

CREDIT OPINION

19 May 2026

Update

Send Your Feedback

Contacts

Norah Zhang, CFA +1.212.553.1895
Analyst
norah.zhang@moodys.com

Rian Pressman, CFA +1.212.553.3572
VP-Sr Credit Officer
rian.pressman@moodys.com

Jeffrey S. Berg +1.212.553.3611
Associate Managing Director
jeffrey.berg@moodys.com

Jordan Sambursky +1.917.703.7235
Ratings Associate
jordan.sambursky@moodys.com

Federal Home Loan Bank of Topeka

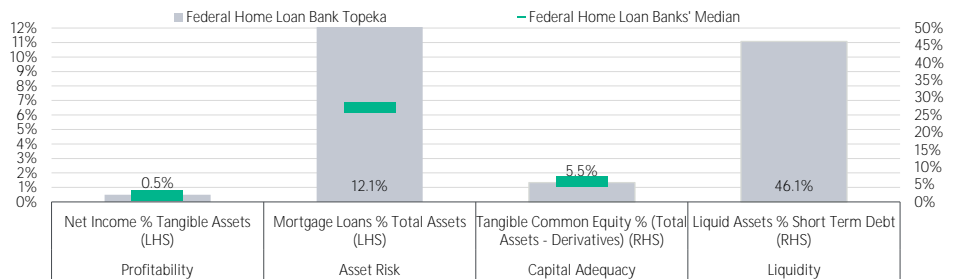
Update to credit analysis

Summary

The [Federal Home Loan Bank of Topeka's](#) (FHLBank Topeka) Aa1 long-term and Prime-1 short-term deposit ratings are in-line with the deposit ratings of the other ten regional FHLBanks. These ratings reflect the combination of FHLBank Topeka's a1 Baseline Credit Assessment (BCA) and our view that there is a very high likelihood of support from the [US Government](#) (Aa1 stable), corresponding to a 70 – 95% probability under our Banks methodology framework. This comparatively elevated support probability assumption applies specifically to FHLBank Topeka's deposit obligations and primarily reflects the operational importance of deposit accounts in facilitating the funding of advances to FHLBank members.

FHLBank Topeka's a1 BCA is based on the excellent asset quality of its advance portfolio, investment portfolio, and mortgage portfolio, along with its consistent earnings generation. FHLBank Topeka benefits from its core business of advancing funds to members, with \$43.7 billion outstanding as of 31 December 2025. While the credit performance of the FHLBank Topeka's mortgage assets, which equal 12.1% of assets as of 31 December 2025, has been excellent, mortgage assets carry heightened operational complexity along with greater interest rate risk and credit risk relative to the FHLBank's core lending business.

Exhibit 1
Rating Scorecard - Key Financial Ratios [1]



[1] All ratios are as of 31 December 2025.
Source: Moody's Ratings

Credit strengths

- » Excellent credit quality of its advance, investment, and mortgage portfolios minimize asset risk
- » Although narrowly focused, the FHLBanks, including FHLB Topeka, are central liquidity providers to US banks, underscoring their systemic importance

Credit challenges

- » Significant single borrower concentrations

- » Reliant on confidence-sensitive market funding, but market access is strong because of consolidated issuance and FHLB status as a government-sponsored enterprise (GSE)

Outlook

The stable rating outlook reflects our stable outlook on the ratings for the US government.

Factors that could lead to an upgrade

An upgrade of any individual Federal Home Loan Bank's long-term deposit ratings would require an upgrade of our US Government rating.

A higher BCA at any individual Federal Home Loan Bank could occur if its advances to members were more than 70% of assets on a consistent basis, while also displaying: 1) stronger profitability, 2) a stable member risk profile focused primarily on depository members, 3) continued strong asset risk management, including modest asset-liability and operational risk, and 4) robust capital and liquidity.

