

CREDIT OPINION

21 February 2025

Update



Send Your Feedback

RATINGS

National Rural Utilities Coop. Finance Corp.

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

Please see the [ratings section](#) at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.

Contacts

Clifford J Kim +1.212.553.7880
VP-Sr Credit Officer
clifford.kim@moodys.com

Victoria Shenderovich +1.212.553.4490
Sr Ratings Associate
vika.shenderovich@moodys.com

A. J. Sabatelle +1.212.553.4136
Associate Managing Director
angelo.sabatelle@moodys.com

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

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 (REC) 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 negative) and a revolving note purchase agreement with the Federal Agricultural Mortgage Corporation (Farmer Mac), a federally chartered private corporation, that are in addition to CFC's funding through the capital markets.

That said, CFC's leverage remains high reaching almost 8.2x adjusted debt to equity at the end of FY 2023, as calculated by Moody's, and above CFC's internal target for this period given its growing loan portfolio. For FY 2024, CFC's leverage declined to around 7.7x after accounting for Moody's revision to the treatment of hybrid securities. 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 CFC's loan portfolio for a period of time rather quickly. In that regard, CFC faces 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.

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 provides funding diversity

Credit Challenges

- » Single industry and obligor concentration in the loan portfolio
- » Elevated financial leverage
- » Moderate carbon transition risk

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 ongoing efforts to manage its 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 if the Moody's adjusted debt to equity ratio 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 surface 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 at or above 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.moody's.com> for the most updated credit rating action information and rating history.

Key Indicators

CFC's key indicators

	2024	2023	2022	2021	2020
Loans (\$billions) [1]	34.5	32.5	30.1	28.4	26.7
Adjusted Capital Funds (\$billions) [1][2]	3.60	3.47	3.28	3.12	3.08
Adjusted TIER (x) [1][3]	1.24	1.25	1.30	1.23	1.17
Adjusted Debt / Adj. Capital Funds (NIC) x [1][2][4]	7.7x	8.2x	8.1x	8.0x	7.8x
Loan Loss Reserve (\$millions) [1][5]	49	53	68	86	53
Loan Loss Reserve / Loans (%) [1][5]	0.14%	0.16%	0.22%	0.30%	0.20%
Net Income / Average Managed Assets (%)	1.6%	1.5%	2.6%	2.8%	-2.0%
Tangible Common Equity / Tangible Managed Assets	6.6%	6.5%	7.6%	7.4%	7.3%
Problem Loans / Gross Loans (%)	0.14%	0.42%	0.76%	0.84%	0.67%
Net Charge-Offs / Average Gross Loans (%)	0.0%	0.1%	0.0%	0.0%	0.0%
Debt Maturities Coverage (%)	44.1%	41.1%	40.1%	42.0%	56.8%
FFO / Total Debt (%)	1.0%	1.1%	0.9%	0.9%	0.9%
Secured Debt / Gross Tangible Assets (%)	47.2%	51.2%	51.3%	56.0%	58.5%

[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. The Hybrid Equity Credit methodology published on February 1, 2024 applies to CFC's financial results after this date. For prior results, the Hybrid Equity Credit methodology applicable at the time applies.

[5] Excludes loss reserves for guarantee portfolio

Source: Moody's Ratings, 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.

