FitchRatings

Structured Finance
Commercial Mortgage Servicer
North America

PNC Bank, National Association

Ratings

Commercial Master Servicer[a]	CMS2+
Commercial Primary Servicer[b]	CPS2+
Commercial Special Servicer	CSS2+

Last Rating Action: Upgraded October 2022.
[a]Rating upgraded from 'CMS2' on Oct. 31, 2022.
[b]Rating upgraded from 'CPS2' on Oct. 31, 2022.

Applicable Criteria

Criteria for Rating Loan Servicers (February 2020)

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

Related Research

Fitch Ratings Upgrades PNC Bank's Commercial Primary & Master Servicer Ratings (October 2022)

Fitch Affirms PNC Financial Services Group, Inc. at 'A+'; Outlook Stable (October 2022)

PNC Bank, National Association's commercial real estate (CRE) servicing platform does business as Midland Loan Services (Midland, or the company) and is the commercial mortgage servicing division of PNC Bank, N.A. (PNC). Midland maintains highly diversified primary, master and special servicing portfolios totaling $627.6 billion (up from $557.9 billion the prior year), of which $305.7 billion comprises nonsecuritized loans on behalf of institutional investors (50.6% by loan count) and agency (26%) and life company (23%) clients, among others. The company's securitized servicing portfolio of master servicing for 463 transactions represents more than $310.2 billion of securitized CMBS, agency and commercial single-family rental (SFR) transactions as of June 2022.

The majority of Midland's primary servicing is nonsecuritized and includes servicing for institutional investors, specialty finance companies and PNC, for which Midland provides servicing on more than 5,300 loans totaling approximately $133.0 billion through its shared services program. The company also provides servicing technology services through its *Enterprise!*[SM] loan management (*Enterprise!*) system to approximately 19 clients with a cumulative balance of $1.5 trillion and more than 91,000 loans as of June 2022, excluding its own portfolio.

As of June 2022, Midland was named special servicer for 382 securitized transactions totaling $227.0 billion comprised of multiborrower CMBS 2.0 (40% by count), alternative ABS (26%), SFR (19%), single asset-single borrower (12%) and CRE CDOs (1%). The company added 79 new securitization assignments during the 12 months ended in June 2022, including seven multiborrower CMBS, 22 alternative ABS, 33 SFR, 13 single asset-single borrower (SASB) and three CRE-collateralized loan obligation (CLO) transactions. Since Fitch Ratings' prior review Midland has resolved 208 loans totaling $4.2 billion, resulting in a more than 50% decline by balance and loan count of active specially serviced loans from YE20.

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 scale of 1-to-5, 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.

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Key Rating Drivers

Company/Management: While predominately a third-party servicer, Midland services $72 billion of multifamily loans for PNC and approximately 50% of PNC real estate's CRE debt portfolio as of June 2022. PNC provides capital to support Midland's investment in commercial and multifamily mortgage servicing rights, funding for advances and significant infrastructure and support services, including legal, technology, human resources, finance, compliance and risk management. PNC has dedicated capital and technology resources to a multiyear project to convert Midland's infrastructure to support more dynamic enhancements and modernize *Enterprise!*.

Staffing and Training: As of June 2022, Midland maintained a total servicing staff across primary, master and special servicing of 514 employees, up 7% from the prior year, with primary/master servicing staff level employees seeing the largest increase in headcount. As of the same date, Midland was actively recruiting 22 primary/master servicing employees to address turnover and portfolio growth. Aggregate turnover among master/primary servicing increased to 20% for the 12 months ended in June 2022, from 16% the prior year, due to 90 employee separations, with all but 17 located in Overland Park. Excluding internal transfers, aggregate turnover is 16%, consistent with the prior year. Turnover among senior management declined to 23% as of the same date, from 30% as of Fitch's last review, while middle management turnover increased to 23% from 15%. There was no material decline in the management team's average tenure or experience irrespective of turnover.

Turnover among special servicing employees increased to 38% as of June 2022, from 22% the prior year. While there was no turnover among the special servicing senior management team, turnover among asset managers increased to 24%, from 10% as of the prior review, due to five separations. The ratio of specially serviced assets to asset managers declined to 10:1 from 19:1 the prior year, indicating some excess capacity among asset managers. The ratio of assets to asset managers was previously high compared to similar Fitch-rated special servicers but is now lower. Employee training hours compare favorably with those of highly rated servicers exceeding 50 hours.

Technology: Midland utilizes *Enterprise!* version 2022.1.32 as its primary servicing system, as well as several propriety support applications. For special servicing Midland has developed a proprietary asset management tool known as AM Insight™, which is a module of *Enterprise!*.

The company is in year three of a multiyear initiative to modernize its technology platform, which historically has had less enhancements and use of automation than peers. Recent technology enhancements include full implementation of a new *Enterprise!* insurance module, implementation of additional API (application program interface) tools, incremental enhancements to ancillary applications and the initial release of a new Borrower Insight® Portal in 3Q22. The new portal contains significant improvements in functionality and lender contact options, which compare favorably to other highly rated Fitch servicers. No enhancements have been made or are currently planned to technology-supporting special servicing functions.

Procedures and Controls: Midland maintains high-level servicing policies, supplemented by detailed desktop procedures that are updated annually. The internal control infrastructure consists of a dedicated risk, compliance and quality assurance group (RCQ) that is responsible for maintaining over 200 comprehensive internal servicing controls, annual internal audits from PNC and external audits.

Fitch noted positively that the number of open internal control deficiencies reported declined to six open issues, down from 10 issues as of 1Q21 and 18 issues as of 1Q20, reflecting Midland's ongoing efforts to remediate findings. Additionally, Midland's 2021 Regulation AB (RegAB) audit contained no material noncompliance findings, representing a demonstrated history of clean audits for past two years. Fitch found that Midland's quality control (QC) framework, inclusive of dedicated and independent compliance testing, clearly identified controls and robust monitoring, along with reporting that is consistent with best practices.

Financial Condition: Fitch maintains Long-Term (LT) and Short-Term (ST) Issuer Default Ratings (IDRs) for PNC Financial Services Group Inc. and its primary operating subsidiary, PNC Bank, N.A., of 'A+'/'F1' with a Stable Rating Outlook.

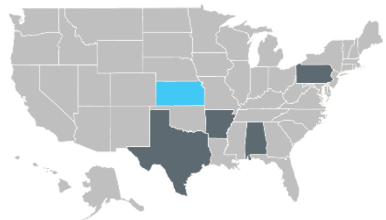
Loan Administration: Midland does not maintain separate primary and master servicing teams, as servicing functions are performed by distinct servicing operations and servicing solutions groups. The company leverages technology to integrate and monitor compliance with loan servicing functions and workflow processes. Midland utilizes more third-party vendor support than other Fitch-rated primary/master servicers to provide additional capacity.

Company Experience Since:

CRE Servicing	1991
CMBS Servicing	1992
Overseeing Primary Servicers	1992
CRE Loan Workout	1991
CMBS Workout	1992

Source: Midland Loan Services.

Office Locations



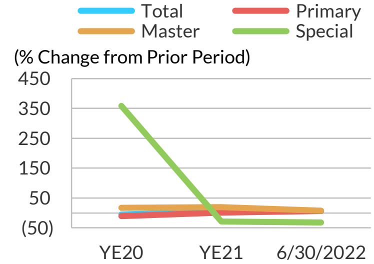
Primary Office: Overland Park, KS.

Operational Trends

Business Plan	■	Stable business plan with steady flow of new business offsetting portfolio declines.
Servicing Portfolio	▼	Less than 10% year-over-year growth by loan count or runoff in the portfolio.
Financial Condition	■	Stable Rating Outlook.
Staffing	■	Staffing changed less than 12% +/−.
Technology	■	Stable technology platform.
Internal Controls	■	Stable control environment; no material audit findings.
Servicing Operations	■	Stable operations; no material changes year-over-year.

Source: Fitch Ratings.

Servicing Portfolio



Note: Special servicing includes loans actively in special servicing (including REO). Total excludes special servicing.
Source: Midland Loan Services.

While the company maintains oversight and QC of outsourced functions, outsourcing includes some core functions, such as loan covenant testing, setup for cash managed loans, SFR payoff calculations, loan conversions and borrower contact for consent requests and insurance verification.

Defaulted/Nonperforming Loan Management: Midland maintains a dedicated team of special servicing asset managers and has demonstrated proficiency in working out CRE loans through multiple cycles and managing REO assets. The group utilizes a propriety asset management system built around its policies and procedures with imbedded internal controls.

A dedicated group of analysts monitors performing loans irrespective of Midland being the primary servicer and additional staff are responsible for borrower consents. The company's special servicing portfolio consists solely of third-party appointments and is largely new issue CMBS, which has historically experienced minimal defaults.

Company Overview

Servicing Portfolio Overview

($ Mil.)	6/30/22	% Change	12/31/21	% Change	12/31/20
Total Servicing					
UPB	627,647.4	6	589,550.2	5	560,276.3
No. of Loans	25,353	2	24,970	(13)	28,612
Primary Servicing					
UPB	499,599.2	6	469,124.6	1	463,143.1
No. of Loans	20,053	1	19,921	(18)	24,414
Master Servicing					
UPB	310,244.8	8	288,464.5	20	241,313.9
No. of Loans	13,145	3	12,711	10	11,519
Special Servicing — Named					
UPB	227,396.6	1	224,665.3	3	218,235.9
No. of Loans	7,557	(6)	8,072	(9)	8,912
Special Servicing — Active[a]					
UPB	4,556.5	(32)	6,674.6	(29)	9,430.6
No. of Loans	191	(34)	291	(28)	403

[a]Including REO. UPB – Unpaid principal balance.
Source: Midland Loan Services.

Midland added 20 new servicing clients during the 18 months ended in June 2022, and it continues to maintain a diverse mix of clients across multiple sectors. The company also discontinued a similar number of clients during the same period to reallocate staffing resources to growing client relationships.

Midland, the commercial mortgage servicing division of PNC Real Estate, is considered an integral part of the business servicing PNC-originated loans and generating servicing revenue from PNC's diverse service and product lines. PNC Real Estate has over 1,200 employees, inclusive of Midland, across the U.S., with approximately $72.0 billion in outstanding CRE exposure as of September 2022. PNC Real Estate funded $3.8 billion of agency originations in 2021, as well as $9.7 billion in CRE balance sheet and other originations. Other than Midland, PNC Real Estate business segments include real estate banking, agency finance and tax credit solutions.

Midland services approximately 50% of PNC's CRE debt portfolio as of June 2022 and is considered an important component in maintaining a moderate risk profile and providing a diverse revenue stream for the bank. Servicing functions performed by Midland vary from full primary servicing to payment processing, accounting and reporting with no borrower contact. The portfolio serviced on behalf of PNC comprised 369 loans totaling $4.9 billion for the CRE debt group, 1,066 loans totaling $4.3 billion for the new markets tax credit group, 270 investments totaling $620 million on behalf of the community development banking group and 1,323 loans totaling $27 billion on behalf of PNC agency finance as of June 2022.