Factors that could lead to a downgrade

A US Government rating downgrade would trigger a downgrade of all the individual Federal Home Loan Banks' long-term deposit ratings.

Factors that could lead to a downgrade of any of the individual Federal Home Loan Banks' a1 BCAs include elevated loss expectations on their investment portfolios, deteriorating capital, significant asset-liability mismatches or if advances to members as a percentage of assets decline materially on a sustained basis. In addition, a reduced role in US banking system funding and/or an expanded risk profile could result in a lower BCA. A sustained weakening of profitability or liquid resources could also trigger a lower BCA. However, should any of the individual Federal Home Loan Banks' BCAs be downgraded to a2, our joint default analysis suggests that the Aa1 sovereign rating of the US government can still provide uplift to the Aa1 rating level for their long-term deposits.

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

Exhibit 2

Federal Home Loan Bank of Topeka (Consolidated Financials) [1]

	12-25 ²	12-24 ²	12-23 ²	12-22 ²	12-21 ²	CAGR/Avg. ³
Total Assets (USD Billion)	77.5	75.9	74.9	72.0	48.0	12.7 ⁴
Net Income / Tangible Assets (%)	0.5	0.6	0.5	0.3	0.3	0.4 ⁵
Liquid Assets (GSE) / Short Term Debt (%)	46.1	47.0	41.4	40.6	55.1	46.0 ⁵
Tangible Common Equity / (Total Assets - Derivatives) (%)	5.5	5.6	5.4	5.2	5.5	5.5 ⁵
Mortgage Loans / Total Assets (%)	12.1	11.8	11.2	11.0	17.0	12.6 ⁵

[1] All figures and ratios are adjusted using Moody's standard adjustments. [2] Basel I; US GAAP. [3] May include rounding differences because of the scale of reported amounts. [4] Compound annual growth rate (%) based on the periods for the latest accounting regime. [5] Simple average of periods for the latest accounting regime.

Further to the publication of our revised methodology in November 2025, only ratios from annual 2024 onwards included in this report apply reported risk weights for all exposures, discontinuing our previously applied standard adjustment for certain government securities. Sources: Moody's Ratings and company filings

Profile

Chartered by Congress in 1932 through the Federal Home Loan Bank Act, the [11 FHLBanks](#) are federally chartered, privately capitalized GSEs whose primary mission is to provide their roughly 6,400 member financial institutions with a [reliable source of liquidity](#) to support housing finance, community lending and asset-liability management. Each FHLBank is a separately chartered cooperative owned by its respective members, with its own board of directors, management and employees. Members primarily include banks, savings institutions, insurance companies and credit unions.

The 11 FHLBanks together with the Office of Finance, which is the fiscal agent responsible for issuing and servicing the FHLBanks' debt, make up the FHLBank system. The FHLBanks and the Office of Finance operate under the supervisory and regulatory framework of the Federal Housing Finance Agency (FHFA), which was created by Congress in the Housing and Economic Recovery Act of 2008. The FHLBanks are also registered with the Securities and Exchange Commission, which requires them to file public financial statements.

Each FHLBank serves as a financial intermediary between its members and the capital markets by issuing, via the Office of Finance, debt, known as consolidated obligations (bonds and discount notes), and lending those proceeds to its members, primarily in the form of secured loans, known as advances. Advances are generally over-collateralized, minimizing the credit risk on these loans. In addition, the FHLBanks benefit from their statutory lien priority with respect to certain pledged member assets. The FHLBanks also purchase mortgage loans, principally 15-30 year conventional and government-guaranteed or insured fixed-rate loans. Additionally, the FHLBanks invest in securities, principally agency MBS, subject to an investment limit of three times regulatory capital. Some FHLBanks offer correspondent services to their member institutions, including wire transfer, security safekeeping, and settlement services.

