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CREDIT OPINION

16 February 2023

Update

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RATINGS

National Rural Utilities Coop. Finance

Corp.	
Domicile	Dulles, Virginia, United States
Long Term Rating	A2
Туре	Senior Unsecured - Dom Curr
Outlook	Stable

Please see the <u>ratings section</u> at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.

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National Rural Utilities Coop. Finance Corp.

Credit Update of Key Rating Factors

Summary

National Rural Utilities Cooperative Finance Corporation's (CFC; A2 senior unsecured; stable) credit profile reflects the strength of its unique franchise position as a dominant low-cost, tax-exempt lender, primarily to the creditworthy rural electric cooperative (RECs) sector. The stability and resilience of CFC's loan portfolio and CFC's practice of normally lending on a senior secured basis has led to its long-demonstrated history of low net charge offs and problem loans within the REC sector, in addition to steady financial performance with adjusted TIER at or exceeding CFC's target of 1.1x since at least 2000. CFC's credit quality also benefits from multiple funding sources such as the member cooperatives, the Guaranteed Underwriter Program with Rural Utilities Service (RUS), an agency of the US Government (Aaa stable) and a revolving note purchase agreement with the Federal Agricultural Mortgage Corporation (Farmer Mac), a federally chartered private corporation. The rating affirmation acknowledges CFC's demonstrated track record to manage through portfolio challenges within the REC loan portfolio when they surface, without incurring a material impairment to the balance sheet.

That said, CFC's leverage remains persistently high at over 8.0x adjusted debt to equity at FY2022, as calculated by Moody's, and above CFC's internal target given its growing loan portfolio. Moreover, CFC's loan portfolio is concentrated in a single industry with ongoing, single obligor concentration. While this segment of the electric industry has strong fundamentals and its position as generally a senior secured lender are ongoing mitigants, events within the industry and within a region can impact its loan portfolio for a period of time rather quickly. In that regard, CFC has moderate carbon transition risk since some of the larger generation and transmission cooperatives in its loan portfolio still rely extensively on coal fired generation to meet members' energy demands. Furthermore, the inverted interest yield curve is likely to negatively pressure CFC's net interest margin over time although we expect CFC to maintain its 1.10x TIER ratio.

Credit Strengths

- » Around 95% of CFC's loan and guarantees portfolio are to the creditworthy REC sector and over 90% are secured
- » History of low net charge offs and problem loans in the REC sector
- » Unique franchise provides strong competitive position
- » Continued access to multiple funding sources fosters less reliance on capital markets

Credit Challenges

- » Single industry and obligor concentration in the loan portfolio
- » Persistent high leverage
- » Moderate carbon transition risk
- » Inverted yield curve will pressure earnings

Rating Outlook

CFC's stable rating outlook reflects CFC's long-standing strategic commitment to focus on loans primarily to RECs, maintaining a diversified funding profile, and its plans to address its heightened leverage ratio. CFC's high leverage, single industry concentration and single obligor concentration are persisting rating constraints.

Factors that Could Lead to an Upgrade

- » Given relatively high and persistent leverage and single industry and single-obligor concentration, the likelihood of a rating upgrade for CFC is limited.
- » Prospects for a positive rating action exist beyond the next 12 months if the Moody's adjusted debt to adjusted capital funds metric improves to 6.0x on a sustained basis, liquidity remains strong, and alternatives to wholesale capital market funding increase in number and depth, while CFC continues to maintain a relatively clean portfolio with no new material non-performing assets, and continuing to demonstrate an ability to produce stable financial results which consistently exceed the 1.1x adjusted (TIER) target.

Factors that Could Lead to a Downgrade

- » If new material problem loans surfaces within CFC's portfolio;
- » If CFC's strategy strays toward increasing its loans to non-core electric cooperative markets;
- » If CFC leverage continues to rise leading to Moody's adjusted debt to equity nears or exceeds 9.0x on a sustained basis
- » If CFC's access to private sources of long-term capital become constrained
- » If CFC fails to maintain an adequate liquidity profile, including ample access to multi-year bank credit facilities.

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the issuer/deal page on https://ratings.moodys.com for the most updated credit rating action information and rating history.