PNC provides capital to support Midland's investment in commercial and multifamily mortgage servicing rights, funding for servicing advances and significant infrastructure and support services, including legal, technology, human resources, finance, compliance and risk management to Midland.

As of June 30, 2022, Midland's $659.5 billion CRE servicing portfolio consisted of: $311.1 billion in CMBS, $153.1 billion for institutional clients, $44.0 billion in SFR, $53.0 billion in agency, $21.3 billion in government and $76.9 billion in alternative ABS (specialty finance, whole business securitizations and construction). Included within Midland's servicing portfolio are 158 Canadian securitized loans representing $1.4 billion secured by collateral outside of the U.S. as of June 2022, along with 87 loans totaling $8.3 billion in various foreign countries.

Midland receives special servicing assignments through its relationships with investors and provides due diligence services to subordinate investors. As a third-party servicer, changes in the special servicing portfolio are driven primarily by control shifts in securitized transactions as losses are incurred or controlling class holders' preferences.

Headquartered in Overland Park, KS, Midland maintains satellite offices in:

- Little Rock, AR (technology services);
- Birmingham, AL (investor reporting, asset management, operational accounting, servicing transfers, special servicing and CMBS servicing);
- Dallas, TX (investor reporting, asset management, covenant administration, agency servicing, interim servicing, collateral surveillance, servicing transfers, reserve administration and CMBS and special servicing); and
- Pittsburgh, PA (business development, financial loan services, complex loan administration, servicing transfers, covenant administration, operational accounting and collateral surveillance).

Midland added satellite offices in Dallas, TX and Birmingham, AL to provide access to experienced servicing professionals outside of Kansas, City, MO. The company subsequently discontinued basing servicing employees in Washington D.C.

All special servicing functions are centralized in Overland Park, although the number of remote employees has increased and includes three in Birmingham and one in Dallas.

Financial Condition

On Oct. 20, 2022, Fitch affirmed The PNC Financial Services Group, Inc.'s (PNC) and its primary operating subsidiary's (PNC Bank, N.A.) LT and ST IDRs at 'A+'/'F1'. The Rating Outlook is Stable.

Key Rating Drivers

Ratings Affirmed: PNC's ratings are underpinned by solid operating performance, the successful integration of BBVA USA and its diverse and growing business profile that supports consistent results. Moreover, Fitch continues to characterize PNC's risk profile as generally superior to most large regional banks and supportive of the bank's relatively high rating.

Solid Credit Quality: Similar to peers, PNC's credit quality has remained strong in recent quarters. Fitch has a favorable view of PNC's risk profile, supported by measured growth and strong underwriting practices that have historically resulted in credit quality outperformance compared to large regional peers. Fitch expects PNC's credit costs to remain manageable in the context of earnings and capital given its loan mix and conservative stance in underwriting.

Stable Earnings: The ratings and Stable Rating Outlook incorporate Fitch's expectation that earnings will remain relatively stronger than peers, aided by revenue synergies and cost efficiencies gained from the BBVA USA transaction. The bank's 1H22 operating profit-to-risk-weighted assets (RWA) ratio of just over 1.7% generally compares well with other large regional banks. Results continue to benefit from an increasing net interest margin (NIM) under higher interest rates and PNC's diversified sources of noninterest income, such as its treasury management and asset management businesses, which have held up well through most of 2022.

Capital Managed Lower: PNC has managed capital lower such that its buffer over Fitch thresholds for its common equity tier 1 (CET1) ratio has diminished significantly. PNC's CET1 ratio has trended down by roughly 100 basis points (bps) over the past year and is now closer to the bank's LT CET1 target range of 8.5%–9.0%, as the bank engaged in share buybacks in 2022.

This more aggressive capital management approach is viewed as a credit negative but is partially offset by a reduction in merger integration risk.

Holding Company Notching: PNC's holding company Viability Rating (VR) is equalized with PNC Bank N.A.'s VRs due to strong liquidity management. PNC's common equity double leverage is below 120%, and it maintains a solid liquidity buffer at the holding company level to cover upcoming cash outflow.

Rating Sensitivities

Factors that could, individually or collectively, lead to negative rating action/downgrade:

In light of the recent capital deployment, PNC's ratings are particularly sensitive to the firm's approach to capital management. Negative pressure could be placed on PNC's ratings and/or Rating Outlook if its CET1 were to dip below 9.0% for multiple quarters without a credible plan to rebuild it. Fitch expects PNC's earnings performance to remain supportive of its rating over the long term in both level and consistency. Should Fitch observe a meaningful erosion of earnings outperformance over time, its overall rating would likely experience negative rating pressure.

Factors that could, individually or collectively, lead to positive rating action/upgrade:

With a LT IDR of ‘A+’, PNC remains one of the most highly rated banks in North America. With the successful integration of BBVA USA, Fitch recognizes that the bank's business profile has strengthened to some degree; as such, there is some potential for upward rating movement.

Over time, an upgrade would be predicated on a superior core earnings profile relative to rated peers, driven by a proving out of revenue from the BBVA transaction such that income previously generated via the bank's Blackrock stake is adequately replaced. An upgrade to PNC would also be fueled by maintenance of capital at appropriate levels while also retaining its historically conservative credit risk appetite.

Other Debt and Issuer Ratings: Key Rating Drivers

The uninsured deposit rating of PNC Bank N.A. is one notch higher than its IDR because U.S. uninsured deposits benefit from depositor preference. U.S. depositor preference gives deposit liabilities superior recovery prospects in the event of default.

PNC's LT senior unsecured debt is rated one notch below its LT IDR, reflecting anticipated below average recoveries for holding company senior creditors in a resolution scenario given the lack of a resolution debt buffer requirement and the fact that its holding company senior and qualifying junior debt buffers are expected to be sustained below 10% of RWA over time. PNC Bank N.A.’s LT senior unsecured debt is equalized with its and PNC's LT IDR. This reflects the expectation of average recoveries for senior unsecured debtholders at the bank level, driven by Fitch's view of U.S. regulators’ likely approach to early intervention and resolution alternatives under U.S. law.

PNC's and PNC Bank N.A.'s ST senior unsecured debt ratings are 'F1', in line with the respective entities' ST IDRs. PNC's holding company-issued subordinated debt is two notches below the bank's VR. In accordance with Fitch's Bank Rating Criteria, this reflects baseline notching for loss severity of two notches. PNC's holding company-issued subordinated debt does not meet the specific conditions under Fitch criteria for applying a one-notch variance from the VR.

PNC's bank-level subordinated debt is notched one level down from its VR for loss severity. In accordance with the Bank Rating Criteria, this reflects alternate notching to the base case of two notches due to Fitch's view of U.S. regulators' likely approach to early intervention and resolution alternatives under U.S. law.

PNC's preferred stock rating of 'BBB' is notched four levels down from its VR. This encompasses two notches for nonperformance and two notches for loss severity. PNC's trust preferred securities remain four notches from the VR, encompassing two notches for nonperformance and two notches for loss severity.

PNC and PNC Bank N.A. have a Government Support Rating (GSR) of 'ns', reflecting Fitch's view that the probability of governmental support for these entities is unlikely. The IDRs and VRs do not incorporate the likelihood of any support.

Employees

As of June 30, 2022, Midland maintained a total servicing staff across primary, master and special servicing of 514 employees, up 7% from the prior year, with growth mainly occurring at the primary/master servicing staff level. As of the same date, Midland was actively recruiting 22 primary/master servicing and three special servicing employees. The majority of employees are fully dedicated to servicing operations and do not support other Midland business lines or PNC.

Employee Statistics

	2022				2021			
	No. of Employees	Average Years Industry Experience	Average Years Tenure	% Turnover	No. of Employees	Average Years Industry Experience	Average Years Tenure	% Turnover
Primary/Master Servicing								
Senior Management	8	26	23	22	10	23	21	30
Middle Management	83	20	17	23	84	20	17	15
Servicing Staff	380	8	6	19	347	8	6	16
Total	**471**	—	—	**20**	**441**	—	—	**16**
Special Servicing								
Senior Management	3	20	20	0	3	19	19	40
Middle Management	8	20	14	53	7	26	20	22
Servicing Staff	32	12	5	38	31	11	4	20
Total	**43**	—	—	**38**	**41**	—	—	**22**

Source: Midland Loan Services.

Primary/Master Servicing

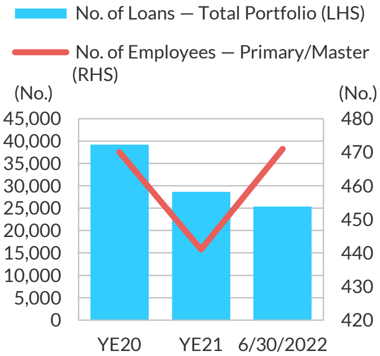
Midland does not maintain separate primary and master servicing teams given overlap in servicing functions, which are performed by distinct servicing operations and real estate servicing solutions groups. Servicing operations is a functional approach to common tasks such as investor reporting, accounting and treasury, conversions, transaction processing and payoffs, among others. The operations team is divided by product type, with specific teams responsible for borrower relationships involving shared servicing client portfolios, as well as insurance, agency, portfolio and lending clients. There are also specialized teams for complex loans, borrower services, SFR and interim servicing. The real estate solutions team includes surveillance, loan covenant administration, performing asset management and reserve administration servicing functions, as well as special servicing and balance sheet asset management.

Aggregate turnover among master/primary servicing increased to 20% for the 12 months ended in June 2022, from 16% the prior year, due to 90 employee separations, with all but 17 located in Overland Park. The majority of employee separations were voluntary (74% by count), followed by internal transfers (20%). Excluding internal transfers, aggregate turnover is 16%, consistent with the prior year.

The senior management team consists of eight employees averaging 26 years of industry experience and 23 years with Midland. The team comprises two members of executive management, three members of business development and the heads of account management, risk and compliance and loan servicing. There has been 22% turnover within the senior management team since Fitch's prior review due to two voluntary separations, one of which involved a retirement. There was no decline in the average tenure and experience of the senior management team due to the departures, which the company currently does not plan to backfill. The average tenure and experience of the senior management team compares favorably with other highly rated servicers.

There were 83 middle managers, consistent with the prior year, with an average of 20 years of industry experience and 17 years of tenure, also unchanged from the prior year. Turnover among middle managers increased to 23% in 2022, from 15% the prior year, due to six internal transfers and 13 voluntary separations. Whereas middle manager separations were backfilled largely from existing staff promotions, there was no decline in the average tenure and experience of middle managers. The combined senior and middle management team of 91 managers provides sufficient management depth to staff employees and averages about one manager for every four staff level employees.

Loan and Employee Counts



Source: Midland Loan Services.

Fitch notes multiple years of elevated turnover as a concern. While turnover has gerneally increased across all servicers, Midland has experienced multiple years of elevated turnover at all levels, including three leadership changes since 4Q18. The company made considerable progres in backfilling departures in 2022, including the addition of staffing depth, establishing satellite offices outside of the Kansas City market and addressing key turnover drivers.

