific to each servicing function.

### Outsourcing

Berkadia does not outsource core servicing functions; however, it does engage third-party vendors to provide tax processing, track UCC filings and perform property inspections.

### Vendor Management

Berkadia contracts with vendors primarily for tax processing, UCC filings and property inspections. Berkadia's risk control and compliance group is responsible for vendor management. The company categorizes and reviews its vendors annually and has established a formal process to review vendors engaged by the company. The company's vendor oversight includes reviewing the financial, operational and compliance environments to ensure vendors meet and can continue to meet the terms of their contractual arrangements. As part of this oversight, the company collects third-party audit reports (Service Organization Control [SOC] reports). Work is monitored through service-level agreements and vendor report cards that are created quarterly. Vendors are tested as part of Berkadia's SOC1 and SOC2 audits. Monthly calls are also held with the company's vendors to address any issues that arise.

## Information Technology

Berkadia utilizes McCracken's Strategy release 17.6 as its core servicing application. While on an application service provider (ASP) contract with McCracken, Berkadia maintains its servicing data on its own servers, allowing what the company believes to be faster processing speeds. Incorporated into and integrated with Berkadia's systems are workflow technologies through its Enterprise Productivity Management (EPM) suite, a proprietary document-imaging system.

Additional ancillary applications used by Berkadia include:

- SmartView, a combination of the servicing data warehouse and IBM Cognos Business Intelligence tools that aggregates and extracts data used for operational and management reporting, along with customized reporting.
- Mega Work Flow, a proprietary application designed for automating workflows, managing work requests, tracking turnaround times and providing realtime status updates on outstanding requests to borrowers and investors.
- EPM/EDM (Enterprise Productivity Management/Enterprise Data Management) – EPM is a proprietary document-imaging system that creates loan documents as images and makes them available to staff for viewing, faxing and printing. The EPM system is used to facilitate approval of cash transactions both within servicing and corporate functions. The EDM system, which is also proprietary, contains the electric loan file, servicing agreements and related documents. These two systems are integrated using an electronic queuing system to facilitate movement of funds from the requester to the approver and which provides an audit trail for all funds moved.
- Asset Surveillance 2.0, which analyzes financial statements, tracks property inspection results and records rent roll data.
- The Investor Reporting Information System (IRIS), a CMBS deal-level database and advance tracking application that stores deal information, indicators and parameters for the investor reporting and surveillance groups. The advance module stores advance parameters, tracks loan-level advances (such as principal and interest and escrows) and calculates advance interest where applicable.
- The Reporting Utility Deal Interface (RUDI), an investor reporting tool that allows for loan-level reporting by combining data from Berkadia's core servicing system with those from its data warehouse.
- Investor Query, a website that provides investors, rating agencies and other interested parties with reports, documents, data and general information pertaining to Berkadia's CMBS transactions.
- LoanView, a mobile-friendly borrower website that provides access to loan-level information, related documents and electronic billing. LoanView was recently updated to allow borrowers to upload financial statements and other documents, as well as set up automatic payments on days within their respective contractual grace periods.
- CertInView, a proprietary commercial insurance risk-mitigation application that monitors investor requirements, exposures and compliance at the transaction, property and policy levels.

Berkadia's servicing systems are integrated via a nightly process that disseminates data from McCracken Strategy into SQL (structured query language) server databases. These databases support CRE Finance Council (CREFC) investor reporting, SmartView, LoanView and Investor Query. Berkadia's reporting platform is automated through IRIS and Strategy. Static daily and monthly reports are run automatically on a scheduled basis. Custom queries, created and run through SmartView, track and monitor servicing information on an as-needed basis.

Strategy is internally supported by Berkadia's IT servicing support resources and the ASP, McCracken. Berkadia's servicing support department handles security access requests (user administration) and other application support. McCracken provides application management support as needed.

Berkadia uses McCracken Strategy release 17.6 as its primary servicing application; while Fitch notes that Berkadia has been using the same version of the application since 2015 while other rated servicers have moved to newer releases, the company is using newer features of the system, such as migrating loan covenant requirements to McCracken's Process Manager, to improve tracking.

Recent technology initiatives have included updating the Mega Work Flow application for better accuracy and realtime tracking of tasks, developing a financial statement analysis tool with RPA functionality to reduce time to spread statements and updating the borrower website to allow submission of financial statements, reserve requests and insurance policies. Berkadia has also enhanced its proprietary market analysis application to include a resiliency analysis in response to the coronavirus pandemic; this analysis focuses, by market, on employment, credit scores, multifamily valuations that include rent growth and new supply and multifamily loan performance.