Key Indicators

Exhibit 1

	2022	2021	2020	2019
Loans (\$billions) [1]	30.06	28.43	26.70	25.92
Adjusted Capital Funds (\$billions) [1][2]	3.28	3.12	3.07	3.01
Adjusted TIER (x) [1][3]	1.30	1.23	1.17	1.19
Adjusted Debt / Adj. Capital Funds (NIC) x [1][2][4]	8.10	8.03	7.66	7.53
Loan Loss Reserve (\$millions) [1][5]	68	86	53	18
Loan Loss Reserve / Loans (%) [1][5]	0.22%	0.30%	0.20%	0.07%
Net Income / Average Managed Assets (%)	2.6%	2.8%	-2.0%	-0.6%
Tangible Common Equity / Tangible Managed Assets	7.6%	7.4%	7.3%	7.3%
Problem Loans / Gross Loans (%)	0.76%	0.84%	0.67%	0.05%
Net Charge-Offs / Average Gross Loans (%)	0.0%	0.0%	0.0%	0.0%
Debt Maturities Coverage (%)	40.1%	42.0%	56.8%	60.1%
FFO / Total Debt (%)	0.9%	0.9%	0.9%	0.8%
Secured Debt / Gross Tangible Assets (%)	51.3%	56.0%	58.5%	58.4%

[1] Fiscal year ends May 31st

[2] Members' Equity is adjusted for derivative forward value and foreign currency adjustments

[3] Net margin adjusted to exclude derivative forward value and foreign currency adjustments. Cost of funds adjusted to include derivative cash settlements

[4] Members capital securities receive equity credit, as determined by Moody's

[5] Excludes loss reserves for guarantee portfolio

Source: Moody's Investors Service, CFC SEC filings

Corporate Profile

Headquartered in Dulles, Virginia, CFC is a member-owned cooperative association, non-bank financial institution exclusively serving rural electric and telecommunication utilities. CFC was organized in April 1969 by RECs to provide an economical alternative to federally subsidized funds from the RUS of the U.S. Department of Agriculture.

Loans to telecommunication members are made through Rural Telephone Finance Cooperative (RTFC), a private cooperative association formed to provide financing for its rural telecommunications members and affiliates. Loans are also made through National Cooperative Services Corporation (NCSC), a member-owned cooperative association, which primarily provides specialized financing and services to entities owned, operated and controlled by RECs.

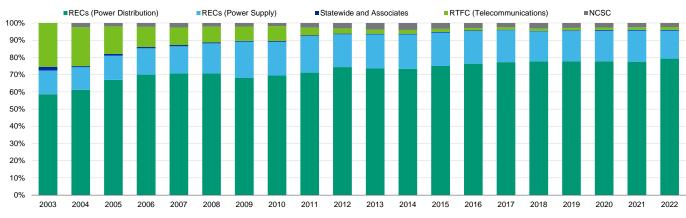
Detailed Credit Considerations

CFC's consolidated loan portfolio mostly comprises of the low-risk REC sector

CFC's principal lending market is the REC distribution segment, which we consider to be among the least volatile and most resilient across the electric power sector (see Exhibit 2 below).



Loans to the low risk REC distribution sector has grown to more than 79% of the portfolio



Source: CFC's audited financials

The REC distribution segment is a segment that we consider to have strong investment grade credit qualities. RECs generally conduct relatively low risk business activities, sells electricity to mostly residential customers, tends to have generally steady capital requirements, employ conservative capital structures, and the majority benefit from full flexibility in setting their customers' rates. As of FY 2022, around 79% of CFC's loan portfolio were to REC distribution utilities. When including loans to power supply RECs, most of which also have investment grade credit qualities as well, that rises to around 96% of CFC's loan portfolio.

CFC remains committed to its philosophy of minimizing its lending to the riskier telecommunications sector, a credit positive initiative, which began almost 20 years ago. At FY 2003, telecommunications loans represented around 25% of the total loan portfolio compared to around 1.6% at FY 2022. The decrease is credit positive since the telecommunications loan portfolio represented more than 80% of CFC's cumulative net charge offs since its inception through FY 2022.