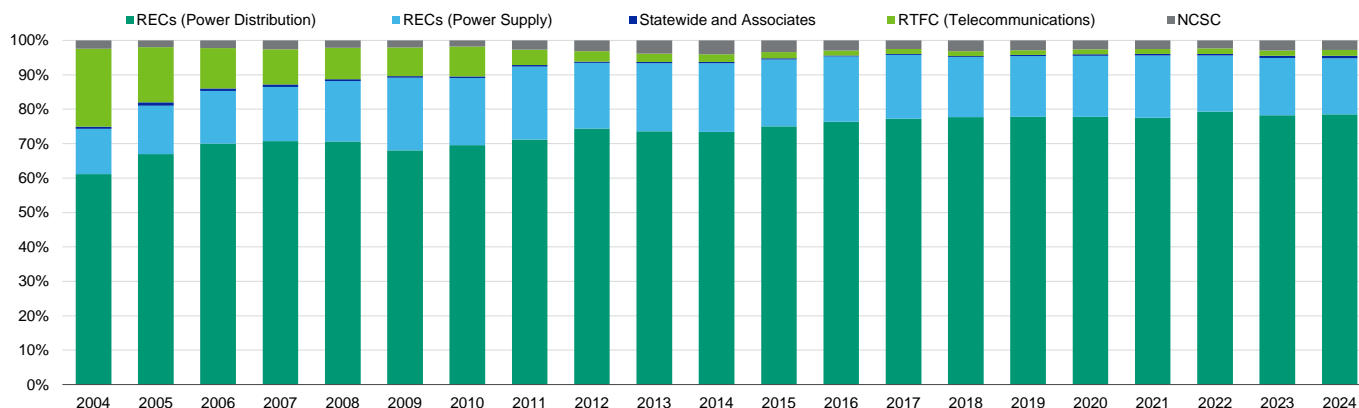
Detailed Credit Considerations

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).

Exhibit 2

Loans to the low risk REC distribution sector has stabilized at almost 80% of the portfolio since 2017



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, sell electricity to mostly residential customers, tend 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 2024, around 78% of CFC's loan portfolio was 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 95% 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 1.7% at FY 2024. The decrease is credit positive since the telecommunications loan portfolio represented more than 80% of CFC's cumulative net charge offs.

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

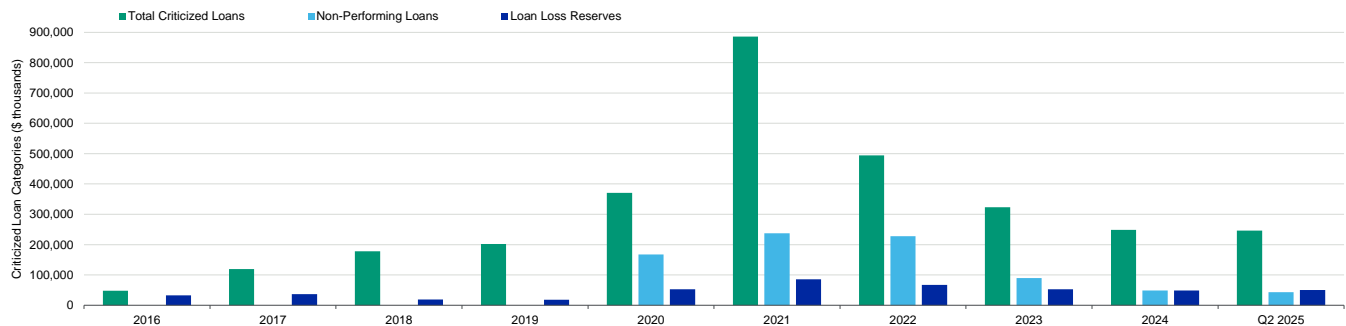
Since the cooperative's inception in 1969 through FY 2024, there have been 35 defaults and about \$527 million of cumulative net charge-offs on its electric and telecom loan portfolio with the latter responsible for more than 80% of the total cumulative net charge offs. Eighteen defaults occurred in the electric portfolio, including the Brazos Electric Power Cooperative, Inc. (Brazos Electric) bankruptcy in March 2021 and Brazos Sandy Creek in March 2022, and seventeen to the telecom portfolio. Prior to Brazos Electric's 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, 2024, around 91% CFC's loans were secured which further supports CFC's low net charge off rate.

While historical net charge offs at CFC have remained low, the amount of loans in the criticized category and nonperforming rose sharply in 2021, but 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: Aa3 stable) power market during winter storm Uri in February 2021 that caused the substantial financial deterioration of Brazos Electric and Rayburn Country Electric Cooperative, Inc (Rayburn, Baa3 positive), two generation and transmission cooperatives. 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. As of November 30, 2024, CFC no longer has any loans to Brazos Electric nor Brazos Sandy Creek and incurred cumulative net charges for the Brazos entities totaled \$14 million including \$1 million of recorded loan recovery relative to approximately \$114 million of outstanding exposure at the end of FY2022.

Exhibit 3

Loan quality has improved since 2021 when winter storm Uri negatively affected several of CFC's Texas borrowers
(In thousands USD)



Criticized category include loans classified as special mention, substandard and doubtful and includes nonperforming loans

Source: CFC's audited financials

At the end of November 30, 2024, CFC reported total loans in the criticized category total almost \$246 million and nonperforming loans totaled around \$49 million. Approximately \$183 million within the criticized loan category are performing loans to one borrower that experienced adverse financial impact from two successive hurricanes. The borrower has benefited from federal aid to fund restoration costs and the borrower remains current on its obligations. The only nonperforming loan is to a power supply electric borrower.