Berkadia continues to focus on building a single cloud-based database across the company to improve processing times and create a single repository for data. The database is intended to form the foundation for other applications, such as the proprietary interactive market analysis, Mega Work Flow and IRIS applications.

Berkadia's IT staff consists of 356 employees. The Hyderabad staff is an extension of the U.S. IT workforce, with responsibilities across all IT areas that include infrastructure, system development and support, customer support, program management and IT management.

### Disaster Recovery/Business Continuity

Berkadia maintains disaster recovery and business continuity plans that are managed in-house, with all critical functions and applications tested annually. The company maintains its primary data center at a tier 3 facility in Valley Forge, PA. Berkadia has a server cage within the facility managed by Berkadia personnel. Berkadia also maintains a hot site at SunGard in Philadelphia, approximately 18 miles from the operations center in Ambler, where critical servers are backed up and reproduced in realtime. The replication of critical data in realtime should lead to less than 15 minutes of lost data in the event of a disaster.

Berkadia conducts an annual business impact analysis in which core systems and processes are identified. Systems identified as critical have redundant backup capability and are able to be recovered within 24 hours, the same timeframe for processes deemed critical to operations. These departments are assigned seats at co-location facilities and are tested at the facility annually to ensure all primary and secondary work can be performed at SunGard. Processes not considered critical are prioritized according to work significance. In addition, all employees can work remotely as needed via a VPN (virtual private network) connection that is tested during semiannual business continuity tests.

The operation center in Hyderabad is equipped with a diesel-powered backup generator, as is its hot site in Bangalore, India, approximately 354 miles from the operations center. The Bangalore site maintains dedicated equipment and 94 dedicated seats for each shift (day, night and split shifts), including eight laptop stations. The hot site provides for a backup data circuit and fully equipped business continuity seats that include phone, PC, fax and copying capabilities. Berkadia also has first access to an apartment complex onsite to house its employees in the event of a disaster.

Disaster recovery is tested annually; testing occurred most recently in February 2020 for both the U.S. and Hyderabad operations and was considered successful.

### Internal Control Environment

Berkadia has a strong, comprehensive control environment that incorporates its technology platform and multiple layers of secondary reviews and quality checks, including sampling work performed for accuracy, internal audits and external audits performed by GSEs, life companies, banks and master servicers. The control environment includes dashboard and workflow technology to track employee output and quality; managerial supervision and work review; monthly and quarterly quality control sampling by the risk, control and compliance group; an annual risk assessment created in conjunction with the annual audit plan; and training aimed at reducing operational breakdowns. Additionally, the company is subject to third-party external audits, including Regulation AB (Reg AB), Uniform Single Attestation Program (USAP), SOC1 and SOC2 audits.

### Policies and Procedures

Berkadia's risk, control and compliance group, which reports to the CFO and also contains a separate internal audit group, monitors and reviews servicing policies and procedures as necessary. Policies and procedures are formally reviewed by management annually and, when a policy/procedure is updated, the respective manager/supervisor sends the updated document(s) to the risk, control and compliance group. The policies, procedures and related forms and templates are centralized on the company's intranet, allowing accessibility to all employees.

Fitch reviewed several of Berkadia's policies and procedures and found them to be detailed, providing step-by-step instructions on how to perform specific servicing functions and associated tasks. The policies and procedures manual compares favorably with those of other highly rated servicers and is updated on an as-needed basis. The most recent changes to the manual covered privacy policies in response to recent regulatory changes.

Berkadia successfully implemented its global business continuity plan worldwide in March 2020 as a result of the coronavirus pandemic. All domestic and offshore employees transitioned to remote working with no disruptions, reflecting the company's detailed and tested plan. The company boarded nearly 1,500 loans between March 13 and May 15, 2020. Berkadia expects the mandate to remain in place as long as necessary.

Berkadia maintains a comprehensive reporting process to manage output from its servicing operations, using data validation reports, exception reporting and dashboards.

## Controls and Compliance

Berkadia's day-to-day controls are incorporated into its policies and procedures manual and involve process-driven reviews facilitated through its technology platform, tickler systems, exception reporting, workflow processes and dashboard management. Servicing managers run reports against SmartView to identify process exceptions. Some of the reports run daily include delinquency, maturity, suspense, outstanding financial statement and escrow shortage exception reports. Berkadia also runs data validation reports from SmartView to ensure servicing data is properly captured.