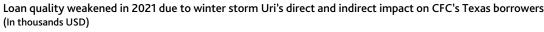
High credit quality of CFC's loan portfolio remains evident through low net charge offs

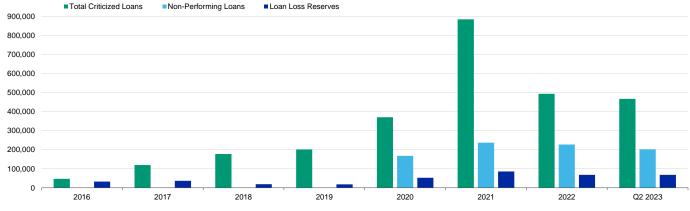
Since the cooperative's inception in 1969 through FY 2022, there have been 33 defaults and about \$513 million of cumulative net charge-offs on its electric and telecom loan portfolio with the latter responsible for more than 80% of the total cumulative net charge offs. Eighteen defaults occurred in the electric portfolio, including the Brazos bankruptcy in March 2021 and Brazos Sandy Creek in March 2022, and fifteen related to the telecom portfolio. Prior to Brazos' bankruptcy filing in March 2021, CFC had not experienced any defaults or charge-offs in its electric utility and telecommunications loan portfolios since fiscal years 2013 and 2017, respectively. The overall low loan write-off history demonstrates the historically high credit quality of CFC's loan portfolio, the strength of the collateral typically pledged to CFC, the essentiality of the electric distribution business, and the ability of CFC to take a long-term view concerning debt restructurings due to its unique relationship with its customer base and the fact that CFC does not have profit-maximization goals. As of November 30, 2022, around 92% CFC's loans were secured which further supports CFC's low net charge off rate.

While historical net charge offs at CFC has remained low, the amount of loans in the criticized category and nonperforming rose sharply in 2021 and have since declined. CFC's nonperforming and criticized loans increased in the third quarter of FY 2021 due to extraordinarily high wholesale power costs in the Electric Reliability Council of Texas, Inc. (ERCOT: A1 stable) power market during winter storm Uri in February 2021 that caused the substantial financial deterioration of Brazos Electric Power Cooperative, Inc (Brazos) and Rayburn Country Electric Cooperative, Inc (Rayburn, Baa3 stable). At the end of FY2021, CFC had a total of \$379 million of secured and unsecured loans to Rayburn that were classified as substandard. Subsequently in February 2022, Rayburn completed a

securitization transaction, resolved its outstanding costs from the winter storm, and CFC upgraded its loans to Rayburn into the 'pass' category.

Exhibit 3





Criticized category include loans classified as special mention, substandard and doubtful and includes nonperforming loans Source: CFC's audited financials

At the end of fiscal Q2 2023, CFC reported total loans in the criticized category at \$467.6 million compared to only \$48 million at fiscal year end 2016 and nonperforming loans totaled around \$203 million compared to zero from 2016 through 2019. Approximately \$247 million within the criticized loan category are performing loans to one borrower that experienced adverse financial impact from two successive hurricanes. CFC expects this borrower will benefit from federal aid to fund restoration costs and the borrower remains current on its obligations. The nonperforming loans are to three borrowers: Brazos (\$78 million exposure as of Q2 2023), Brazos Sandy Creek (\$21 million exposure as of Q2 2023), and a power supply borrower (\$104 million exposure as of Q2 2023). In Q2 2023, CFC had \$15 million of charge offs associated with Brazos and Brazos Sandy Creek. In December 2022, CFC's exposure to Brazos was reduced to \$22 million (unsecured) after receiving \$56 million of payments according to Brazos's plan of reorganization to exit bankruptcy. CFC expects to receive the remaining \$22 million from Brazos over the next 6 to 12 months. Also in December 2022, lenders to Brazos Sandy Creek including CFC took over the borrower's 25% undivided interest in the Sandy Creek coal fired plant through Riesel Holdco, LLC, an entity formed by Brazos Sandy Creek noteholders.

Industry and obligor concentration risks partially offset by strong risk management

While the REC sector is broadly low risk, CFC's primary focus on this sector represents single industry concentration. As such, trends in the rural electric utility's broadly affecting credit quality, such as carbon transition risk, or events broadly affecting RECs in a region, such as winter storm URI, can also directly impact CFC. The industry concentration also results in obligor concentration risk since CFC's top 20 largest borrowers composed of around 19% of the total loan portfolio as of November 30, 2022.