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 in 2021, can also directly impact CFC. The industry concentration also results in obligor concentration risk since CFC's top 20 largest borrowers composed of around 20% of the total loan portfolio as of November 30, 2024.

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. No loans had been put to Farmer Mac for purchase, pursuant to this agreement as of November 30, 2024.

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.

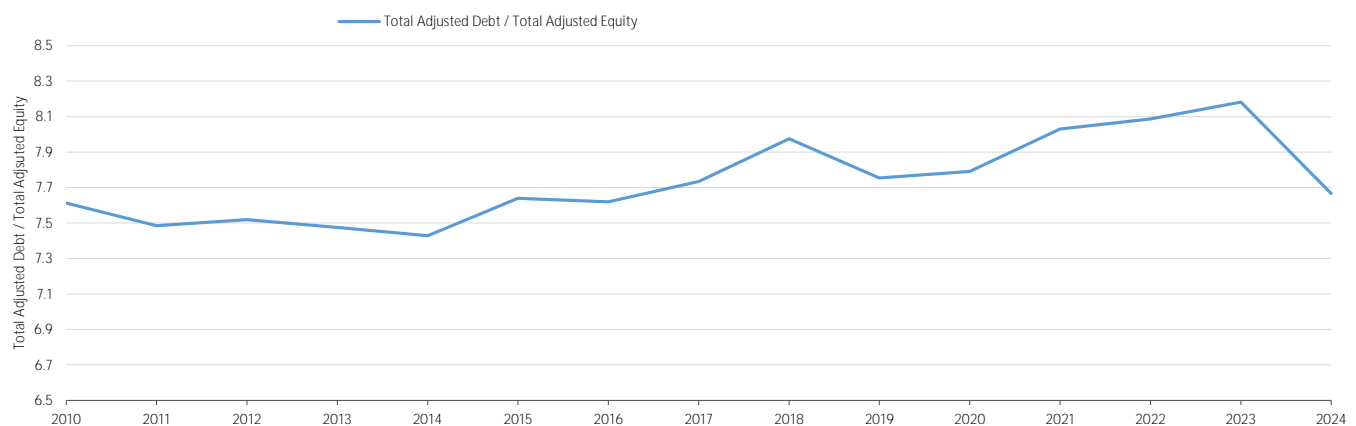
High leverage and extensive use of secured debt as funding source are weaknesses

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 (but excluding hybrid equity), which has historically grown although not as fast as its loan growth and totaled \$2.39 billion as of May 31, 2024 according to Moody's calculations. Moody's adjustment disregards derivative gains and losses among other adjustments. Additionally, in recent years, CFC has supported its loan growth in its capital structure through publicly offered subordinated deferrable debt and retained earnings. As of FY 2024, these forms of equity composed \$952 million of deeply subordinated members' capital term certificates, \$246 million of members' certificates, and \$1.29 billion of subordinated deferrable debt. According to the latest hybrid equity credit methodology published in February 2024, Moody's assigns 50% equity credit to both the members' capital term certificates and after February 1, 2024, subordinated deferrable debt when calculating CFC's leverage ratio. For financial ratios prior to this date, we assume 50% equity credit on the members' capital term certificates and 25% equity credit on the subordinated deferrable debt.

CFC's leverage ratio as represented by adjusted debt to adjusted equity (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 since 2010 from a low of around 7.4x in 2014 to a recent high near 8.2x at the end of FY2023, a credit negative. The main driver of the increased leverage has been CFC's extensive loan growth that is primarily debt funded and patronage capital 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. For FY2024, CFC's leverage ratio declined to around 7.7x from almost 8.2x in FY2023 given the higher equity credit attributed to the deferrable subordinated debt.

Exhibit 4

Moody's adjusted debt to equity ratio for CFC has increased through FY2023



Note: The figures in the exhibit above reflect the Moody's hybrid methodology applicable at the time. For FY 2024 results, it incorporates Moody's Hybrid Equity Credit methodology published on February 1, 2024.

Source: CFC audited financials

Starting in Q2 FY 2025 CFC's revised its reported adjusted debt to equity ratio target to 8.5x from 6.0x and changed the methodology to calculate the ratio. CFC's reported leverage ratio more conservatively attributes 50% equity credit to its subordinated deferrable debt compared to the 100% equity credit under CFC's prior approach. Under CFC's new methodology, CFC's leverage calculation is

much more similar to the Moody's adjusted figure and CFC's reported adjusted debt to equity ratio was 7.37x and 7.27x, respectively, for Q2 FY2025 and FY2024.