The company also performs quality control checks through random sampling to determine if processes and procedures are performed as expected. Subject matter experts (experienced employees who are not managers) sample generally 5%–8% of the work volume processed in a given month. Results are used by managers as part of the employee performance development process. The risk, control and compliance group also performs monthly cash control testing of cash disbursements. The risk, control and compliance group has 10 members, four of whom are stationed at the Hyderabad office.

Berkadia's transformation group functions as a secondary level of review, aggregating data from Mega Work Flow to measure productivity, quality control and process deviations or outliers on a monthly basis. The transformation group generates dashboards to track productivity, quality and spare capacity among employees. These dashboards are generated from data captured in Mega Work Flow. Dashboards are reviewed monthly with operational managers and senior servicing managers.

## Internal Audit

Berkadia has a dedicated internal audit team comprising two full-time auditors who report directly to the company's audit committee and administratively to the head of risk controls and compliance. The internal audit group performs operational audits on an annual rotation based on an annual risk assessment. Each functional area is risk-rated based on qualitative and quantitative factors.

Each year, different servicing functions are selected for auditing, with repeat audits for some functions depending on the degree of risk. The annual audit plan is submitted to and approved by the company's audit committee comprising executive management. While internal audits are performed on a 24-month rotation, high-risk areas are subject to more frequent audits.

Fitch reviewed a copy of the 2020 risk assessment, which covered the methodology and risk assessments for technology, corporate, mortgage banking, servicing and investment sales. The servicing risk assessment was robust in scope and covered: bank administration, cash movement and cash-managed loans, servicing advances, escrows, financial statements and rent rolls, inspections and reserves, investor reporting, payoffs, UCCs, property inspections, reserves, taxes and insurance, the India platform, life company servicing, customer service, portfolio management, borrower requests, managing data and new loan boarding.

The internal audit group performed an audit on servicing accounting, cash movement and wires in 2019. Fitch reviewed a copy of the audit, which sampled cash movement transactions and domestic wire transactions and resulted in satisfactory outcomes with minimal findings. The minor findings were retested by internal audit in the next quarter, ultimately confirming that all findings were remediated. In 2018, internal audit performed an audit on servicing insurance and reserves. The insurance audit covered insurance policies, insurance expiration date tracking, force-placed insurance procedures/correspondence and the loss claims process. The reserves audit covered reserve onboarding and the monitoring of reserves and reserve disbursements. Both the insurance and reserves audits resulted in satisfactory outcomes with minimal findings.

## External Audit

Berkadia is subject to annual Reg AB and USAP audits on its portfolio as a primary and master servicer. Fitch reviewed the annual Reg AB and USAP reports issued by Grant Thornton on Feb. 14, 2020 without any findings. USAP and Reg AB testing is global and incorporates both the U.S. and India platforms.

Berkadia also states that it is subject to numerous reviews and audits throughout the year from its clients, including the GSEs, life companies and banks. Additionally, master servicers send

Berkadia's servicing compliance group reviews various parts of the servicing platform on a rotating basis. The group is leveraged to develop senior staff into middle managers. One middle manager with 28 years of experience leads the group and has two direct reports, along with the intention of rotating more staff into these roles.

Fitch notes Berkadia's robust annual risk assessment on all business segments to prioritize and develop the audit plan as a strength.

auditors to perform subservicer audits. Public accountants perform the annual SOC1 and SOC2 audits. The SOC1 report is an audit of the entire servicing platform relevant to internal controls over financial reporting and the related technology. The SOC2 report details the control environment with respect to the company's internal controls involving security, availability, processing integrity, confidentiality and privacy.

## Primary Servicing

As of March 31, 2020, Berkadia's primary servicing portfolio consisted of 18,748 loans totaling \$285.1 billion, including 3,200 CMBS loans totaling \$48.0 billion. Berkadia continues to grow its CMBS primary servicing portfolio (with an external master) driven by Freddie Mac K-series deals; the portfolio is up 20% by loan count since 2018.

Berkadia entered the SFR market in 2018, adding seven Freddie Mac SFR transactions collateralized by 5,675 homes with an outstanding balance of \$643 million. The company also recently began interim servicing for SFR loans pre-securitization and was recently named primary and master servicer on two SFR transactions collateralized by 216 loans on 4,774 properties totaling \$578 million (these transactions were boarded after Fitch's review period and are not included in the portfolio statistics).