Although each FHLBank is primarily liable for its portion of consolidated obligations, each FHLBank is also jointly and severally liable with the other FHLBanks for the payment of principal and interest on all consolidated obligations. Despite our expectation of a high likelihood of government support in a default scenario, these obligations are not obligations of the US government and are not guaranteed by either the US or any government agency.

As of 31 December 2025, FHLBank Topeka reported total assets of \$77.5 billion.

Detailed credit considerations

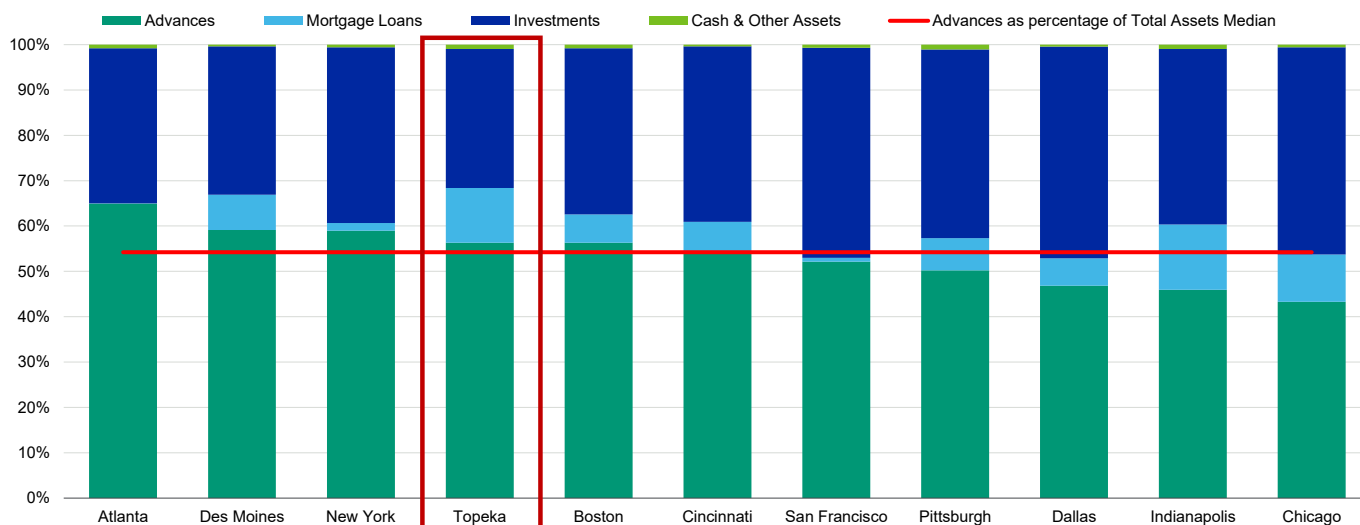
Asset quality and credit risk management

The asset quality of FHLBank Topeka is exceptional. Advances, which represented about 56.3% of total assets as of 31 December 2025, are over-collateralized that has never resulted in a loss. In fact, no FHLBank has ever incurred a loss on an advance in the over 90-year history of the system. This pristine record is attributable to the over-collateralization and generally short-term nature of advances, conservative underwriting standards and credit monitoring policies in which members' credit strength is actively monitored. Importantly, the FHLBanks routinely obtain a perfected security interest in pledged collateral and can therefore expect to stand ahead of other creditors of failed institutions, and the FDIC, because of those perfected security interests.

Similar to other FHLBanks, FHLBank Topeka's balance sheet composition is narrowly focused. Beyond its advance portfolio, various investment securities and purchases mortgages from participating members comprise the remaining part of the balance. FHLBank Topeka's mortgage portfolio, representing 12.1% of total assets as of 31 December 2025, has experienced far lower losses and

delinquencies than industry averages. This is reflected in the aa3 assigned score for Asset Risk in our scorecard. Exhibit 3 shows the composition of FHLBank Topeka's asset mix.