Servicing staff average eight years of industry experience and six years of tenure, unchanged from the prior year. While turnover among servicing staff increased slightly to 19% in 2022, from 16% the prior year, the number of staff employees increased approximately 10%. The company added 86 staff level employees during the 12 months ended in June 2022, including 15 employees with 10 or more years of experience. The majority of staff level departures during the 12 months ended in June 2022 were voluntary (76%), followed by internal transfers (16%).

Approximately 82% of Midland's master/primary servicing staff is located in Overland Park, down from 93% the prior year, and the company opened satellite offices in Dallas and Birmingham. Outside of Overland Park, 9% of employees work remotely and 4% are located in Dallas, followed by 3% in Pittsburgh and 2% in Birmingham. Employees in satellite locations support risk and compliance, covenant administration, investor reporting, reserve administration and business development.

Senior managers of the commercial loan servicing group monitor the size, projected growth and complexity of Midland's servicing portfolio and adjust staffing levels and/or engage or increase support from third-party vendors. Functional servicing requirements for each department are monitored by senior management on a quarterly basis through exception reporting to measure potential operational weakness, particularly as servicing volumes fluctuate. Department workflow, backlogs and measured activity resolution times are also monitored by cost center managers and servicing directors to ensure an acceptable servicing standard is maintained.

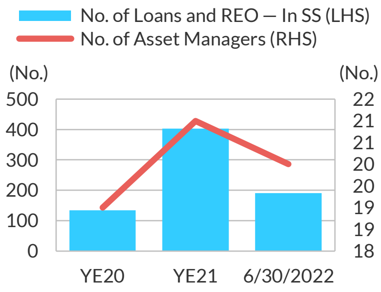
Irrespective of increased aggregate turnover, Midland has increased its total servicing staff by 7% since Fitch's prior review, demonstrating the ability to backfill departures and add bench strength. Elevated turnover has not negatively impacted average employee experience, as Midland has been able to hire experienced employees.

Special Servicing

The special servicing group is part of the real estate solutions division and consists of multiple special servicing teams of asset managers and analysts. The real estate solutions division also includes performing loan surveillance, loan covenant administration, external special servicing liaison, performing asset management, reserve administration, balance sheet asset management and certain loan administrations functions. The division also supports Midland's third-party due diligence services.

The special servicing team is divided into three teams of asset managers responsible for working out loans from default to disposition, along with a collateral management services group responsible for underwriting, research and analysis. Midland does not currently maintain a dedicated REO group or teams specific to any one loan product or asset type given the current volume of specially serviced loans.

SS Loan and Employee Counts



REO – Real estate owned. SS – Special Servicing.
Source: Midland Loan Services.

There was no turnover among the three senior managers of special servicing, who average 20 years of industry experience and 20 years of tenure with Midland. The team comprises the head of special servicing and the heads of real estate solutions and collateral surveillance and covenant administration. Only one senior manager is fully dedicated to supporting special servicing, as two senior managers also have responsibilities for the operations and compliance and real estate solutions groups.

The special servicing group is also staffed by eight middle managers, up from seven the prior year, averaging 20 years of industry experience and 14 years of tenure. Four managers are fully dedicated to special servicing, with four managers allocating 80% or less of their time with operations and compliance, covenant administration, loan administration, balance sheet asset management and due diligence services. There was 53% turnover among middle managers since Fitch's prior review due to three separations, all of which were internal transfers.

There are 32 staff level employees averaging 12 years of industry experience and five years with the company. Of the staff level employees, approximately two thirds are fully dedicated to supporting special servicing with the remaining having shared responsibility for loan administration, balance sheet asset management, due diligence, ABS account management, consents, surveillance, operations and compliance. Staff level employees experienced 38% turnover, up from 20% the prior year, due to nine voluntary separations and one internal transfer. Seven of the staff level separations involved employees with two years or less of tenure.

Aggregate turnover among special servicing employees increased to 38%, from 22% the prior year, as a result of four internal transfers and 11 voluntary separations. Excluding internal transfers, aggregate turnover is 29%. During the same period, Midland added seven staff level and two middle management special servicing employees, two of which are asset managers, and Midland was actively recruiting for three positions within the special servicing team.

Fitch identifed 20 special servicing employees as asset managers who average 15 years of experience; as such, the company maintains a 10:1 assets to asset manager ratio, down from 19:1 the prior year. Turnover among asset managers was 24% due to five seperations.

Fitch identified 20 special servicing employees as asset managers, down from 21 the prior year, who average 15 years of industry experience and eight years of tenure. Turnover among asset managers increased to 24%, from 10% during the 12 months ended June 30, 2022, due to five separations. The ratio of specially serviced assets to asset managers declined to 10:1, from 19:1 the prior year, indicating some excess capacity among asset managers. The ratio of asset managers was previously high compared to similar Fitch-rated special servicers but is now lower.

Senior managers of the special servicing group meet weekly to evaluate staffing levels, capacity issues and opportunities for increased efficiency. Midland has addressed staffing needs through a combination of reassigning resources from/to other Midland/PNC departments, such as Midland's performing loan asset management group, to retain employees with CRE experience, and hiring experienced asset managers.

Training

Midland provides employee training through the Midland employee enrichment training (MEET) program, which provides a structured and sequenced series of courses and activities. The training program is administered by a training working group comprised of nine mangers and staff representing various departments, including the chief operating officer (COO) of Midland, who acts the program chair. Additional training support is provided by a dedicated learning and development coordinator who has more than 14 years of tenure with PNC and joined Midland in 2022. The working group, along with the learning and development coordinator, meets monthly with senior management to evaluate ongoing training offerings, participation and opportunities to enhance staff engagement and promote career growth. New training initiatives can be identified by senior managers through industry events, employee feedback or managers.

In 2022, Midland hired a dedicated learning and development coordinator. Additionally, Midland introduced video series trainings in 2022 to highlight key functions, responsibilities and skills needed to perform in-servicing departmental roles. As of June 2022, more than 25 department videos had been created.

Midland provides employees with several training options, including instructor-led and web-based training, with the goal of developing specific skills needed for their position and broadening industry and market knowledge and the overall operations of Midland. Employees are required to complete annual regulatory and compliance training dictated by PNC and tracked separately through PNC's internal MyLearning application. Required training courses include the false claims act, flood insurance, fair lending, essentials of equal treatment, customer complaint management, real estate collateral valuation, money laundering and maintaining privacy and security, among others. Individual training goals are established and reviewed during annual performance reviews during which managers are provided training transcripts for each employee.

Integrated within MyLearning is "iLearn," a self-directed learning and development portal that gives employees access to a wide library of skills training provided by LinkedIn Learning, Intuition, Bersin, TED and Pluralsight, among others. The platform includes several financial sector topics, such as fixed income, derivatives, interest rate options, economics and treasury management. The platform allows management to push topical articles or videos directly to employees.

In addition to the MEET program, Midland offers new and existing employees training through the Mortgage Bankers Association of America (MBA), with the ability to obtain the certified mortgage servicer designation. Instructor-led courses include MBA and commercial mortgage servicing criteria, real estate fundamentals and current market topics. Employees have access to over 40 courses, some of which are included within the MEET curriculum for bronze and silver levels. Two servicing employees have received commercial certified mortgage servicer designations from the MBA thus far, and Midland currently has one employee with the certified treasury professional certification supporting cash management functions.

Midland requires a minimum of 40 training hours for employees with three years or less of experience and 30 hours for all other employees. Minimum training hours include compliance and regulatory training required by Midland and PNC. In 2021, master/primary servicing employees completed an average of 56 training hours while special servicing employees completed an average of 57 hours, among the highest training hour averages of Fitch-rated servicers. During 1H22, master/primary and special servicing employees completed 32 hours and 20 hours, respectively.

Employee training hours compare favorably with those of highly rated servicers, at 56 hours and 57 hours for master/primary and special servicing employees, respectively.

PNC and Midland maintain several initiatives that address diversity, equity and inclusion (DE&I). PNC maintains an enterprise diversity and inclusion team that provides employees with resources such as monthly diversity and inclusion actions, an inclusion podcast series and various ILearn courses. For 1H22, Midland reported that employees collectively participated in nearly 500 instances of DE&I learning.

Operational Infrastructure

Outsourcing

Midland engages third-party vendors to perform several servicing functions, such as tax, Uniform Commercial Code (UCC) filings, property inspections and certain primary servicing functions not typically outsourced, such as loan covenant testing, certain payoff quotes and waterfall loan setup, among others. The company outsources customary tax monitoring and payment to three separate tax firms and UCC filing to a third party through PNC. Midland also uses two vendors to monitor flood insurance determinations and forced placement activities, as well as one bank in addition to PNC for Canadian treasury management services.

The company engages a third-party vendor to perform the initial underwriting of borrower consent requests, such as lease approvals, assumptions and transfers of ownership and loan conversions, among others, along with loan covenant analysis and testing. The vendor is also engaged to perform the waterfall setup for cash-managed loans during high volume periods. The vendor currently performs approximately 80% of new loan waterfall setups. In performing servicing functions on behalf of Midland, the vendor may contact borrowers directly to perform lease reviews, assumptions and covenant testing.

Midland uses a longstanding outsourcing agreement with another third party for collateral release processing, financial statements and rent roll data entry for nonsecuritized loans, insurance data entry, pursuit of invoice receipt, property inspection review and data entry, along with some financial statement analysis. The vendor may contact borrowers and insurance agents on behalf of Midland to pursue insurance invoices, evidence of insurance and receipts.

Midland began a separate engagement with a global financial services vendor in 2020 to perform financial statement data entry, normalization and annualization, as well as data entry for rent rolls for securitized loans to reduce processing times. The vendor, who does not have borrower contact, works directly within the *Enterprise!* application while Midland currently retains responsibility for financial statement analysis, QC and borrower contact. Midland has been using the vendor, which uses a mix of onshore and offshore personnel, for approximately one year and currently performs QC for approximately 40% of the work performed, which it expects will decrease over time as the process matures. In 2022, Midland expanded the scope of services with the vendor to include calculating partial payoffs for SFR loans within *Enterprise!*. The company reviews payoff quotes performed by the vendor prior to issuance to the borrower.

Consistent with other special servicers, the company engages third parties for property inspections, appraisals, brokerage services, property management and architectural, environmental and legal services associated with special servicing assignments. Contracts with outsourcing vendors generally do not have expiration dates and contain 60-day termination periods. Midland mitigates reliance on vendors by engaging multiple companies with the ability to expand the scope of services. The company also retains the ability to perform outsourced functions internally, although it would need to add staff resources if outsourced functions were internalized.

Midland is also an outsource provider of servicing for institutional investors, specialty finance companies and PNC through its "shared services" platform for which Midland performs certain functions, while the named servicer retains oversight responsibility and borrower contact. Subservicing through its shared servicing platform consists of approximately 5,311 loans totaling $133.0 billion on behalf of three clients (up from 5,460 loans/$109.9 billion the prior year). Approximately 25% of the loans are on behalf of a PNC affiliate, and the two third-party contracts expire in 1H23 notwithstanding any extension options.