Full servicing for SFR loans includes taxes, homeowners association (HOA) fees, insurance, escrow, reporting, financial statement analytics, watchlist management inspections, billing and payment processing, customer service and asset management. The same technology for primary servicing assignments is utilized for SFR; Freddie Mac's document management and property reporting systems are used for reporting requirements on Freddie Mac loans.

## Primary Servicing Portfolio Overview

	3/31/20	% Change	12/31/19	% Change	12/31/18
<b>CMBS</b>					
No. of Transactions – Primary Servicer	514	2	502	15	436
UPB – Primary Servicing (\$ Mil.)	48,022.0	1	47,762.7	11	42,846.2
No. of Loans – Primary Servicing	3,200	(1)	3,228	(1)	3,250
<b>Non-CMBS</b>					
UPB (\$ Mil.)	236,684.6	2	231,240.3	20	192,400.9
No. of Loans	15,504	1	15,284	4	14,700

Note: March 31, 2020 primary servicing numbers include 3,466 loans that are limited subservicing.  
UPB – Unpaid principal balance.  
Source: Berkadia.

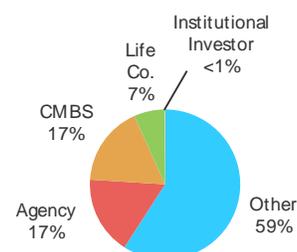
## New Loan Setup

For loans originated by Berkadia, a report is generated identifying loans that have closed, and loan packages are reviewed upon receipt. Prior to boarding a loan, missing documents are tracked in the new loan boarding database, and outstanding documents are tracked via a tickler.

For externally originated loans, the new loan boarding team is notified regarding upcoming transfers or acquisitions, and prior servicer data files are forwarded to new loan boarding for scrubbing, formatting and electronic boarding. Loan document packages are forwarded directly to the workflow management team for imaging. Loanboarding will upload all loans to a test environment to ensure data validity. After passing an edit check in a test environment, loans are loaded into the production environment, with missing information requested from the originating/transferring party. Exception reports are generated from SmartView to track missing documents.

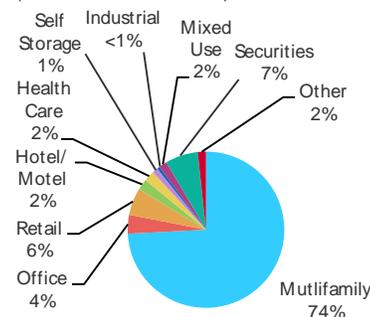
Loans originated by Berkadia are generally boarded within 10 days of receipt of the complete loan package or, in the case of transferred loans, within five days of closing the transaction. Monthly reports are prepared to measure the time taken to obtain loan packages after closing and the time taken to board loans once packages are received. All loans boarded into the servicing system are subject to edit checks and a quality control sampling.

## Primary Servicing Product Type (As of March 31, 2020)



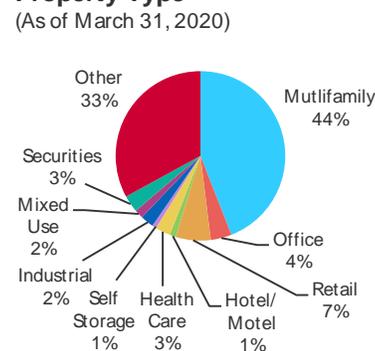
Note: Percentages based on number of loans.  
Source: Berkadia.

## CMBS Servicing Property Type (As of March 31, 2020)



Source: Berkadia.

## Non-CMBS Servicing Property Type (As of March 31, 2020)



Source: Berkadia.

Berkadia's risk, control and compliance department performs monthly new loan setup testing.

**Accounting/Cash Management**

Loan payments are expected to be posted within 24 hours of receipt by the payment processing team. Payments posted are batched in Strategy and reconciled by a bank reconciliations team to daily data transmissions received from banks. Reconciliations of accepted and rejected payments are completed daily to ensure rejected items were managed appropriately and funds were applied properly. Payment clearing, disbursement clearing and selected critical accounts are reconciled each day. All other reconciliations are completed within 30 days of statement cutoff.