Exhibit 3
FHLBank Topeka's asset mix compared to those of the other FHLBanks
 As of 31 December 2025



Source: Company filings and Moody's Ratings

Similar to other FHLBanks, FHLBank Topeka has significant borrower concentrations, a long-term earnings risk. Its top five advance borrowers represented 51.8% of total advances as of 31 December 2025, an amount comparable to the average for all FHLBanks. This has not changed much from a year ago.

Interest rate risk management

FHLBank Topeka manages its interest rate risk exposures through the use of debt with similar characteristics to its assets, as well as with derivatives. As noted, its core asset are advances, which are offered in a variety of types, including fixed rate, variable rate, callable by the member, as well as puttable advances. With a puttable advance, the FHLBank purchases a put option from members, which allows the FHLBank to terminate the fixed rate advance on specified dates and offer, subject to certain conditions, replacement funding at prevailing market rates. Prepayment fees, a common feature of advances, help compensate the bank for the funding put in place at inception when advances are paid off ahead of schedule.

Interest rate risk management is important for the FHLBanks because their net interest margins (NIM) tend to be narrow, particularly when compared with a typical commercial bank. FHLBank Topeka has endured the current challenging interest rate environment relatively well. For 2025, its reported NIM was 68 basis points (bps), down from 73 bps for the same period of 2024.

Capital adequacy

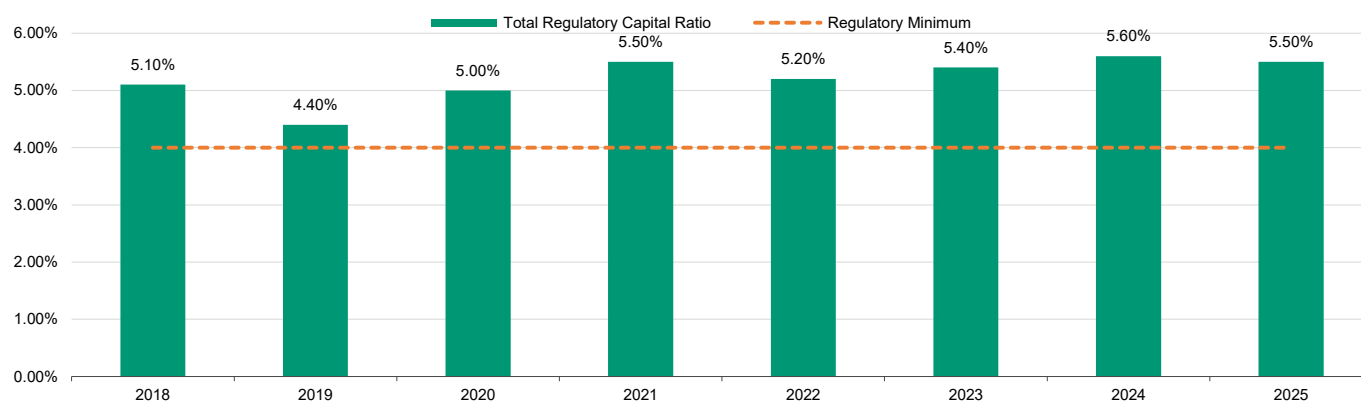
FHLBank Topeka is required by regulation to maintain minimum regulatory capital of 4.00% of its total assets. As of 31 December 2025, the reported capital ratio of the FHLBank was 5.5%, compared to 5.6% as of 31 December 2024(Exhibit 4). The aa2 assigned score for Capital in our scorecard incorporates our estimate of FHLBank Topeka's TCE ratio on a risk-weighted basis, which is very strong.

To become a member of an FHLBank, financial institutions must purchase stock in the bank. All shares have a statutory par value of \$100. When a member needs to access advances, it must not only pledge high-quality collateral, but also purchase additional activity-based stock in proportion to their borrowings. As a result, during times of high advance activity, the dollar amount of capital automatically increases.