Midland utilizes more third-party vendor support than other Fitch-rated primary/master servicers to provide additional capacity. While the company maintains oversight and QC of outsourced functions, outsourcing includes some core functions, such as loan covenant testing, setup for cash-managed loans and borrower contact for certain reserve follow-up and consent requests, as well as insurance agents for insurance verification. Since Fitch's last review, Midland has internalized the replacement reserve draw review process from a vendor and calculating SFR loan payoffs.

Midland ended an outsourcing relationship for special servicing functions for certain securitized SFR loans in 2022, internalizing all workout functions. The company does not currently engage vendors for core special servicing functions.

Vendor Management

PNC maintains an Enterprise Third-Party Management Program (ETPM), which is coordinated with Midland's RCQ group. The program supports new vendor engagements and a formal oversight program, which includes formal risk assessments for each vendor correlating to formal oversight procedures depending on the level of risk. Vendors are required to submit policies and procedures, technology and security questionnaires and, in some instances, audits. The RCQ group works with business managers on the selection and ongoing oversight of vendors.

The third-party management software (Archer) is used to monitor and manage third-party vendors. The software administers risk assessments ranging from broad scoping questionnaires to targeted follow-up assessments and, finally, ongoing periodic oversight. Midland process owners are responsible for ongoing monitoring and oversight of vendor relationships through exception reports and sample testing. All vendor work is monitored and tested to ensure compliance with Midland's and PNC's policies and procedures.

Information Technology

As of June 2022, Midland was using *Enterprise!* version 20220.1.32 as its primary servicing system, having upgraded from version 2021.1.42 since Fitch's last review. *Enterprise!* is developed by Midland and licensed to other servicers and hosted by Midland. *Enterprise*! is integrated with several supporting applications, such as its proprietary asset management and special servicing system, automated transaction processing, consolidated receipts processing and investor-reporting applications.

The company uses the following secondary systems to support primary servicing functions, the majority of which are integrated with *Enterprise!*:

- Waterfall Loan Management System (WLM) version 2.11.0: Receipt collections, preparation of payment postings and remittances, approval of money transfers, generation of distribution statements and monitoring of loans with cash management agreements.
- Cash Workstation Management (CWM) version 2.10.1: Treasury application for cash administration and check printing.
- Document Insight® Portal version 3.9.0: Proprietary digital document management tool.
- Investor Reporting Module version 2.3.0.3: Tool for tracking portfolio-specific reporting requirements and calculating Appraisal Subordination Entitlement Reduction (ASER).
- Advanced Investor Reporting (AIR) version 2.2: Remittance calculator also used to calculate Appraisal Reduction Amounts (ARA) and ASERs. Future replacement for the Investor Reporting Module.
- Bank Account Reconciliation System (BARS) version 3.5.1.1: Cash and bank account reconciliation application.
- CMBS Investor Insight® Portal version 20220.1.31: CMBS loan and transaction information portal.
- Borrower Insight® Portal version 20220.1.31: Borrower interface portal.
- Portfolio Investor Insight® Portal version 20220.1.31: Private investor web portal.
- Automated Transaction Processing (ATP) version 3.18: Internal and external money movement workflow tool.
- Dimensions version 2022.6.2: Internal data warehouse.

Special servicing is supported by Midland's proprietary asset management tool known as AM Insight™, which is a module of *Enterprise!*. The application was introduced in February 2018 and is built around special servicing asset management workflows of defaulted loan workout and REO asset management for all property types.

Asset managers use the application to create business plans, track compliance requirements, review loan terms, manage correspondence, analyze collateral and perform net present value (NPV) financial analyses of alternative resolution strategies and review and track operating budgets. The application also includes a surveillance module that receives a data feed from a third-party provider and is used for monitoring performing loans, loan covenants and watchlist status where Midland is the named special servicer.

Borrower Insight® Portal is Midland's internally developed, web-based borrower portal. As of December 2021, the portal had 1,317 registered users and enrollment efforts are continuing. The web portal, last redesigned in 2018 to improve the borrower experience, allows borrowers to access loan information, payment and transaction history and billing information and to set up ACH (Automated Clearing House) payments.

Midland began the initial release of an enhanced Borrower Insight® Portal in 3Q22. The new portal adds additional self-service functionality for borrowers, including the ability to request reserve distributions, submit required documentation, upload and track financial statements and rent rolls, print billing statements and submit online payments. The portal also includes new

While Midland's technology has been sufficient, upgrades and enhancements have trailed those of its peers. More recently, the company has significantly invested in its systems, converting its infrastructure to support more dynamic enhancements.

Midland and PNC undertook a strategic investment in the *Enterprise!* system in 2020. The goal of the three- to five-year initiative is to modernize the platform and transform the technology infrastructure to a cloud-based hosting environment, allowing for more frequent updates and open architecture to support automation.

customer contact tools, providing borrowers live chat accessibility with customer service representatives, the ability to message their assigned lender contact and enhanced security protocols, including multifactor authentication.

The new portal is being released in phases with a focus on CMBS and SFR borrowers. A demonstration of the new portal to Fitch showed it was easy to navigate, with more robust functionally than the legacy application and comparing favorably to other highly rated Fitch servicers. Its most notable features are new lender contact options and the ability to track the progress of reserve disbursement requests.

Midland has a dedicated group responsible for building and maintaining custom reports to supplement the more than 200 reports available in *Enterprise!* Midland's business data warehouse program, Dimensions, allows for a centralized reporting environment across all servicing databases to manage reporting and information output, providing reports in areas of delinquency, portfolio statistics, runoff, deposits and special servicing for management and servicing operations.

While the investor reporting application and AIR tool are the primary tools supporting the reporting function, Midland also maintains a data warehouse that includes business intelligence tools such as a monthly management dashboard to support historical reporting and trend analysis. While the majority of data elements contained within Dimensions are day-end, there are several key data elements, including balances, loan status, transaction and workflow and loan accounting data, that are updated every 15-30 minutes. Additionally, Midland maintains extracts of certain data elements, allowing certain users to create ad-hoc queries and reports as needed. Information is delivered to institutional servicing clients via the company's Portfolio Investor Insight® Portal.

Midland began testing RPA (robotic process automation) for servicing functions in 2019 and now has seven RPA-assisted servicing processes, up from six the prior year. RPA is utilized to retrieve and load flood determination data, upload subservicer operating statement analysis reports (OSARs), update tax records and for document imaging, investor reporting and processing payments remitted by subservicers. In April 2022, the company added an RPA process to support master servicer reporting. The new automation tool extracts financial statements, rent rolls and inspection files and loads them to a SharePoint site for forwarding to pooling and servicing agreement (PSA) parties.

Recent technology enhancements include full implementation of a new *Enterprise!* insurance module that includes a new data structure to support simple and complex relationships between insurance policies and properties, tools to apply insurance requirements across a portfolio and templates aligned to current industry standard forms. Midland began using the application in June 2021 for a small subset of loans and subsequently migrated all loans in June 2022.

The company has also increased its use of API tools to streamline data sharing between applications and optimize business processes. As of September 2022, Midland had 85 active API interfaces with *Enterprise!* and an additional 122 APIs across ancillary applications. Examples of APIs include the automated boarding of tax records into *Enterprise!* and a collateral workbook tool that uses eight APIs to consolidate data. APIs also support loading property operating statement data into *Enterprise!*. Incremental enhancements were also made to AIR, ATP, WLM, CWM and the Documents Insight® Portal. No enhancements were made to AM Insight™ since Fitch's last review.

Future technology initiatives continue to be focused on modernizing the *Enterprise!* platform, including transitioning the application from being hosted via PNC's data centers to a public cloud environment. Midland also continues to develop a documentation automation tool using optical character recognition and APIs to extract data from common documents, integrate it within a workflow process and load the information directly into *Enterprise!*. The tool, similar to that used by other highly rated servicers, is expected to improve the efficiency, accuracy and capacity to analyze financial statements, rent rolls and ACORD forms. Midland is also working on a new loan covenant module for *Enterprise!*, having temporarily paused development to redirect resources to the workflow and borrower portal tools. Incremental enhancements are also scheduled for AIR, ATP and WLM. There are currently no future enhancements planned for AM Insight™.

The company has a separate IT staff and, in conjunction with PNC technology, approximately 190 employees responsible for supporting Midland technology. The PNC helpdesk is responsible for network and PC hardware issues, while Midland itself maintains responsibility for *Enterprise!* application support. Second-level support groups include network services, system operations and software development groups.

Midland continues to make incremental enhancements to *Enterprise!* and numerous ancillary applications to modernize its infrastructure and improve workflow efficiency. The company has increased the pace of incremental upgrades, and future upgrades are expected to be frequent once *Enterprise!* is migrated to a cloud environment. Technology enhancements continue to focus on master/primary servicing functions, as there are no planned enhancements to the company's special servicing asset management application.

Midland began the phased release of its new Borrower Insight® Portal in 3Q22. The new portal contains significant improvements in functionality and lender contact options, which compare favorably to other highly rated Fitch servicers. The portal is currently in its initial rollout and only available to a small subset of borrowers; however, it will be expanded to CMBS and SFR borrowers through YE22. As of October 2022, 20% of primary serviced borrowers have accessed the new portal.

Cybersecurity

PNC maintains a dedicated cyber operations team responsible for preventing and responding to cybersecurity events. There is a formal cybersecurity program that focuses on protecting data and technology resources by monitoring, tracking and responding to suspicious and malicious activity. While Midland did not provide results of recent vulnerability or penetration testing, it reports that no cybersecurity incidents impacted its technology environment during the 12-month period ended June 30, 2022.

Disaster Recovery/Business Continuity Plan

Midland maintains a business resiliency program that includes testing of critical and noncritical systems, including *Enterprise!*, based on established recovery time objectives. Critical servicing systems are expected to be operational with 24 hours of a failure, including *Enterprise!*, ATP, BARS and CWM. PNC's treasury management application has a six-hour recovery time objective. Separately, Midland's borrower and investor portals have a 48-hour recovery time objective. The most recent test occurred in April 2022, and the recovery time was within the company's 24-hour objective.

The majority of Midland employees currently work hybrid schedules, mixing remote and in-office days. The company established and staffed satellite offices in Dallas and Birmingham in 2022, thereby mitigating its reliance on the Kansas City market for hiring and enhancing its out-of-region business continuity.

Midland's technology environment currently resides within the PNC corporate technology environment, having migrated from a standalone environment in 2018. The PNC environment consists of two data centers operated by third-party vendors in different geographic locations. Data is replicated in realtime between the two centers, resulting in less than 15 minutes of possible data loss. The company is in the process of transitioning certain technology applications, including *Enterprise!*, out of the PNC environment to a public cloud environment. Initial proof of concepts and a full impact analysis have been completed to develop a transition plan with the goal of transitioning to an Azure environment.

The company's disaster recovery plan identifies key management personnel across the enterprise as members of a business resiliency management team responsible for overseeing operational recovery in the event the Overland Park office is not operational or inaccessible. Business continuity procedures include a work-from-home strategy, a third-party disaster recovery facility for eight employees in Kansas City and relocation of business operations to the company's Dallas, Birmingham or Little Rock offices, the closest of which is approximately 380 miles away and can accommodate approximately 85 employees.