Reconciliations are assigned and completed through workflow in the EDM system. Reconciliations are reviewed and approved with a signature time and date stamp into the workflow by an approver who is separate from the preparer. All critical reconciliations and a 10% sample of the remaining population move into a second approval queue for review and approval by a manager who is separate from the preparer and first approver.

Berkadia currently services 374 active cash-managed loans. Cash management and loan agreements are reviewed by a manager or senior analyst in the dedicated cash-managed loans group. Each cash-managed loan is assigned to an analyst and placed on his or her calendar by distribution date, with ticklers established for each upcoming distribution date. Berkadia uses electronic waterfall templates that are approved prior to the disbursement of funds. All fund disbursements require dual signatures.

Lockbox accounts are opened pursuant to the cash management agreement or cash management section of the loan agreement as hard or soft lockbox accounts. For springing lockboxes, trigger events are communicated to the cash-managed loans group, and loan documents are reviewed for trigger events and the appropriate cash management procedures. In the event a lockbox is triggered, the client relations manager notifies the borrower of the trigger event and the new procedures for payment.

**Investor Reporting**

The investor reporting group generates CREFC investor reporting packages (IRPs) via IRIS, which aggregates loan data from Strategy and SmartView. IRIS also allows analysts to upload data from special servicers and subservicers. RUDI performs automatic data checks, including reconciliations between the calculated scheduled ending balance and the balance maintained in Strategy. An investor reporting analyst reviews and researches any differences or exceptions noted by the system and makes adjustments as needed.

In addition to the data checks performed by IRIS, Berkadia has a dedicated group within investor reporting that reviews each transaction’s CREFC IRP, either on or prior to the reporting date. After the reporting date but before the distribution date, the research team within the investor reporting group will review the transaction report for discrepancies before posting the IRP to the investor query website.

Investors can view the most current loan and property details on Berkadia’s Internet portal, Investor Query. The site includes all CREFC reports and allows users to view operating statement analysis reports, net operating income worksheets, borrower financial statements and rent rolls.

**Escrow Administration**

Berkadia performs escrow analyses annually for escrowed loans, typically when annual taxes have been paid. An escrow analysis report is prepared monthly to determine the workload for a particular month, with the final analysis run at the end of the month. Taxes for non-escrowed loans are tracked by a third-party vendor that provides reports for uploading into Strategy; these reports are also verified for accuracy.

For insurance, payments are verified on non-escrowed loans upon analysis of the annual renewal. A paid receipt confirmation is requested from the agent on an annual basis. In addition, Berkadia verifies that the lender is named as mortgagee/loss payee/additional insured so that if a notice of cancellation for nonpayment is issued, the company will receive a copy and the notice can be addressed accordingly. Berkadia monitors due dates for both escrow and non-escrow insurance coverage with reports generated from Strategy. To track insurance, Berkadia uses CertInView, its proprietary insurance monitoring tool that tracks insurance at the portfolio, loan, property and policy levels.

Berkadia’s risk, control and compliance department performs monthly cash control testing.

**% Payment Collections Via:**

ACH	60
Checks	23
Wires	17

ACH - Automated clearing house.  
Source: Berkadia.

During the past 12 months, Berkadia has had one instance of a report restatement.

**% Portfolio Escrowed for:**

Taxes	53
Insurance	44

Source: Berkadia.

Berkadia incurred nine tax penalties with a total fee of approximately \$23,000 in 2019, representing a small fraction of the total tax payments processed. The company did not have any lapsed UCCs within the past 36 months.

Reserve requests are imaged in EDM and uploaded onto a SharePoint site. The requests are assigned to a processor responsible for reviewing and processing the request. Once the review is completed, the analyst will submit the request for managerial approval.

UCC filings are loaded into Strategy for tracking purposes. In conjunction with their respective vendors, the UCC groups in Ambler and Hyderabad will continue, terminate, amend or assign the appropriate filings. Berkadia prepares continuations within six months of expiration. Reports are used to monitor UCC due dates and compliance and are managed through monthly dashboards. In addition, quality control testing is performed on the work to ensure accuracy and performance are measured through the dashboards.

**Asset Administration**

The client relations group is responsible for monitoring delinquent payments through daily reports generated from SmartView. At the end of the grace period, the client relations manager makes at least three attempts within 30 days to contact the borrower. All attempts are noted in Strategy. Delinquency letters are then generated, and when the loan is two payments delinquent, or in accordance with the loan documents, a default letter is generated and sent to the borrower. The loan is then coded as a default in Strategy.