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 although this ratio has come down over time. Over the last two years, secured borrowings relative to gross tangible assets represented an average of around 47% and this factor scores in the 'B' category in the methodology compared to 58% in 2020. As of November 30, 2024, CFC's secured borrowings comprised of \$7.1 billion of collateral trust bonds (CTB), \$6.3 billion under the GUP program, and \$3.5 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 reliable funding diversity.

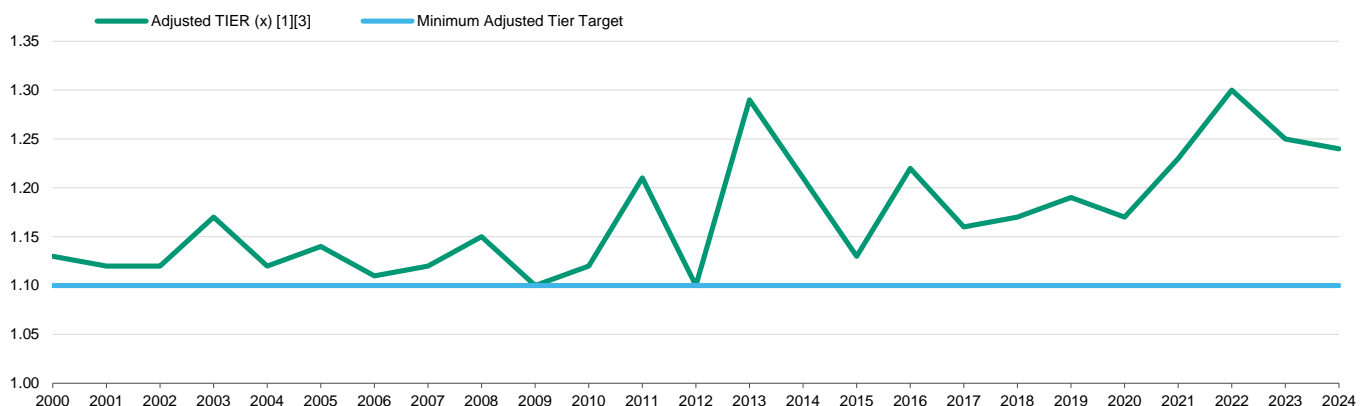
Weak financial metrics but steady financial performance relative to its financial targets

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 mid '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 FY 2024, CFC reported an adjusted TIER of 1.24x and for the six month period ending November 30, 2024, it reported a TIER of 1.20x.

Exhibit 5

CFC's Adjusted TIER has been at or above its 1.1x target since at least 2000



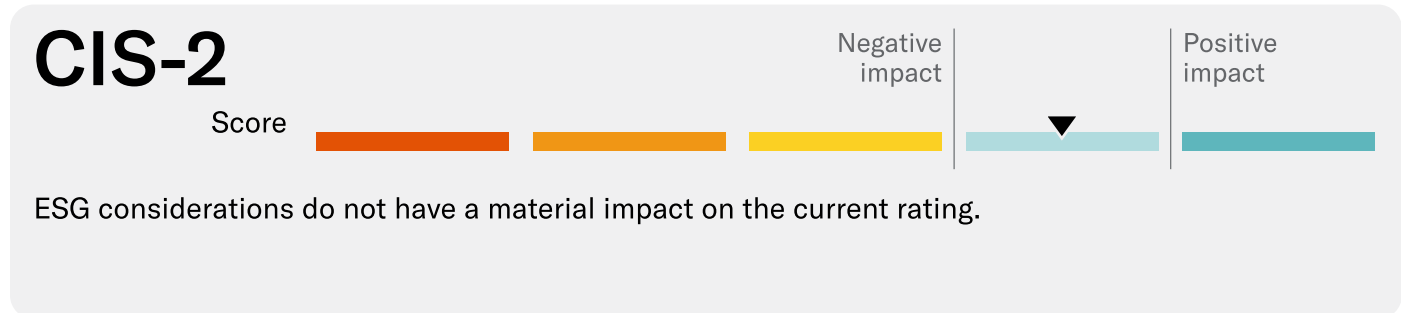
Source: CFC Audited Financial statements