Partially offsetting these risks is CFC's strong risk management capabilities. The cooperative lender regularly maintains an internal risk rating system and sets exposure limits for each borrower, while also retaining an independent bank consulting firm to provide an annual third party assessment of the functioning of the risk rating system. Furthermore, as part of CFC's strategy to manage its credit risk exposure, the cooperative executed a long-term standby purchase commitment agreement with Farmer Mac effective August 31, 2015, as amended on May 31, 2016. This agreement allows CFC to designate certain loans to be covered under the commitment, subject to approval by Farmer Mac, and if any such designated loan subsequently goes into material default for at least 90 days, upon request by CFC, Farmer Mac must purchase such loan at par value. CFC designated, and Farmer Mac approved loans that had an aggregate outstanding principal balance of \$454 million as of November 30, 2022. No loans had been put to Farmer Mac for purchase, pursuant to this agreement, as of FY Q2 2023.

Strong competitive position benefits from CFC's unique franchise characteristics

As a member owned lender, CFC enjoys strong support from its member cooperatives as it provides those entities with attractive and customized financing alternatives. The value of the CFC franchise is evident through the broad participation by the RECs in CFC's offering of member capital securities as well as the steadily increasing members' investment amount that helps to fund CFC's operations. We consider the members' investments to be a "sticky" form of core funding. CFC's unique franchise position is magnified by the financial institution's status as a tax-exempt cooperative association with a primary operating objective to provide low cost funding to its members.

High leverage and extensive use of secured debt as funding source are weaknesses

Due to the nature of its ownership structure, CFC does not have common stock in its capital structure. Instead, CFC has Moody's adjusted members' equity in its capital structure, which has historically grown although not as fast as its loan growth and totaled \$2.02 billion as of May 31, 2022 according to Moody's calculations. Moody's adjustment disregards derivative gains and losses among other adjustments. Additionally, CFC has supported its loan growth in its capital structure through deeply subordinated capital term certificates, which have equity like characteristics and are offered only to its members, members' certificates, which are also owned by its members, and publicly offered subordinated deferred debt. As of FY 2022, these forms of equity composed \$994 million of deeply subordinated members' capital term certificates, \$240 million of members' certificates, and \$987 million of subordinated deferrable debt. Moody's assigns 50% equity credit to the members' capital term certificates and 25% equity to the subordinated deferrable debt in calculating CFC's leverage ratio.

CFC's leverage ratio as represented by adjusted debt to adjusted capital funds (according to Moody's calculations that, among other items, adjusts for the effects of mark-to-market changes on CFC's derivatives which at times can be significant) has crept up over time from a low of around 7.10x in 2012 to a high of over 8.0x at the end of FY2022, a credit negative. The main driver of the increased leverage has been CFC's extensive loan growth that is primarily debt funded and patronage retirement according to CFC's policy which seeks to retire 50% of the prior year's allocated patronage capital and hold the remaining 50% for 25 years. CFC's ability to implement funding strategies which reduce leverage on a sustained basis remain critical to its credit profile as it funds member cooperative borrowing needs.

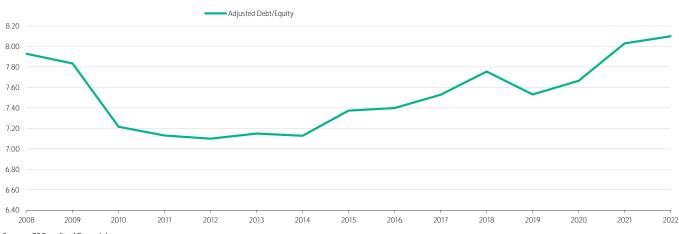


Exhibit 4 Moody's adjusted debt to equity ratio for CFC has increased over time

Source: CFC audited financials

Since 2021, CFC's reported adjusted debt to equity ratio has also been above its policy target of 6.0x and as of November 30, 2022, CFC's adjusted debt to equity ratio had risen to 6.54x compared to 6.24x at FY2022 and 6.15x in FY2021. We understand CFC has plans to address its heightened leverage ratio over the next 12-24 months.

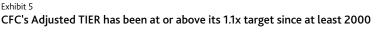
In addition to high leverage, CFC's extensive use of secured borrowings to fund its loan program is a weakness since it reduces overall financial flexibility. Over the last three years, secured borrowings relative to gross tangible assets represented an average of around 55% and this factor scores in the 'B' category in the methodology. As of November 30, 2022, CFC's secured borrowings comprised of

\$7.6 billion of collateral trust bonds (CTB), \$6.3 billion under the GUP program, and \$3 billion under the note purchase agreement with Farmer Mac. While the loan collateralization requirement is a credit negative, the GUP program and the note purchase agreement with Farmer Mac represent important sources of funding diversity.