Exhibit 4

FHLBank Topeka's capital ratio has remained above the regulatory minimum

Total regulatory capital ratio and regulatory minimum capital ratio, 2018 - 2025



Source: Company filings and Moody's Ratings

Profitability

FHLBank Topeka's modest but consistent profitability, as measured by return on average assets (ROAA), reflects the primarily low to moderate risk profile of its asset base. FHLBanks' profitability measures are generally weaker, but less volatile, than those of rated US commercial banks. For 2025, FHLBank Topeka's reported ROAA was 0.47%, slightly lower than 0.56% reported in 2024. The baa1 assigned score for Profitability in our scorecard reflects FHLB Topeka's good earnings stability.

Liquidity and funding

The FHLBanks fund themselves by issuing debt, primarily in the form of consolidated obligations. Despite their high dependence on market funding, the FHLBanks' market access has been reliable because of their importance as providers of liquidity to the financial system as well as their GSE status, despite no formal guarantee from the US government, which is reflected in the baa1 assigned score for Funding Structure in our scorecard. As of 31 December 2025, FHLBank Topeka had liquid assets as a percentage of short-term debt of about 46.1%. We assign a Liquid Resources score of baa1.

FHLBank Topeka's liquidity benefits from enhanced risk management that was implemented several years ago in accordance with FHFA guidance. The guidance established requirements for the FHLBanks' base case liquidity and implemented funding gap metrics for three-month and one-year maturity horizons. In addition, the guidance addressed liquidity stress testing and contingency funding plans. We expect that FHLBank Topeka will continue to be in compliance with all its liquidity requirements.

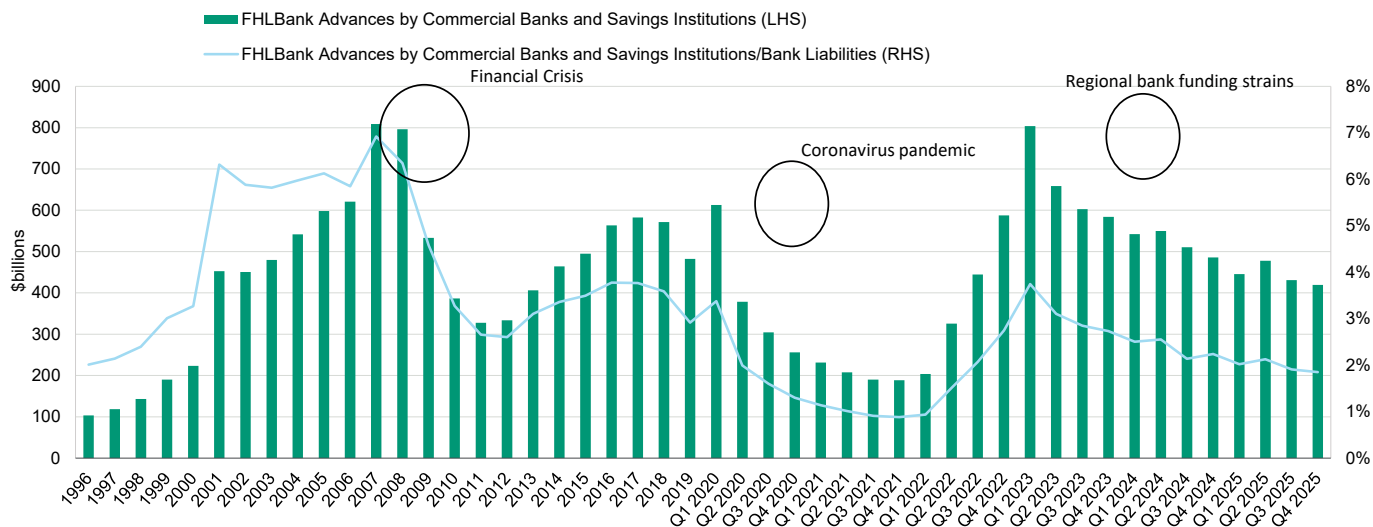
Role as a provider of liquidity to US financial institutions