ESG considerations

National Rural Utilities Coop. Finance Corp.'s ESG credit impact score is CIS-2

Exhibit 6

ESG credit impact score

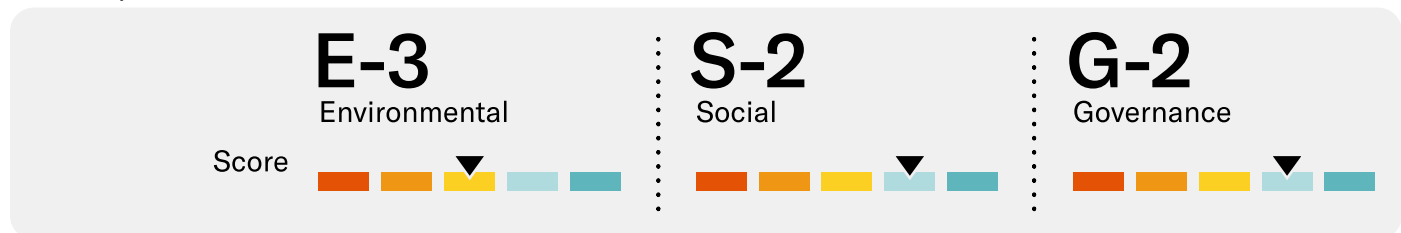


Source: Moody's Ratings

CFC's ESG Credit Impact Score is neutral (**CIS-2**) that considers CFC's history of low non-performing loans and net charge offs and unique cooperative business model but also board membership that mostly comprises of non-independent directors. It also considers moderately negative environmental risks due to carbon transition, waste & pollution, and physical climate risk of its electric cooperative borrowers.

Exhibit 7

ESG issuer profile scores



Source: Moody's Ratings

Environmental

CFC's **E-3** issuer profile score largely reflects moderate risk 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 a moderately negative risk since electric cooperatives can be susceptible to major weather events such as winter storm Uri and hurricanes. Electric cooperatives have access to Federal Emergency Management Agency (FEMA) funds following a hurricane which aids in the long-term recovery.

Social

CFC's **S-2** issuer profile score considers social risks that does not pose a particular credit risk especially since CFC transacts directly with rural cooperative utilities and do not have retail customers.

Governance

CFC's **G-2** issuer profile score considers a positive financial strategy and risk management given its history of low nonperforming loans ratio and net charge offs. While board structures and policies is moderately negative since CFC's board is almost entirely comprised of non-independent directors, 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.

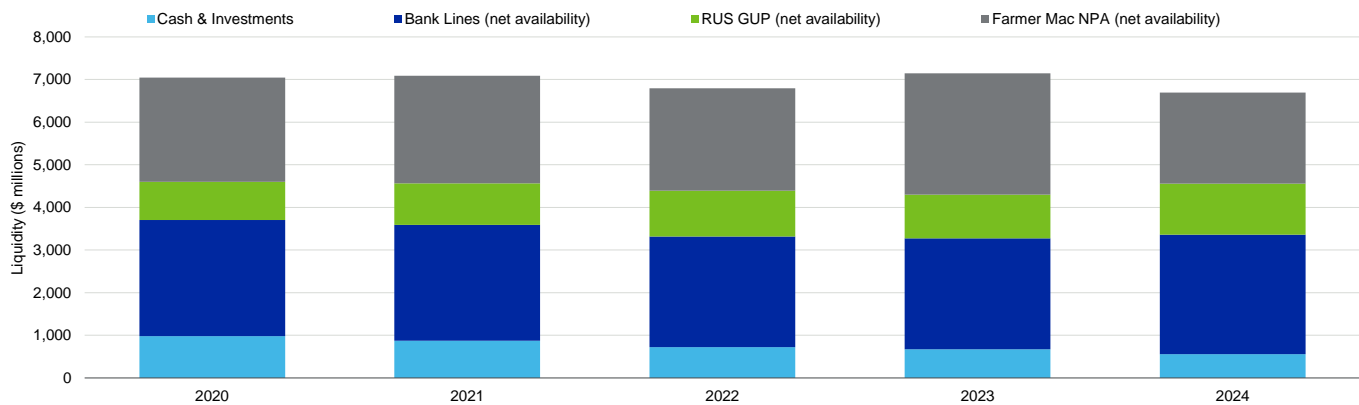
ESG Issuer Profile Scores and Credit Impact Scores for the rated entity/transaction are available on Moodys.com. In order to view the latest scores, please click [here](#) to go to the landing page for the entity/transaction on MDC and view the ESG Scores section.