The loan administration group is responsible for the collection, analysis and reporting of operating statements and rent rolls. The client relations group is leveraged for contacting borrowers who have not submitted financial statements. Berkadia typically takes 30 days to spread financial statements from the date of collection. Servicing agreements and PSA requirements are tracked in asset surveillance, and performance is monitored through weekly exception reporting. For rent rolls, Berkadia’s dedicated rent roll team uploads rent rolls to store electronically and performs a full rollover analysis annually.

Berkadia’s surveillance department utilizes the CREFC guidelines for watchlist reporting. Internal guidelines focus greater attention on loans with debt service coverage ratios below 1.0x, upcoming maturities, borrower-expressed hardships and other significant or large loans in the pool. The surveillance group utilizes RUDI for watchlist reporting. A surveillance analyst reviews watchlist loans every month.

Property inspections are performed in accordance with servicing agreements stored in Investor Matrix. Approximately 97% of site inspections are outsourced, and the company’s property inspections department reviews all of them for quality and completeness. Berkadia issues follow-up letters for deferred maintenance items, which are tracked until cleared in Strategy’s asset surveillance module. Unresolved deferred maintenance items are reported to investors.

Berkadia contacts borrowers at 12 months and again at six months prior to maturity in an attempt to understand their intentions and whether they plan to refinance.

**Customer Service**

Client relations managers are the main points of contact for all primary and master/primary borrower inquiries, which can be made by phone, e-mail or online chat via Berkadia’s customer website, LoanView. The site provides 24-hour online access to loan-level information, transaction histories, borrower notices, monthly billing statements and related documents so that borrowers can make payments, study balances, review reports and export information to Excel. Over 85% of Berkadia’s borrowers use LoanView.

Borrower and payoff requests are received by a client relations manager who then reviews the loan documents and the PSA to determine permissibility. The required documentation is then processed by the appropriate business unit. The client relations manager will monitor progress via SmartView and Mega Work Flow and correspond with borrowers as appropriate.

The payoff processing unit calculates the payoff amount, which is verified and approved by two approvers within the payoff group. Upon final approval, the client relations manager is notified via e-mail that the quote is available within the imaging system for distribution to the borrower. Requests for payoffs are turned around within 48 hours.

All property inspections, which are generally performed by a third-party contractor, undergo a quality control review by the company’s property inspections department.

## Master Servicing

As of March 31, 2020, Berkadia was the named master servicer on 58 CMBS transactions encompassing 585 loans totaling \$4.6 billion, down 47% (by loan count) from YE18. While the master servicing portfolio continues to runoff, Berkadia selectively bids on new transactions with the goal of increasing escrow balances that are more profitable as interest rates increase. Fitch notes that the CMBS master servicing market is highly competitive and concentrated among four active master servicers. Fitch also notes that Berkadia's recent assignment on two SFR transactions partially mitigates the runoff in the master servicing portfolio. Berkadia also leverages its master servicing infrastructure to support clients requiring subservicer oversight, data aggregation and investor reporting.

### Master Servicing Portfolio Overview

	3/31/20	% Change	12/31/19	% Change	12/31/18
No. of Transactions – Master Servicer	58	(6)	62	(30)	88
UPB – Master Servicing (\$ Mil.)	4,599.7	(6)	4,901.7	(31)	7,149.9
No. of Loans – Master Servicing	585	(8)	638	(42)	1,106
No. of Primary Servicers Overseen	6	(25)	8	(27)	11

UPB – Unpaid principal balance.  
Source: Berkadia.

### Primary Servicer Oversight

A client relations manager is assigned as the primary contact for subservicers and is responsible for monitoring subservicer financial statement collection and analysis, investor reporting remittance timeliness and accuracy and compliance with USAP and Reg AB reporting requirements. The client relations manager also performs monthly reporting on the subservicer portfolio and shares the results with the risk, control and compliance group.

Financial reporting from subservicers is entered into Strategy and analyzed automatically. The remitting and reporting practices of each subservicer are monitored and reviewed on a monthly basis. Receipt of funds and reports is matched against an electronic calendar to monitor compliance. All remittances, reporting and bank reconciliations are reviewed based on the individual contract requirements. On a quarterly basis, financial statement collections and analysis are monitored to ensure compliance with all PSAs, and property inspection data are reviewed. In addition, each subserviced loan is fully loaded into Strategy and updated monthly to ensure the servicing record is up-to-date and intact.