Midland expanded its geographic footprint in 2022 with the addition of satellite offices in Dallas and Birmingham, bringing the total number of satellite offices to three, excluding other PNC offices. Satellite offices house dedicated servicing staff covering all key servicing functions, allowing Midland to continue operations in the event of a prolonged service disruption in the Kansas City market.

Governance

Midland maintains a multifaceted internal control environment, consistent with large institutional banks, following the three-lines-of-defense methodology. The three lines of defense consist of the RCQ group, independent risk management and internal audit groups. Controls are established by documented policies and procedures built around servicing agreement and regulatory requirements. The effectiveness of controls is monitored quarterly through management certifications.

Policies and Procedures

Midland's policy is to review and update policies and procedures on an annual basis or as necessary to address process or regulatory changes. Department managers are responsible for updating policies and procedures for their respective groups with a secondary review performed by their manager prior to implementation. Policies and procedures are maintained in a central PNC Real Estate SharePoint site and accessible by all employees. Desktop procedures are maintained at the department level and accessible to all employees via a shared directory. Changes are communicated in department meetings, via email or in company meetings depending on the scope of the change. Training is formally provided for new employees and may be supplemented to include policy and procedure changes depending on scope.

The company currently maintains approximately 1,700 procedures. Compliance with policies and procedures is maintained through controls tied to each procedure, which are monitored through management reporting and, in some instances, may serve as key performance indicators.

Midland's policy and procedure document is a high-level description of operational groups and their function and it is supplemented by process flow charts. Policies and procedures, which are supplemented by desktop procedures, are very high level with no functional detail and do not contain an as-of date or evidence of the previous update. Midland does not formally track changes to policies and procedures as they are continuously updated by department managers; therefore, Midland was unable to provide Fitch with an inventory of material policy and procedure changes since Fitch's prior review, although updates have been made in conjunction with the new *Enterprise!* insurance module.

Fitch previously reviewed sample desktop procedures for flood insurance compliance, payoff quotes, financial statement and rent roll analysis, tax payments and escrow analysis. Desktop procedures are detailed with step-by-step instructions, screen prints and illustrative examples of how specific functions are performed, while others comprise lists of steps to be performed without detailed instructions. Desktop procedures sampled by Fitch evidenced recent reviews.

Fitch reviewed a sample of special servicing procedures, which provided a high-level overview of each function and a general procedural outline, at times supported by related forms. Midland's special servicing policies and procedures are less detailed than those of other highly rated servicers; however, there is a separate and more detailed user manual for Midland's proprietary asset management and special servicing system. Special servicing policies and procedures reviewed by Fitch reflected recent reviews and updates where appropriate.

Fitch found that Midland's QC framework, inclusive of dedicated and independent compliance testing, clearly identified controls and robust monitoring and reporting, consistent with best practices.

Compliance and Controls

The RCQ group, which has added four additional employees since Fitch's prior review, is dedicated to quality assurance oversight and is independent of servicing operations and technology divisions reporting to the executive vice president and COO of PNC Real Estate. The group provides oversight and support for other PNC Real Estate business areas in addition to Midland and consists of a director and staff of 16, up from 12 yoy, and one external consultant. The group includes three managers, two advisors, six senior specialists and five specialist-level associates. The director of RCQ has 20 years of industry experience and tenure with Midland.

The RCQ group provides quality assurance validation, audit coordination, control monitoring, testing and completion of various operations reviews and subservicer reviews. The group also provides regulatory compliance direction and support in the areas of corporate governance, asset protection, compliance verification and strategic guidance.

The core of Midland's internal control environment is approximately 200 comprehensive internal controls in servicing processes and functions, as well as 30 controls for regulatory compliance, identified by management and assigned to control owners in the lines of business. In 1H22, Midland added approximately six controls over servicing processes or functions. Controls are integrated into PNC's Archer application as the official system of record for control oversight.

Fourteen of the internal controls address special servicing asset management and workout cash control functions. The RCQ group oversees the administration of the controls as a whole, while each control is assigned to an owner that evaluates the controls on a quarterly basis. The executive vice president and head of Midland is required to certify to the operating effectiveness of the entire control environment. In addition to formal controls, individual departments have additional department-level controls structured around their workflow procedures.

A summary of control results is provided to senior management for evaluation quarterly and contains a summary of controls, new and removed controls and heat maps to identify performance declines. Fitch reviewed the 2Q22 control summary report, which clearly illustrates the effectiveness of controls and tracks the number of controls added and removed each quarter.

As of June 2022, Midland had one low, three medium and two high rated open issues, down from 10 issues as of 1Q21 and 18 issues as of 1Q20, reflecting Midland's ongoing efforts to remediate findings. Fitch also reviewed management-level risk metric reports for the four quarters ended in 2Q22. The reports, which are reported to the senior management team, contain a heat map summary of key compliance, data management, operations, technology and operational risk metrics and are an effective tool to identify control deficiencies or process breakdowns.

The enterprise compliance group at PNC has a dedicated corporate and institutional banking (C&IB) compliance group responsible for managing compliance in conjunction with the enterprise compliance group. The C&IB compliance group comprises a senior vice president and 14 staff employees that provide compliance support to Midland. The group leverages subject expertise from PNC's privacy office, bank secrecy act/anti-money laundering and sanctions risk, independent risk management compliance testing and the regulatory change group to support Midland.

Separately, the enterprise testing services, independent risk management and compliance testing team (ETS team) provides assistance in developing and monitoring risk-based testing across procedures and controls of select areas as needed. The ETS team comprised 15 employees focused on compliance activities, inclusive of Midland, as of June 2022.

The enterprise compliance group, which is led by the chief compliance officer of PNC, performs an annual compliance plan that includes risk assessments, compliance monitoring programs and a review of risk management policies. The plan includes annual testing of various groups, which may include servicing operations depending on the scope. Separately, PNC's corporate ethics office monitors servicing employee compliance with the bank's conflicts of interest policy.

As of June 2022, Midland had five outstanding control exceptions in the process of being remediated, four of which were identified by the business, and one open issue pending validation. The company successfully remediated and closed 17 control exceptions since Fitch's prior review.

Control exceptions can be self-identified by control owners or business groups through exception reporting, control testing or audits.

Internal Audit

Midland's commercial servicing operations and technology divisions are audited by the internal audit division of PNC within the C&IB division. Although the internal audit group operates within the business line, it operates independently, reporting to the PNC audit committee. The enterprisewide internal audit team, comprised of 450 employees, is responsible for confirming that risks are appropriately identified and managed; assets are protected; employees follow established policies and procedures and regulatory and investor requirements; and material financial, managerial and operating information is accurate, reliable and timely.

The scope and frequency of the audits are determined by PNC's internal audit division based on a risk assessment but generally include an annual review of Midland's technology infrastructure and general servicing operations, including Sarbanes-Oxley compliance, vendor management and anti-money laundering, among others.

As of June 2022, Midland was servicing 1,275 floating-rate loans totaling $58.1 billion indexed to, or tied to, the Secured Overnight Financing Rate (SOFR) index, thereby mitigating the pending transition of existing balance sheet, CLO and SASB loans currently using the London Interbank Offered Rate (LIBOR).

Audits are structured around the group's strategic objectives; financial and operational information; effectiveness and efficiency of operations and programs, assets, policies and procedures; and compliance with laws, regulations, policies, procedures and contract requirements. PNC's 2021 risk assessment identified Midland for audit every three years, through five engagements consisting of loan services, specialized servicing, real estate solutions, investor reporting and operational accounting and client solutions.

PNC's internal audit group performed three audits encompassing Midland in 2021, consistent with the number of internal audits in 2020, albeit with different scopes. Internal audits included the *Enterprise!* Government Services Application (ESGA), Midland Investor Reporting and Operational Accounting and an ATP application audit.

The ESGA audit resulted in a 'satisfactory' opinion and contained one medium finding that is now closed and one medium PNC Enterprise finding that remained open as of July 2022 but has low impact to Midland. The Midland Investor Reporting and Operational Accounting also resulted in a 'satisfactory' opinion and contained on medium finding that is now closed, one self-identified high finding and the PNC Enterprise finding noted in the ESGA audit. The high finding pertains to the automated calculation of special servicing fees for pari passu loans, which is expected to be remediated by YE22. Lastly, the ATP audit resulted in a 'satisfactory' opinion and contained no findings.

External Audit

Midland is subject to various external audits as a servicer and technology provider. The company was subject to RegAB, SOC 1 and SOC 2 audits by PricewaterhouseCoopers LLP, as well as third-party reviews from government-sponsored enterprises and other servicers.

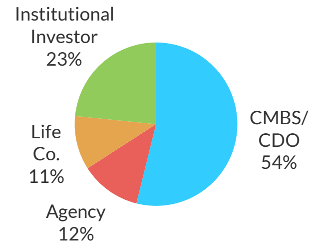
Midland's 2020 and 2021 RegAB audits did not contain any material noncompliance findings.

Fitch reviewed the company's RegAB audit for YE21, dated Feb. 18, 2022, which contained no material noncompliance findings. Midland has had two consecutive RegAB audits with no findings since the 2019 and 2018 audits, both of which contained a finding pertaining to Schedule AL reporting, a prior concern.

Fitch also reviewed an SOC 1 audit for the 12 months ended in September 2021, which resulted in a qualified final opinion and contained three issues resulting in control exceptions, one of which was self-identified. Control exceptions included access management completeness and accuracy, bank accounting titling review and asset management case approval. Fitch reviewed the control exceptions and management responses and determined that the bank account titling and access management exceptions were isolated events and not indicative of systemic operational failures. Management self-identified an already-closed issue pertaining to special servicing cases that were not approved in a timely manner. Management reports it addressed the issues through additional training.

The company's SOC 2 audit for the 12 months ended in September 2021 contained an unqualified opinion of compliance and a single finding that was also identified in the SOC 1 audit. Fitch also reviewed Midland's Chapter Six and Chapter Seven U.S. Department of Housing and Urban Development (HUD) audits for 2021. There were no operational findings in the audits, although both identified changes in accounting methodology for commercial loan and lease losses and fair value of commercial loans acquired through the BBVA USA acquisition, both of which were owned and addressed by the PNC management team and independent of Midland.

Primary Servicing Product Type
(As of June 30, 2022)



Note: Percentages based on number of loans.
Source: Midland Loan Services.

Primary Servicing

Primary Servicing Portfolio Overview

($ Mil.)	6/30/22	% Change	12/31/21	% Change	12/31/20
Securitized					
No. of Transactions — Primary Servicer	483	5	462	7	432
UPB — Primary Servicing	193,944.9	7	180,441.9	16	155,475.4
No. of Loans — Primary Servicing	8,342	1	8,229	3	7,975
Nonsecuritized					
UPB	305,654.3	6	288,682.7	(6)	307,667.7
No. of Loans	11,711	0	11,692	(29)	16,439

UPB – Unpaid principal balance.
Source: Midland Loan Services.