Liquidity Analysis

CFC generally has very good liquidity, as shown in Exhibit 8, to support its commercial paper program, its variable rate tax-exempt demand bonds, and upcoming maturities.

Exhibit 8

CFC's availability liquidity



Fiscal year end is May 31.

Source: CFC's audited financials

As of December 5, 2024, CFC's primary source of liquidity are \$3.3 billion of committed bank lines consisting of a \$1.595 billion bank line maturing in November 2027, a \$1.555 billion bank line maturing in November 2028, and a \$150 million line maturing in November 2026. 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.

Supplementing CFC's liquidity is the \$8.7 billion GUP program with RUS (up to \$1.2 billion available as to November 30, 2024) and \$6.5 billion revolving note purchase agreement with Farmer Mac (\$3 billion available as of January 14, 2025) that serve to diversify CFC's funding sources. While both programs 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 ratio of around 44%. Furthermore, the note purchase facility with Farmer Mac is available through January 14, 2030, with successive automatic one-year renewals subject to approval by Farmer Mac.

As of November 30, 2024, CFC's liquidity sources covered 90% of its upcoming debt maturity over the next 12 months including \$3.2 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.

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.

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
National Rural Utilities Coop. Finance Corp.

Financial Profile	Factor Weights	Historic Ratio	Initial Score	Assigned Score	Key driver #1	Key driver #2
Profitability						
Net Income / Average Managed Assets (%)	10%	1.57%	Baa2	Baa1	Pro-forma adjustments	
Capital Adequacy and Leverage						
Tangible Common Equity / Tangible Managed Assets (%)	25%	6.64%	B2	Baa1	Other adjustments	
Asset Quality						
Problem Loans / Gross Loans (%)	10%	0.44%	Aa3	Aaa	Expected trend	Portfolio composition
Net Charge-Offs / Average Gross Loans (%)	10%	0.01%	Aaa	Aaa	Expected trend	
Weighted Average Asset Risk Score			Aa2	Aaa		
Cash Flow and Liquidity						
Debt Maturities Coverage (%)	10%	44.05%	B3	Baa1	Stress tests	Other adjustments
FFO / Total Debt (%)	15%	1.00%	Caa3	Ba1	Pro-forma adjustments	
Secured Debt / Gross Tangible Assets (%)	20%	47.19%	B1	B2	Expected trend	
Weighted Average Cash Flow and Liquidity Score			B3	Ba2		
Financial Profile Score	100%		Ba2	Baa1		
Operating Environment						
Home Country	Factor Weights	Sub-factor Score	Score			
Macro Level Indicator	0%		Aa2			
Economic Strength	25%	aaa				
Institutions and Governance Strength	50%	aa2				
Susceptibility to Event Risk	25%	baa				
Industry Risk	100%		A			
Home Country Operating Environment Score			A2			
	Factor Weights		Score	Comment		
Operating Environment Score	0%		A2			
ADJUSTED FINANCIAL PROFILE				Score		
Adjusted Financial Profile Score				Baa1		
Financial Profile Weight	100%					
Operating Environment Weight	0%					
Business Profile and Financial Policy				Adjustment	Comment	
Business Diversification, Concentration and Franchise Positioning				1		
Opacity and Complexity				0		
Corporate Behavior / Risk Management				1		
Liquidity Management				0		
Total Business Profile and Financial Policy Adjustments				A2		
					Comment	
Sovereign or parent constraint				Aaa		
Standalone Assessment Scorecard-indicated Range				a1 - a3		
Assigned Standalone Assessment				a2		

Source: Moody's Ratings

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 Ratings

© 2025 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

CREDIT RATINGS ISSUED BY MOODY'S CREDIT RATINGS AFFILIATES ARE THEIR CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND MATERIALS, PRODUCTS, SERVICES AND INFORMATION PUBLISHED OR OTHERWISE MADE AVAILABLE BY MOODY'S (COLLECTIVELY, "MATERIALS") MAY INCLUDE SUCH CURRENT OPINIONS. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT OR IMPAIRMENT. SEE APPLICABLE MOODY'S RATING SYMBOLS AND DEFINITIONS PUBLICATION FOR INFORMATION ON THE TYPES OF CONTRACTUAL FINANCIAL OBLIGATIONS ADDRESSED BY MOODY'S CREDIT RATINGS. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS, NON-CREDIT ASSESSMENTS ("ASSESSMENTS"), AND OTHER OPINIONS INCLUDED IN MOODY'S MATERIALS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S MATERIALS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. AND/OR ITS AFFILIATES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND MATERIALS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND MATERIALS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND MATERIALS DO NOT COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS, ASSESSMENTS AND OTHER OPINIONS AND PUBLISHES OR OTHERWISE MAKES AVAILABLE ITS MATERIALS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS, AND MATERIALS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS AND INAPPROPRIATE FOR RETAIL INVESTORS TO USE MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS OR MATERIALS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER.

ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT. FOR CLARITY, NO INFORMATION CONTAINED HEREIN MAY BE USED TO DEVELOP, IMPROVE, TRAIN OR RETRAIN ANY SOFTWARE PROGRAM OR DATABASE, INCLUDING, BUT NOT LIMITED TO, FOR ANY ARTIFICIAL INTELLIGENCE, MACHINE LEARNING OR NATURAL LANGUAGE PROCESSING SOFTWARE, ALGORITHM, METHODOLOGY AND/OR MODEL.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND MATERIALS ARE NOT INTENDED FOR USE BY ANY PERSON AS A BENCHMARK AS THAT TERM IS DEFINED FOR REGULATORY PURPOSES AND MUST NOT BE USED IN ANY WAY THAT COULD RESULT IN THEM BEING CONSIDERED A BENCHMARK.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the credit rating process or in preparing its Materials.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY CREDIT RATING, ASSESSMENT, OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any credit rating, agreed to pay Moody's Investors Service, Inc. for credit ratings opinions and services rendered by it. MCO and all MCO entities that issue ratings under the "Moody's Ratings" brand name ("Moody's Ratings"), also maintain policies and procedures to address the independence of Moody's Ratings' credit ratings and credit rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold credit ratings from Moody's Investors Service, Inc. and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at ir.moody.com under the heading "Investor Relations — Corporate Governance — Charter and Governance Documents - Director and Shareholder Affiliation Policy."

Moody's SF Japan K.K., Moody's Local AR Agente de Calificación de Riesgo S.A., Moody's Local BR Agência de Classificação de Risco LTDA, Moody's Local MX S.A. de C.V., I.C.V., Moody's Local PE Clasificadora de Riesgo S.A., and Moody's Local PA Clasificadora de Riesgo S.A. (collectively, the "Moody's Non-NRSRO CRAs") are all indirectly wholly-owned credit rating agency subsidiaries of MCO. None of the Moody's Non-NRSRO CRAs is a Nationally Recognized Statistical Rating Organization.

Additional terms for Australia only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of MOODY'S affiliate, Moody's Investors Service Pty Limited ABN 61 003 399 657 AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 383569 (as applicable). This document is intended to be provided only to "wholesale clients" within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY'S that you are, or are accessing the document as a representative of, a "wholesale client" and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to "retail clients" within the meaning of section 761G of the Corporations Act 2001. MOODY'S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail investors.

Additional terms for India only: Moody's credit ratings, Assessments, other opinions and Materials are not intended to be and shall not be relied upon or used by any users located in India in relation to securities listed or proposed to be listed on Indian stock exchanges.

Additional terms with respect to Second Party Opinions and Net Zero Assessments (as defined in Moody's Ratings Rating Symbols and Definitions): Please note that neither a Second Party Opinion ("SPO") nor a Net Zero Assessment ("NZA") is a "credit rating". The issuance of SPOs and NZAs is not a regulated activity in many jurisdictions, including Singapore. JAPAN: In Japan, development and provision of SPOs and NZAs fall under the category of "Ancillary Businesses", not "Credit Rating Business", and are not subject to the regulations applicable to "Credit Rating Business" under the Financial Instruments and Exchange Act of Japan and its relevant regulation. PRC: Any SPO: (1) does not constitute a PRC Green Bond Assessment as defined under any relevant PRC laws or regulations; (2) cannot be included in any registration statement, offering circular, prospectus or any other documents submitted to the PRC regulatory authorities or otherwise used to satisfy any PRC regulatory disclosure requirement; and (3) cannot be used within the PRC for any regulatory purpose or for any other purpose which is not permitted under relevant PRC laws or regulations. For the purposes of this disclaimer, "PRC" refers to the mainland of the People's Republic of China, excluding Hong Kong, Macau and Taiwan.

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454