Berkadia's internal audit group performs onsite audits and desktop audits of subservicers. Of Berkadia's six subservicers, two received desktop audits in 2020 along with onsite audits in 2018, while four were subject to desktop audits in 2016 that were completed in 2017. No audits of subservicers were initiated in 2017. There are currently four subservicers who have not received a desktop or onsite audit within the last three years; Berkadia states that no reviews were performed since few loans were being subserviced, while some of the loans were defeased.

### Advancing

Servicing advances are tracked in Strategy and in a dedicated database that tracks the advances at a loan level. Principal and interest advances are also tracked in a separate database by the investor reporting group. These systems are compared monthly to ensure information is current and accurate.

As master servicer, Berkadia's recoverability decisions consider the special servicer's business plan and resolution strategy. Local market conditions such as occupancy and rental rates, inventory, competition and general economic conditions within the area are also considered. The most recent appraisal is reviewed for reasonableness and possibly a broker's opinion of value. All of this information is summarized in an advancing memo, which is prepared and updated monthly for each loan with an outstanding advance. Discussions are conducted with the special servicer to monitor the disposition process and expenses incurred to date. Potential future property protection expenditures are considered when determining the overall advance exposure amount and total advances outstanding for the transaction.

Berkadia's master servicing portfolio is heavily concentrated in legacy CMBS deals that account for 86% of the portfolio by deal count, representing significant upcoming maturities. Berkadia is the master servicer for four Freddie Mac K-series transactions.

As of May 30, 2020, Berkadia had received 558 debt relief inquiries and 348 formal requests for relief from CMBS borrowers relating to the coronavirus pandemic.

Berkadia performs less onsite primary servicer audits than other highly rated master servicers. Fitch believes annual primary servicer reviews, inclusive of regular onsite audits, are a best practice of highly rated servicers. Berkadia last performed onsite audits of the two largest subservicers (accounting for 71% of all subserviced balances as of March 31, 2020) in 2018 and subsequently performed desktop audits in 2020. No subservicer audits were performed in 2017. Berkadia has the smallest subservicer portfolio among the most active master servicers.

Berkadia's advance committee comprises the executive vice president of Berkadia; the senior vice president of asset management; the vice presidents of investor reporting and financial analysis; and analysts from the risk, financial analysis and CMBS asset management teams.

The CMBS portfolio manager organizes a monthly advance meeting for loans with the greatest exposures. All loans with advances are presented to the advance committee a minimum of once every 90 days, and volatile loans are discussed monthly. A determination regarding whether to continue advancing, stop future advancing or stop future advancing and recover a portion or all of the current advances from the trust cashflow is made. When a determination is made to cease advancing on a loan, it is then classified as nonrecoverable.

ALL FITCH CREDIT RATINGS ARE SUBJECT TO CERTAIN LIMITATIONS AND DISCLAIMERS. PLEASE READ THESE LIMITATIONS AND DISCLAIMERS BY FOLLOWING THIS LINK: [HTTPS://FITCHRATINGS.COM/UNDERSTANDINGCREDITRATINGS](https://fitchratings.com/understandingcreditratings). IN ADDITION, RATING DEFINITIONS AND THE TERMS OF USE OF SUCH RATINGS ARE AVAILABLE ON THE AGENCY'S PUBLIC WEB SITE AT [WWW.FITCHRATINGS.COM](http://WWW.FITCHRATINGS.COM). PUBLISHED RATINGS, CRITERIA, AND METHODOLOGIES ARE AVAILABLE FROM THIS SITE AT ALL TIMES. FITCH'S CODE OF CONDUCT, CONFIDENTIALITY, CONFLICTS OF INTEREST, AFFILIATE FIREWALL, COMPLIANCE, AND OTHER RELEVANT POLICIES AND PROCEDURES ARE ALSO AVAILABLE FROM THE CODE OF CONDUCT SECTION OF THIS SITE. FITCH MAY HAVE PROVIDED ANOTHER PERMISSIBLE SERVICE TO THE RATED ENTITY OR ITS RELATED THIRD PARTIES. DETAILS OF THIS SERVICE FOR RATINGS FOR WHICH THE LEAD ANALYST IS BASED IN AN EU-REGISTERED ENTITY CAN BE FOUND ON THE ENTITY SUMMARY PAGE FOR THIS ISSUER ON THE FITCH WEBSITE.