Midland performs commercial mortgage servicing and subservicing for CMBS trusts, portfolio lenders, institutional investors, financial institutions, specialty finance companies, mortgage bankers and multifamily agency seller/servicers. As of June 30, 2022, Midland acted as primary servicer for 8,342 securitized loans representing $193.9 billion in outstanding balance and 11,711 nonsecuritized loans with an unpaid balance of $305.7 billion. As of July 31, 2022, there were 1,613 loans totaling $52.7 billion within Midland's portfolio scheduled to mature within the next 12 months.

New Loan Setup

Midland regularly receives new loans individually or through bulk data transfers, with each scenario following a different initial process but the same QC review. Midland's new loan setup procedure is to perform a full file scrub for each new loan to ensure all loan covenants, terms and structures are identified, tracked and monitored. Account managers are responsible for working with the servicing transfer department to board new loans that are not part of a bulk transfer. The account manager acts as the point person for all documents and forwards them to the servicing transfer department, where the documents are inventoried, logged, imaged and loaded into *Enterprise!*.

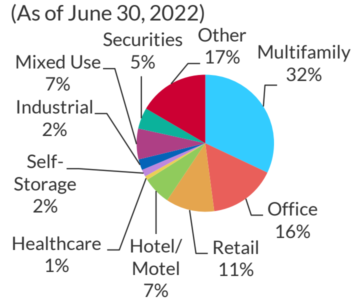
While Midland records all loan level covenants in *Enterprise!* with a tickler function to monitor compliance dates, the company is the only Fitch-rated servicer to outsource covenant testing to an outside vendor.

Setting up new loans is the responsibility of the servicing transfer department, which logs new loan requests into a setup database and assigns an analyst to complete the loan setup process. Once the initial loan setup process is completed, a senior analyst performs a QC review and activates the loan. Accurate and timely boarding is controlled through segregation of duties between setup, QC and exception report monitoring. Individual new loans are set up within three to five days of receipt and 15 days prior to the first payment due date.

Bulk data transfers are the most common new loan setup for CMBS loans and the company performs bulk loan transfers more frequently than any other Fitch-rated servicer, averaging two to six bulk transfers a month, typically comprised of 20 loans–500 loans. Midland requests critical data elements that are then reviewed and code interpreted for transition into *Enterprise!*.

The servicing transfer administration group conducts an audit of all converted information against critical information shown on the trustee's annex of loan information. New loans are uploaded to *Enterprise!* once all data discrepancies are resolved. Once data are transferred to *Enterprise!*, additional audits are performed by the ARM/accrual department of financial terms and the servicing transfer group audits nonfinancial terms. Both audits verify that data agree with terms of the loan documents and identify covenants and other servicing responsibilities.

Securitized Primary and Master Servicing Property Type
(As of June 30, 2022)



Source: Midland Loan Services.

Accounting and Cash Management

Loan payments are posted daily by Midland's treasury operations department using the ATP application that automatically matches cash receipts to expected receivables and posts payments to the appropriate loan. The ATP application is also used to process automated bank files and manual transactions. The treasury operations department, comprised of 13 employees, performs daily reconciliations of cash receipts, comparing money totals and bank account files with money posted to the ATP application. Midland currently uses PNC Bank to hold funds on behalf of securitized transactions and a Canadian bank for Canadian transactions. Both financial institutions meet Fitch's structured finance counterparty rating criteria.

The treasury department is also responsible for monitoring contractual account requirements for banks holding custodial servicing deposits. A staff member performs a monthly review of bank rating requirements for compliance with servicing agreements and submits a report to management for verification and signoff. Midland has a dedicated complex loan administration group consisting of 21 employees responsible for calculating and processing waterfall allocations of cash-managed loans. The company began using a third-party vendor to assist with the setup of cash-managed loans. Midland is currently the only Fitch-rated servicer to outsource cash management setup.

The treasury department is responsible for maintaining and operating the payment collection network, which includes ensuring that lockboxes are established and maintained in accordance with the governing documents. Depending on the requirements of the loan agreement, the complex loan administration group also handles remitting excess funds back to borrowers or wiring funds to the mezzanine servicer.

The operational accounting department, staffed by 12 employees, is responsible for reconciling all custodial bank accounts daily. Midland's proprietary *Enterprise!* bank account reconciliation system is used to compare the servicing system ledger balance for principal and interest, escrows, reserves and suspense accounts to the bank balance for all custodial bank accounts.

As of June 2022, Midland had serviced approximately 2,761 loans with active cash management agreements and approximately 5,090 loans with springing lockboxes for which it has activated 266 lockbox accounts in the past 12 months. As of the same date, Midland monitors 145 LOCs totaling approximately $844.0 million as additional loan collateral.

Midland utilizes a diverse mix of over 10 financial institutions to maintain trust accounting, including PNC Bank N.A., all of which meet Fitch's minimum counterparty rating criteria of 'A'/'F1' for Fitch-rated structured finance transactions.

% Payment Collections

ACH	67
Lockbox	14
Wire	18
Other	1

Source: Midland Loan Services.

Escrow Administration

The property tax group is responsible for researching and establishing real estate tax information for all loans serviced by Midland. This responsibility includes paying escrowed tax bills, verifying the adequacy of escrow amounts, monitoring non-escrowed loans to verify tax payments and customer service for tax inquiries. Midland uses three tax service providers that supply Midland with data on loans with taxes due that are uploaded into *Enterprise!*. Any inconsistencies in tax payments are researched and resolved, with the tax team leader responsible for monitoring progress and approving disbursements prior to payment.

Midland incurred de minimus tax penalties in 2021 for seven loans (down from 28 loans the prior year) as a result of incorrect setup or lack of addressing filing instructions in a timely manner, which the company has addressed through additional training. Tax and insurance escrow analysis is performed on an annual basis during the month following the previous tax or insurance disbursement. After the analysis is performed, if an increase or decrease in the escrow payment is needed, the borrower is provided with a minimum of 30 days' notice prior to the adjustment. Management monitors the timely and accurate escrow analysis using exception reports.

Midland's insurance group monitors the maintenance and payment of insurance premiums to ensure compliance with loan documents. Insurance policy information, policy premiums, payment frequency, due dates and payment status are maintained in *Enterprise!*. Insurance oversight is performed through a weekly report that tracks premiums paid from escrow accounts, receipt of proper insurance documentation and premium payments outstanding. Midland follows up with borrowers and insurance agents on all loans until discrepancies are resolved.

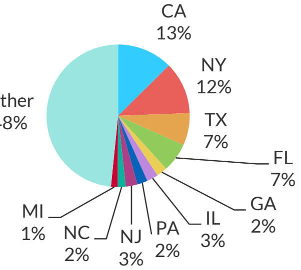
% Portfolio Escrowed

Taxes	68
Insurance	23

Source: Midland Loan Services.

Securitized Primary and Master Geographic Distribution

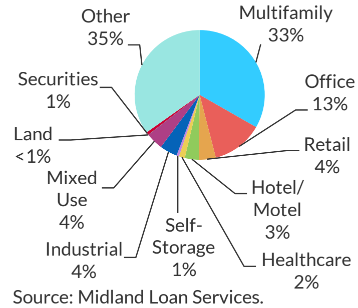
(As of June 30, 2022)



Source: Midland Loan Services.

Midland maintains force placed insurance coverage to protect the interests of the lender in the event of a lapse in coverage. As of June 2022, there were approximately 49 loans covered under the policy, the majority of which were SFR loans. Loans are typically placed under forced placed coverage for an average of 90 days due to the borrower's failure to provide evidence of required coverages.

Nonsecuritized Primary and Master Servicing Property Type
(As of June 30, 2022)



Source: Midland Loan Services.

UCC records are maintained on the servicing system by a separate UCC group. The group monitors UCC expirations six months in advance and utilizes a third-party vendor to prepare and file continuation statements. The group is also responsible for UCC terminations and amendments, as well as changes to secured party and collateral/legal descriptions. Midland reported one UCC filing lapse during the 12 months ended in June 2022, having not had any lapses in the prior three years.

Investor Reporting

Midland maintains a dedicated investor accounting group staffed by 51 employees, up from 42 employees the prior year, responsible for remittance calculations, servicing advances, bank account reconciliation and interfacing with other servicers to determine remittances, realized losses and compliance functions.

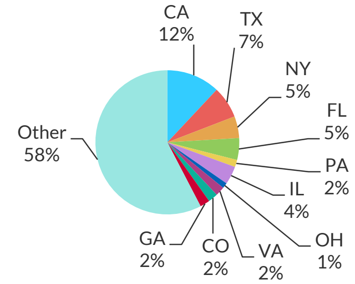
The majority of investor reporting functions are automated by utilizing data extracts from *Enterprise!* on the determination date. Investor accounting analysts, assigned specific portfolios, validate transactions and review key financial terms, servicing data and collection account funding. In addition, analysts review advances for delinquent loans, advance recovery, trust expenses and asset subordinated expense reimbursement accounts. Midland's investor review process includes 50 QC checks to validate key data elements, including cash remittance fields and loan and property data for monthly CRE Finance Council (CREFC) reporting.

Midland collected and reported YE21 financial statements for 96% of securitized loans serviced by July 2022.

The investor reporting group tracks reporting and remittance errors, with 10 in the past 12 months that resulted in redistributions or restatements. These were related to incorrectly reported ASER recoveries, late subservicer or special servicer reporting and complex modifications. In addition, investor reporting reviews trustee reports for transactions with potential issues or complex remittances to confirm accuracy. The company does not have a standing policy to review a sampling of trustee reports for accuracy on a regular basis. Midland also monitors monthly interest distributions in conjunction with advance and expense recovery, particularly for highly concentrated transactions or those with large significant advances or a large number of specially serviced assets.

The investor reporting group continues to gain efficiency using the AIR tool, introduced in 2020. This tool is currently able to process roughly 60% of monthly remittances without analyst intervention. Pending enhancements to the AIR tool to address special servicer fee invoicing, realized loss calculations and other cash reconciliation tools are expected to further improve reporting automation. The group also expects to further streamline the reporting process by introducing new automation functionality to create and distribute monthly remittances before YE22.

Nonsecuritized Primary and Master Geographic Distribution
(As of June 30, 2022)



Source: Midland Loan Services.

Asset Administration

Delinquent payments are monitored by Midland's collections department, which begins contacting borrowers both by phone and a payment reminder mailing within two days of grace period expiration. All collection attempts are recorded in *Enterprise!* and scheduled follow-up dates are based on the borrower response.

Formal collection letters are mailed when a loan is 30 days' past due. Responsibility for transferring loans to special servicing lies with the asset management group, which uses a dashboard to evaluate loans against pending transfer mitigants such as loan forbearance. Management reports monitor the number of collection calls, borrower contacts and payment arrangements made.

The collateral surveillance department is responsible for collection and analysis of operating statements. Financial statements and rent rolls are imaged upon receipt and transferred to third-party vendors for data entry and analysis. The average time to complete the financial statement entry and analysis is 16 days for YE21 statements, down from 21 days the prior year. QC oversight is the responsibility of the assigned portfolio analyst, who will review 20%–100% of the vendor's analysis paying particular attention to watchlist and top 10 loans.