Weak financial metrics but steady financial performance relative to its financial targets

CFC is a member-owned cooperative lender with a goal to set rates that provide its members with the lowest cost financing while also earning a margin consistent with defined financial targets. As part of its strategy, CFC prices its members' loans and guarantees to cover its funding costs, general and administrative expenses, the loan loss provision, and a modest margin to maintain an adjusted TIER of at least 1.10x.

Given CFC's business model, CFC's profitability and cash flow to debt financial metrics are low relative to peers such as net income to average managed assets initially scoring in the low 'Baa' category. That said, these factors have limitations when assessing CFC's credit risk profile given its cooperative model. Our assessment of CFC's credit profile incorporates a view that CFC will continue to set margins at levels that produce positive operating margins and cushion above minimum required internal targets enabling them to comfortably exceed any financial covenants in its debt documents as they have done since at least 2000 as shown in the exhibit below. For the six month period ending November 30, 2022, CFC reported an adjusted TIER of 1.23x compared to 1.29x over the same period a year ago.





Source: CFC Audited Financial statements

Liquidity Analysis

CFC generally has very good liquidity, as shown in Exhibit 6, to support its commercial paper program, its variable rate tax-exempt demand bonds, and upcoming maturities.

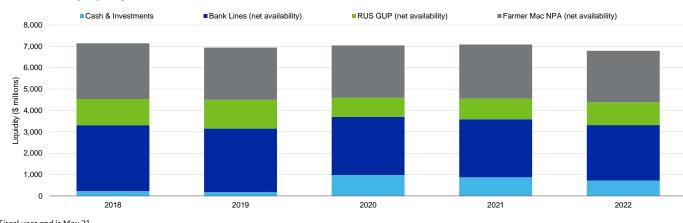


Exhibit 6 CFC's availability liquidity

CFC's primary source of liquidity are \$2.6 billion of committed bank lines consisting of a \$1.355 billion bank line maturing in November 2025. These credit facilities do not contain a MAC clause but have financial covenants which are set at levels that provide substantial cushion. The agreements require an adjusted TIER average of 1.025x for the last six quarters, a minimum adjusted TIER for the most recent fiscal year of 1.05x, and a maximum senior debt to equity ratio to not be more than 10.0x, in all cases as defined in the agreements. The bank lines support CFC's commercial program that ranges from \$1-1.5 billion at each fiscal quarter end.

Supplementing CFC's liquidity is the \$7.948 billion GUP program with RUS (up to \$775 million available as to November 30, 2022) and \$6 billion revolving note purchase agreement with Farmer Mac (\$2.953 billion available as of November 30, 2022) that serve to diversity CFC's funding sources. On December 15, 2022 CFC increased the size of the GUP program by \$750 million. While they represent important sources of funding for CFC, both of these programs require that CFC pledge as collateral eligible electric distribution or power supply system loans equal to at least 100% of the total outstanding borrowings and thus this and certain other conditions precludes the inclusion of these two sources of liquidity from our 'Debt Maturity Coverage' ratio, which results in a low average ratio of around 46%. Furthermore, the note purchase facility with Farmer Mac is available through June 30, 2027, with successive automatic one-year renewals without notice by either party. Beginning June 30, 2026, the revolving note purchase agreement is subject to termination of the draw period by Farmer Mac upon 425 days' prior written notice.

As of November 30, 2022, CFC's liquidity sources covered 95% of its upcoming debt maturity over the next 12 months including \$3.853 billion of member short term investments. Moody's views the member short-term investments as akin to core funding as likely to be extended at maturity. CFC also benefits from scheduled amortizations and repayments on its loan portfolio over a 12 month period totaling \$1.491 billion as of November 30, 2022.

Notwithstanding CFC's liquidity sources described above, CFC still remains dependent upon wholesale short-term and long-term funding. CFC's primary sources of long-term capital market funding include secured CTBs, unsecured medium term notes (MTNs), and subordinated deferrable debt.

Fiscal year end is May 31. Source: CFC's audited financials

ESG considerations

National Rural Utilities Coop. Finance Corp.'s ESG Credit Impact Score is Neutral-to-Low CIS-2

Exhibit 7 ESG Credit Impact Score



For an issuer scored CIS-2 (Neutral-to-Low), its ESG attributes are overall considered as having a neutral-to-low impact on the current rating; i.e., the overall influence of these attributes on the rating is non-material.