Copyright © 2020 by Fitch Ratings, Inc., Fitch Ratings Ltd. and its subsidiaries. 33 Whitehall Street, NY, NY 10004. Telephone: 1-800-753-4824, (212) 908-0500. Fax: (212) 480-4435. Reproduction or retransmission in whole or in part is prohibited except by permission. All rights reserved. In issuing and maintaining its ratings and in making other reports (including forecast information), Fitch relies on factual information it receives from issuers and underwriters and from other sources Fitch believes to be credible. Fitch conducts a reasonable investigation of the factual information relied upon by it in accordance with its ratings methodology, and obtains reasonable verification of that information from independent sources, to the extent such sources are available for a given security or in a given jurisdiction. The manner of Fitch's factual investigation and the scope of the third-party verification it obtains will vary depending on the nature of the rated security and its issuer, the requirements and practices in the jurisdiction in which the rated security is offered and sold and/or the issuer is located, the availability and nature of relevant public information, access to the management of the issuer and its advisers, the availability of pre-existing third-party verifications such as audit reports, agreed-upon procedures letters, appraisals, actuarial reports, engineering reports, legal opinions and other reports provided by third parties, the availability of independent and competent third-party verification sources with respect to the particular security or in the particular jurisdiction of the issuer, and a variety of other factors. Users of Fitch's ratings and reports should understand that neither an enhanced factual investigation nor any third-party verification can ensure that all of the information Fitch relies on in connection with a rating or a report will be accurate and complete. Ultimately, the issuer and its advisers are responsible for the accuracy of the information they provide to Fitch and to the market in offering documents and other reports. In issuing its ratings and its reports, Fitch must rely on the work of experts, including independent auditors with respect to financial statements and attorneys with respect to legal and tax matters. Further, ratings and forecasts of financial and other information are inherently forward-looking and embody assumptions and predictions about future events that by their nature cannot be verified as facts. As a result, despite any verification of current facts, ratings and forecasts can be affected by future events or conditions that were not anticipated at the time a rating or forecast was issued or affirmed.

The information in this report is provided "as is" without any representation or warranty of any kind, and Fitch does not represent or warrant that the report or any of its contents will meet any of the requirements of a recipient of the report. A Fitch rating is an opinion as to the creditworthiness of a security. This opinion and reports made by Fitch are based on established criteria and methodologies that Fitch is continuously evaluating and updating. Therefore, ratings and reports are the collective work product of Fitch and no individual, or group of individuals, is solely responsible for a rating or a report. The rating does not address the risk of loss due to risks other than credit risk, unless such risk is specifically mentioned. Fitch is not engaged in the offer or sale of any security. All Fitch reports have shared authorship. Individuals identified in a Fitch report were involved in, but are not solely responsible for, the opinions stated therein. The individuals are named for contact purposes only. A report providing a Fitch rating is neither a prospectus nor a substitute for the information assembled, verified and presented to investors by the issuer and its agents in connection with the sale of the securities. Ratings may be changed or withdrawn at any time for any reason in the sole discretion of Fitch. Fitch does not provide investment advice of any sort. Ratings are not a recommendation to buy, sell, or hold any security. Ratings do not comment on the adequacy of market price, the suitability of any security for a particular investor, or the tax-exempt nature or taxability of payments made in respect to any security. Fitch receives fees from issuers, insurers, guarantors, other obligors, and underwriters for rating securities. Such fees generally vary from US\$1,000 to US\$750,000 (or the applicable currency equivalent) per issue. In certain cases, Fitch will rate all or a number of issues issued by a particular issuer, or insured or guaranteed by a particular insurer or guarantor, for a single annual fee. Such fees are expected to vary from US\$10,000 to US\$1,500,000 (or the applicable currency equivalent). The assignment, publication, or dissemination of a rating by Fitch shall not constitute a consent by Fitch to use its name as an expert in connection with any registration statement filed under the United States securities laws, the Financial Services and Markets Act of 2000 of the United Kingdom, or the securities laws of any particular jurisdiction. Due to the relative efficiency of electronic publishing and distribution, Fitch research may be available to electronic subscribers up to three days earlier than to print subscribers.

For Australia, New Zealand, Taiwan and South Korea only: Fitch Australia Pty Ltd holds an Australian financial services license (AFS license no. 337123) which authorizes it to provide credit ratings to wholesale clients only. Credit ratings information published by Fitch is not intended to be used by persons who are retail clients within the meaning of the Corporations Act 2001.