Midland's policy is to review and update CREFC watchlist commentary at minimum once every 60 days, consistent with highly rated primary servicers.

The company maintained a consolidated financial statement reporting tool portfolio or loans with multiple collateral, addressing a prior concern noted by Fitch's surveillance group. Midland enters and maintains tenant rent roll data electronically to monitor tenant rollover.

Midland utilizes the CREFC Investor Reporting Package watchlist criteria in addition to its own internal criteria for an internal watchlist. The collateral surveillance department is responsible for creating and managing the watchlist. Oversight of the watchlist is performed monthly by a formal watchlist group comprising representatives of the collateral services, surveillance and collection departments.

The group is responsible for determining appropriate actions for watchlist loans; determining the materiality of a problem loan; overseeing additions, deletions or changes in the status of the watchlist; and facilitating accurate and timely communication with investors and servicers. Watchlist comments are reviewed on a monthly basis and updated at least once every 60 days. Fitch's surveillance group has observed that Midland maintains timely and relevant watchlist commentary relative to other Fitch-rated master servicers.

Midland is responsible for performing CRE property inspections annually utilizing four third-party contractors. The company does not perform property inspections in-house. Borrowers are notified in advance of a property inspection, which includes a property management interview, rent roll review and market and physical property assessments to identify potential risks. Inspection reports are reviewed by analysts who summarize any deferred maintenance issues, which are tracked and communicated to the borrower by a third-party vendor for remediation.

Customer Service

Midland has a dedicated borrower services group consisting of five employees, down from 13 the prior year. This group reports to an operations manager responsible for Borrower Insight® Portal security administration, ATP Unposted, ACH administration, IRS administration and W9 review. In addition, through the Borrower Insight® Portal, borrowers can access balances, payment histories and billing information. Approximately 20% of Midland's primary serviced borrowers have accessed the new Borrower Insight® Portal, with adoption expected to improve as the legacy portal is decommissioned in early 2023.

The company carved out securitized loans from the borrower services group and created a dedicated CMBS servicing group, consisting of 20 staff and one middle manager, in 2022, allowing a dedicated analyst to be assigned as the central point of contact for the life of the loan. A department manager or senior staff member regularly monitors phone calls as a QC measure. The reallocation of staff to a dedicated CMBS team resulted in a decline in the number of employees in the borrower services group.

Midland is the only large volume Fitch-rated primary servicer to outsource financial statement and rent roll data entry, as well as some financial statement analysis; however, the company maintains sufficient controls around the process, with dual QC reviews. The company added a new vendor in 2020 and has reduced its financial statement processing time consistently over the past 24 months.

Requests for a loan payoff must be submitted by the borrower in writing and are formally tracked and assigned a three-day due date. Payoffs are calculated by analysts in consultation with the loan documents. All payoff quotes are reviewed by a second analyst for accuracy. While Midland maintains a benchmark seven-day turnaround for payoff requests (up from three days previously), the turnaround time in 2021 was approximately five days (up from two days previously). Midland monitors borrower satisfaction through periodic customer surveys and input from senior account and portfolio representatives who are in regular contact with borrowers and major clients.

Midland performs annual borrower satisfaction surveys, the most recent of which occurred in September 2021 and involved approximately 3,400 borrowers. The survey had an approximate 6% response rate, and the company has implemented staffing changes and new technologies in response to concerns identified.

Master Servicing

As of June 30, 2022, Midland was named master servicer for 463 securitized transactions totaling $310.2 billion, with 13,145 loans. Master servicing assignments include traditional legacy and recent vintage CMBS transactions, as well as whole business, Canadian CMBS, cell tower and SFR transactions. Also, as of the same date, Midland oversaw 31 third-party primary servicers responsible for servicing 5,438 loans totaling $128.9 billion. The company does not maintain master servicing-specific functional groups, as master servicing duties are performed in conjunction with primary servicing functions.

As of June 2022, approximately 7% of loans maturing during the prior 12 months paid off at maturity, with 85% paying off prior to maturity.

Master Servicing Portfolio Overview

($ Mil.)	6/30/22	% Change	12/31/21	% Change	12/31/20
No. of Transactions — Master Servicer	463	6	437	16	378
UPB — Master Servicing	310,244.8	8	288,464.5	20	241,313.9
No. of Loans — Master Servicing	13,145	3	12,711	10	11,519
No. of Primary Servicers Overseen	31	—	31	—	31

UPB – Unpaid principal balance.
Source: Midland Loan Services.

Midland transitioned its special servicing liaison to the real estate solutions group in 2022 to improve communication with special servicers. The company also holds monthly calls with most special servicers and recently provided updated contacts and escalation contracts to increase the timeliness of responses.

Primary Servicer Oversight

The subservicer oversight group, comprising one dedicated employee resource and three analysts, is responsible for daily oversight of primary servicers. The group generates reports of expected payments each month that are reconciled with primary servicer remittances. The oversight group also monitors timeliness of remittances, any payment variances and tax and insurance compliance reports from primary servicers. The group tracks expected inspections, financial statements and rent roll deliverables from primary servicers and special servicers. Additionally, the oversight group monitors annual RegAB and/or Uniform Single Attestation Program (USAP) audit compliance among primary servicers. Any material variances in collections on missing deliverables are shared with the RCQ group.

Midland successfully performed desktop reviews of all primary servicers, irrespective of portfolio size, during the 12 months ended June 30, 2022. The company's oversight of primary servicers is consistent with that of highly rated master servicers.

There are five employees and one third-party contractor within the RCQ group responsible for subservicer audit oversight. The RCQ group performs an annual audit of all primary servicers. The type of audit performed is based on prior findings, feedback from Midland's subservicer oversight group, results of third-party reports, servicing volume and the number of top 10 loans within a transaction.

Midland's goal is to perform an onsite audit of any servicer with more than five loans at least once every three years. It generally performs 15 to 20 onsite audits annually. Midland transitioned to desktop audits of primary servicers as a result of travel restrictions associated with the coronavirus pandemic in 2020 and resumed in-person onsite reviews in 2022. The RCQ group performed 32 subservicer reviews, consisting of 26 desktop and six onsite/virtual reviews in 2021, encompassing all primary servicers. The results of primary servicer audits are shared with the servicers and summarized during formal subservicer oversight meetings every six months with Midland senior management.

Midland's primary servicer audit addresses servicer performance in all core servicing areas, including cash processing, bank accounts, payoffs, escrow administration and asset management. In 2020, Midland expanded the scope of its audit to include surveillance around the servicers' watchlist processes. An audit includes a review of the servicers' policies and procedures, a servicer questionnaire and sample testing, and it considers input from third-party reports such as USAP, RegAB and Freddie Mac audits.

Advancing

The Servicing Advance Review Group (SARG) is responsible for monitoring and controlling the amount and credit quality of advances made by Midland, with the goal of eliminating nonrecoverable advances. The 10-person group, which meets monthly, comprises senior representatives from investor reporting, real estate solutions, legal, transaction management and PNC credit. Advances are categorized based on four levels, reflecting the dollar amount advanced relative to potential recovery, the length of time advances are outstanding, transaction level exposure and special servicer. All advances and recoveries made by Midland are tracked in *Enterprise!* and reviewed by the advance administrator as part of the monthly remittance and reporting process.

Midland's outstanding advances for securitized loans were approximately $460.0 million as of June 2022, consistent with $470.0 million in June 2021, although the proportion of principal and interest advances has declined while power purchase agreement (PPA) advances have increased.

Midland does not have any programmatic thresholds for determining nonrecoverability, as each asset is reviewed monthly in the context of the loan, property and transaction. The SARG considers the business plan of the special servicer and the availability of information, including multiple property valuations, when making nonrecoverability determinations. Midland advises special servicers to provide monthly status updates on specially serviced loans. The company carefully monitors advance recoverability relative to the number of loans remaining in a transaction, total outstanding advances and potential loan resolutions or payoffs, which effect

Midland's ability to recover advances without causing interest shortfalls to investment grade bonds in securitizations.

Investor Reporting

The CMBS surveillance group is the primary liaison between Midland's operational groups and investors, primary servicers, trustees and rating agencies. The group has a dedicated mailbox that is monitored hourly for incoming requests. The group responds to all inquiries via email or phone contact. Information typically provided includes loan and property performance updates, financial data, OSARs, property rent rolls and site inspections.

The surveillance group is also responsible for monitoring all CMBS portfolios and detecting emerging issues and changes in loan or property performance. The group also conducts monthly conference calls with special servicers to provide up-to-date information on underperforming properties or loans of concern.

Monthly investor reporting is the responsibility of the investor reporting group, which assesses reporting due dates monthly to ensure employee resources are sufficiently allocated to meet reporting deadlines. The group uses Midland's automated investor reporting tool to review and process monthly remittances for securitized and nonsecuritized assets. Reporting packages are distributed to trustees or third-party clients via websites or email and made available on Midland's dedicated investor website when allowed by the investor reporting group. The investor reporting group periodically reviews trustee reports to confirm accurate reporting and monitor the application of funds to securitizations with potential shortfalls or complex loan modifications.

Fitch's CMBS surveillance group views Midland as responsive to inquires and its loan commentary as up to date.

Special Servicing

Special Servicing Portfolio

As of June 30, 2022, Midland was named special servicer for 7,503 securitized loans totaling $227.00 billion in 531 transactions. As of the same date, the company had 180 actively specially serviced loans with an outstanding balance of $4.4 billion while managing eight REO assets with a balance of $178.0 million. There are also $8.5 million of active nonsecuritized assets and one REO asset representing $1.0 million in special servicing of the company's named $433.2 million nonsecuritized portfolio. Midland's nonsecuritized portfolio comprises subperforming and nonperforming CRE assets for investment funds, investment banks, balance sheet lenders and government agencies. Recent growth in nonsecuritized special servicing is the result of a single SFR loan for a third-party balance sheet client.

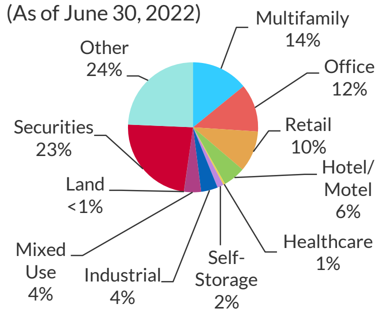
Special Servicing Portfolio Overview

($ Mil.)	6/30/22	% Change	12/31/21	% Change	12/31/20
Securitized					
No. of Transactions — Special Servicer	531	7	495	6	467
UPB — Special Servicer	226,963.5	1	224,564.6	3	217,895.1
No. of Loans — Named Special Servicer	7,503	(6)	8,014	(9)	8,840
UPB — Actively Special Servicer (Non-REO)	4,368.9	(33)	6,498.3	(29)	9,164.8
No. of Loans — Actively Special Servicer (Non-REO)	180	(35)	278	(28)	386
UPB — REO Assets	178.0	9	163.0	(9)	178.8
No. of REO Assets	8	0	8	(11)	9
Nonsecuritized					
UPB — Named Special Servicer	433.2	330	100.6	(70)	340.8
No. of Loans — Named Special Servicer	54	(7)	58	(19)	72
UPB — Actively Special Servicing (Non-REO)	8.5	(30)	12.2	(58)	29.2
No. of Loans — Actively Special Servicing (Non-REO)	2	(50)	4	(43)	7
UPB — REO Assets	1.0	—	1.0	(98)	57.8
No. of REO Assets	1	—	1	—	1

UPB – Unpaid principal balance.
Source: Midland Loan Services.