The FHLBanks' demonstrated ability to access funding throughout the cycle underpins their importance to the financial system. Advances to regulated depository members spiked several times in recent decades: at the height of the global financial crisis in 2008/9, in early 2020 at the beginning of the pandemic, throughout 2022 as banks sought alternative funding given both declines in their deposit balances and rising unrealized losses in their AFS securities portfolios, which increased their reluctance to sell those securities, and most recently, in March 2023 when there was a scramble for liquidity in the wake of multiple regional bank failures and acute deposit outflows at select institutions(Exhibit 5). All of these episodes are reminders of the FHLBank System's important role as a liquidity provider to the financial system in times of stress.

Exhibit 5

FHLBank advances have proven to be a reliable source of bank funding, especially during times of crisis

Q4 1996 - Q4 2025



Source: FDIC

Regulation of the FHLBank System

The FHFA regulates and supervises the FHLBank System. In September 2024, the FHFA issued an advisory bulletin on credit risk management, which underscores supervisory expectations that FHLBanks assess and manage member credit risk based primarily on a member’s financial condition, and not rely solely on collateral when extending advances. The guidance, issued following the regional bank failures in early 2023, outlines expectations across governance, underwriting, ongoing monitoring and oversight of troubled members, including formal escalation procedures and coordination with members’ primary regulators. We believe the guidance has largely been implemented, thus improving consistency of credit risk management across FHLBanks, which is credit positive. Importantly, the guidance reemphasized the distinction between the System’s function as a stable liquidity provider to creditworthy institutions and the Federal Reserve’s role in emergency lending.

Also, in late 2023, the FHFA published a report, FHLBank System at 100, which outlined a multi year reform agenda aimed at clarifying the System’s mission, reinforcing its role as a stable source of secured liquidity, increasing support for housing and community development and improving governance and operational efficiency. The FHFA’s report raised a number of possible areas of change, some of which could be enacted through its ongoing supervision of the FHLBanks or through more formal rule-making, and others that would require Congressional action. Although we think the change in the administration in January 2025 has largely halted these proposals, certain other incremental reforms have been implemented in recent years, in addition to the enhancements to credit risk management. These include the reduction of FHLBank board sizes to their statutory minimums, increased voluntary contributions to affordable housing programs and reforms to the FHFA supervisory examination process.

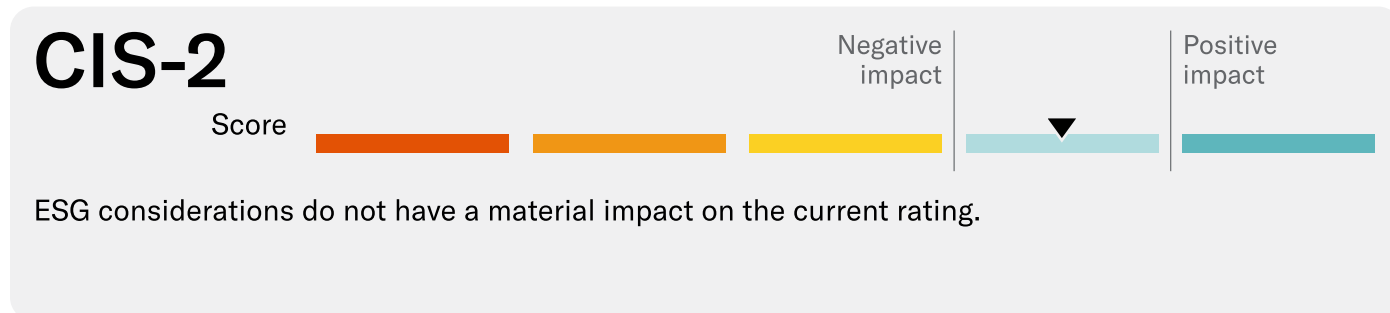
In March 2026, the Administration issued an executive order directing agencies to explore ways to use the System to support housing affordability, including potential changes to collateral processes, expanded longer dated mortgage related advances, targeted liquidity programs, faster collateral onboarding, adjustments to the Affordable Housing Program and possible standardized access to the Federal Reserve’s discount window.