Source: Moody's Investors Service

CFC's exposure to governance risks is neutral-to-low (**G-2**), which considers a positive consideration for financial strategy and risk management given its history of low nonperforming loans ratio and net charge offs. This positive is balanced by neutral-to-low risk scores for management creditability & track record, organizational structure, and compliance & reporting. Furthermore, board structures and policies is moderately negative given CFC's board is almost entirely comprised of non-independent directors; however, we also consider CFC's unique cooperative ownership and alignment of interests. As member-owned cooperative lender to the rural electric cooperative sector, CFC does not operate to maximize profits but its objective is to price its member loans and guarantees to cover its funding costs, general and administrative expenses, its loan loss provision, and a modest margin to maintain an adjusted TIER ratio of at least 1.10x.

Exhibit 8 ESG Issuer Profile Scores



Source: Moody's Investors Service

Environmental

CFC's moderately negative environmental risk (**E-3** issuer profile score) largely reflects moderately negative exposure to carbon transition risk and waste & pollution since some of its larger generation and transmission cooperatives borrowers rely extensively on coal fired generation to meet customer's energy demands. Physical climate risk is also moderately negative since the RES sector can be susceptible to major weather events such as winter storm Uri and hurricanes. These considerations are balanced by neutral-to-low risk for water management and natural capital.

Social

CFC's exposure to social risks is neutral-to-low (**S-2**) which considers neutral-to-low risk scores across customer relations, human capital, demographic & societal trends, health & safety, and responsible production. CFC transacts directly with rural cooperative utilities and do not have retail customers.

Governance

CFC's exposure to governance risks is neutral-to-low (**G-2**), which considers a positive consideration for financial strategy and risk management given its history of low nonperforming loans ratio and net charge offs. This positive is balanced by neutral-to-low risk scores for management creditability & track record, organizational structure, and compliance & reporting. Furthermore, board structures and policies is moderately negative given CFC's board is almost entirely comprised of non-independent directors; however, we also consider CFC's unique cooperative ownership and alignment of interests. As member-owned cooperative lender to the rural electric cooperative sector, CFC does not operate to maximize profits but its objective is to price its member loans and guarantees to cover its funding costs, general and administrative expenses, its loan loss provision, and a modest margin to maintain an adjusted TIER ratio of at least 1.10x.

ESG Issuer Profile Scores and Credit Impact Scores for the rated entity/transaction are available on Moodys.com. In order to view the latest scores, please click <u>here</u> to go to the landing page for the entity/transaction on MDC and view the ESG Scores section.

Rating Methodology

The methodology for these ratings is Finance Companies Methodology. As depicted below scorecard indicated outcome for CFC is A2 scorecard which is in-line with CFC's senior unsecured rating. Please see the Credit Policy page on www.moodys.com for a copy of the methodology.

Finance Companies Methodology

Net Income / Average Managed Assets (%) 10% 1.14% Baa3 Baa1 Pro-form adjustments Capital Adequacy and Leverage Tangbie Common Equity / Tangbib Managed 25% 7.47% B1 Baa1 Other adjustments Asset Quality Problem Loars / Gross Loans (%) 10% 0.76% Baa1 Asa Expected trend Portolio composition Net Charge Olis / Average Gross Loans (%) 10% 0.76% Baa1 Asa Expected trend Portolio composition Net Charge Olis / Average Gross Loans (%) 10% 0.76% Baa1 Asa Expected trend Portolio composition Cash Pow and Liquidity Cash Pow and Liquidity Casa Bas1 Pro-forma adjustments Secure Debt (%) 10% 46.3% B3 Ba1 Pro-forma adjustments Secure Debt (%) 10% 6.87% Casa Ba1 Pro-forma adjustments Secure Debt (%) 10% 6.83 Ba2 Expected trend Bace Secure Debt (%) 10% Aa Bace Expected trend Bace <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>							
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Range	Sovereign or parent constraint				Aaa		
					a1 - a3		
					a2		

Source: Moody's Investors Service

Ratings

Exhibit 10	
Category	Moody's Rating
NATIONAL RURAL UTILITIES COOP. FINANCE CORP.	
Outlook	Stable
Senior Secured	A1
Senior Unsecured	A2
Subordinate	A3
Commercial Paper	P-1

Source: Moody's Investors Service

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