Named Securitized Special Servicing Property Type

(As of June 30, 2022)



Source: Midland Loan Services.

Midland was named special servicer for 79 new securitizations during the 12 months ended in June 2022, including seven multiborrower CMBS, 22 alternative ABS, 33 SFR, 13 SASB and three CRE-CLO transactions. In the 12 months ended June 30, 2022, Midland resolved 204 securitized loans totaling $4.2 billion, of which 116 loans were returned to the master servicer as corrected loans, 43 loans were paid in full and 42 loans comprised discounted payoffs/note sales, along with one foreclosure sale and two REO sales.

Named securitized special servicing is expected to decline in 2023 as a result of consolidation by certain third-party CMBS clients, one of which represents more than 30 transactions.

Loan Administration

Midland's special servicing loan surveillance consists of numerous queries and reports to identify watchlist loans, maturing loans and loans with deteriorating conditions using data compiled from a third-party data provider, as Midland may not be the primary servicer for all loans in which it is named special servicer.

Surveillance tools within AM Insight™ allow the company to quickly assess the impact of potential credit events, such as tenant bankruptcies, store closings and natural disasters. The real estate solutions team maintains contact with all master servicers to facilitate the review of borrower consents and maintains an open dialogue on potential loan transfers. In addition, members of the real estate solutions and collateral management services teams are in frequent contact with master servicers on potential transfer and performing loan consent matters; as such, there is an open dialogue on issues of potential concern or transfer.

Defaulted/Nonperforming Loan Management

The special servicing group has established effective procedures with external master servicers for the transfer of loans to Midland as special servicer. Transfer packages are received by a servicer liaison team that then updates *Enterprise!* to begin CREFC reporting. Asset managers are assigned based on factors such as the size of the loan, the skillset of the asset manager, prior experience in the market for the collateral and the complexity of the asset.

Midland's policy requires asset managers to perform an initial file review through AM Insight™ within 10 days of transfer. The purpose of the initial file review is to familiarize the asset manager with the details of the loan documents, identify any incomplete or missing documentation, document applicable property and loan-specific information, determine an initial plan of action and provide a basis for initial discussions with the borrower and guarantors. The completed initial file review is approved by the asset manager's direct manager.

Midland shifted its CMBS surveillance team from servicing operations to the real estate solutions team in 2021, to better align workflow with special servicing. The company subsequently shifted the reserve administraion, covenant review and external special servicing liaison teams to the real estate solutions group in 2022.

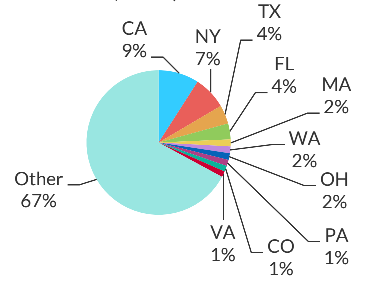
Upon transfer of a loan to special servicing, the asset manager will conduct an inspection and analysis of the property, financial statements, market conditions and other factors that may affect the property value. The asset manager may obtain personal credit reports on individual borrowers/guarantors; research PACER, Lexis/Nexis or other databases to which Midland subscribes; and/or access available records through the internet. Asset managers typically create an asset securitization report (ASR) within the first 45 days of transfer, or earlier if required by the PSA, that outlines the proposed disposition method based on initial information.

Midland generally utilizes a dual track resolution strategy of pursuing foreclosure while negotiating with the borrower. The asset manager also reviews the PSA to ensure compliance with the default, foreclosure and REO provisions in the event a consensual workout with the borrower cannot be reached and foreclosure is necessary. The ASR is forwarded to the directing certificateholder for their review and/or approval, as required by the PSA.

Once the initial diligence on the asset and borrower has been completed, the asset managers, in consultation with their manager, develop a resolution strategy that is outlined in a request for approval case and approved based on Midland's delegations of authority. In evaluating possible resolution strategies, such as reinstatement, forbearance, modification, discounted payoff, foreclosure, receivership sale of collateral, guarantor pursuit, REO sale, REO stabilization, note sale or a combination thereof, asset managers prioritize alternative strategies based on the highest NPV achieved.

Day-to-day asset management monitoring is performed by an oversight manager that meets with asset managers monthly to review the progress of each specially serviced loan and compliance with Midland's policies. In addition, asset managers enter key dates and resolution milestones, such as appraisal and inspection dates, comments, ASRs and alerts, into AM

Named Securitized Special Servicing Geographic Distribution
(As of June 30, 2022)



Source: Midland Loan Services.

Insight™, which generates exception reports for senior managers. Fitch believes Midland maintains sufficient internal controls and QC measures around the workout process.

Midland maintains a delegated authority matrix for approval of all resolution recommendations and document execution, which requires an approval for each action by a senior manager not responsible for the daily management of the asset or oversight of the asset manager. Additionally, managers who perform asset management oversight are not members of Midland's 16-member asset review working group, which reviews recommended actions according to Midland's delegation of authority for loans in excess of $15 million. The asset review working group comprises senior servicing and special servicing managers and members of the legal, compliance, performing asset management, surveillance, investor reporting and insurance groups and is chaired by the senior vice president of real estate solutions.

As a third-party special servicer, Midland is required to seek controlling class approval of asset disposition plans and workout strategies. To obtain timely approvals and avoid potential conflicts with controlling class holders, asset managers maintain an open dialogue with controlling class holders throughout the workout process. The company has not had any material objections or lack of approval from controlling class holders to proposed workouts.

REO Management

Midland currently does not have a separate REO group given the limited number of REO assets. Responsibility for foreclosure and liquidation remains with the original asset manager. When foreclosure is required, the asset manager prepares a foreclosure case that describes the property and its environmental condition and identifies a property manager and broker should the trust be the successful bidder at the foreclosure sale. Similar to ASRs, the foreclosure case is approved prior to taking title to an asset according to Midland's delegation of authority.

Midland does not maintain separate loan workout and REO teams given the current volume of nine REO assets.

The REO business plan describes the property and local market in detail and includes Midland's recommended disposition strategy based on an analysis of alternative resolution strategies, including, at a minimum, as-is brokered sales, stabilized brokered sales and property auctions. The business plans also include operating and maintenance plans and budgets, if necessary. The asset manager also obtains current broker opinions of value and appraisals as required.

After sufficient marketing and competitive bidding, the asset manager prepares an REO disposition case recommending the sale of the property. The disposition case outlines the marketing process, results and sale terms and estimates the loss due to the sale coupled with an analysis of alternative strategies. This case is also approved subject to Midland's delegations of authority or asset review working group depending on the outstanding balance.

Third-party property managers and brokers are identified and interviewed based on their local experience with the subject property type and are retained using standard form agreements that are terminable by either party with 30 days' notice or in the event of a sale. Property managers are required to provide monthly operating statements, account reconciliations and rent rolls for each property, which are reviewed and reconciled by the collateral management services team and the asset manager.

As of June 2022, active special servicing includes one REO property that has been held longer than 36 months, requiring an Internal Revenue Service extension. The asset is a retail property located in Ohio that defaulted in August 2016 and was foreclosed upon in April 2018.

Governance and Conflicts of Interest

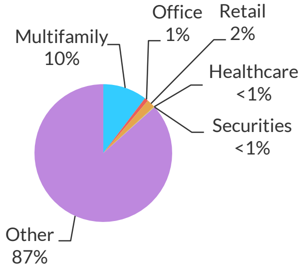
Managing Potential Conflicts

Potential conflicts of interest in special servicing arise through various forms, particularly as investors retaining controlling positions in securitizations or specific loans have influence on workout strategies and the ability to select the special servicer.

Midland currently performs securitized special servicing exclusively for third-party controlling class holders that have the right to appoint special servicers. While Midland, its parent or direct affiliates currently do not invest in CMBS B-pieces or subordinate loans for which Midland would be appointed special servicer, third-party controlling class holders' desire to effectuate a particular workout strategy also creates the potential for conflicts of interest.

The company's stated conflict management philosophy is to identify and document potential conflicts of interest for every transaction, communicate areas of potential conflicts of interest with all transaction parties and monitor ongoing potential conflicts. Midland employees are required to comply with PNC's enterprisewide policies and procedures. This includes a code of business conduct and ethics policy and an employee conduct policy; Midland employees are

Named Nonsecuritized Special Servicing Property Type
(As of June 30, 2022)



Source: Midland Loan Services.

required to certify their compliance with policies and procedures and complete annual compliance training. In addition, the PNC compliance and risk management departments provide ongoing surveillance and oversight of the policies and employee compliance.

With respect to third-party controlling class holder clients, Midland's stated policy for special servicing is to pursue the resolution strategy that presents the highest potential recovery on an NPV basis for all investors in the transaction.

Fitch reviewed a random sample of more than 10 business plans for active and resolved specially serviced assets and found the plans to be generally well documented, although in some instances there was limited detail demonstrating progression of the workout or the plan was not updated within 12 months or more. Fitch discussed sampled loans with asset managers who were knowledgeable about the assets, local markets and efforts made to resolve the loans. Senior managers review workouts with asset managers monthly and asset managers are required to document monthly updates within AM Insight™ outside of business plans. Business plans of non-REO assets contained an NPV analysis of alternate resolution strategies where appropriate.

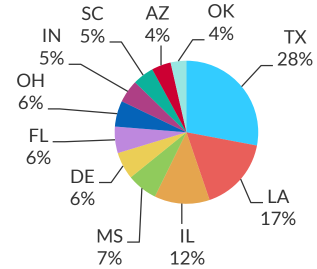
Affiliate Companies

Midland has used the PNC Capital Markets structured products group (SPG) within PNC to broker note sales in some instances. Midland does not have a specific policy regarding the engagement of SPG for note sales; however, it will only do so with controlling class holder consent and discloses the sale of the asset through an affiliate via CREFC reporting. There have been no additional note sales brokered by SPG within the past six years.

Neither Midland nor PNC currently use affiliate companies that provide real estate management services or CRE property brokerage services. Affiliated PNC entities may provide CRE financing options to maturing CMBS loans.

While Midland special servicing business plans compare favorably to other Fitch-rated servicers and are comprehensive, they are not updated annually. Although senior managers review workout progress with asset managers regularly, there is no formal annual review of aged special servicing assets by the asset review working group, contrary to what is typically observed at highly rated special servicers.

Named Nonsecuritized Special Geographic Distribution
(As of June 30, 2022)



Source: Midland Loan Services.

The ratings above were solicited and assigned or maintained at the request of the rated entity/issuer or a related third party. Any exceptions follow below.