Overall, we expect the FHLBanks will remain a reliable source of liquidity to their members in the ordinary course of business. The FHLBanks’ special role as providers of funding to US banks underpins our assessment of a 95 – 100% likelihood of government support for their consolidated debt obligations. As long as the FHLBanks’ role in US banking system funding remains consequential, we will likely continue to ascribe the same government support assumptions in our rating of the consolidated debt obligations.

ESG considerations

Federal Home Loan Bank of Topeka's ESG credit impact score is CIS-2

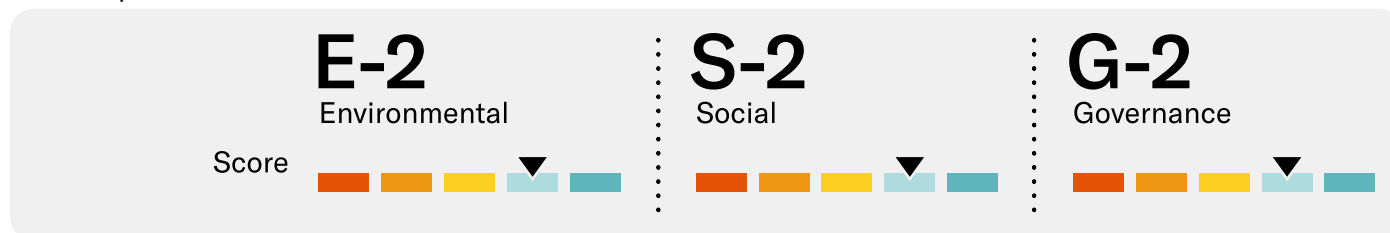
Exhibit 6
ESG credit impact score



Source: Moody's Ratings

FHLB Topeka's **CIS-2** reflects that ESG considerations have no material impact on the current ratings.

Exhibit 7
ESG issuer profile scores



Source: Moody's Ratings

Environmental

FHLB Topeka faces low environmental risks. Its loan portfolio consists of wholesale advances to banks, insurance companies and credit unions. Although most of its bank customers face moderate carbon transition risks through their own loan portfolios, and many of its insurance companies face moderate physical climate risks through their client exposures, FHLB Topeka is only indirectly exposed to these risks and its advance portfolio is diversified.

Social

FHLB Topeka faces low social risks. Its clients are member institutions, such as banks, insurance companies and credit unions, and minimal interaction with retail clients mitigates the risks related to customer relations and demographic and societal trends. While FHLBank Topeka also faces high cyber risk similar to its banking peers, it faces lower risks of customer relations fallout than a typical bank because of its institutional client base.

Governance

FHLB Topeka faces low governance risks. The bank has never reported credit losses on advances, its primary product, highlighting its strong financial strategy and risk management. The bank's strategy and asset composition are based on its Congressional mission and reinforced by its regulators. Like its FHLBank peers, FHLB Topeka is a separately chartered cooperative owned by its respective members, with its own board of directors, management and employees. The bank's mandate, regulatory oversight and policies limit the ability of board members to act against the interest of bondholders, which mitigates the potential conflict of interest resulting from board members being executives of its borrowers.

ESG Issuer Profile Scores and Credit Impact Scores for the rated entity/transaction are available on Moody's.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.

US Banking System's Strong+ Macro Profile

The US banking system's Strong + macro profile score considers the US' (Aa1 stable) exceptional economic strength, high institutions and governance strength, and extraordinary funding capacity (supported by the unique and central roles of the US dollar and Treasury bond market in the global financial system), balanced with a level of susceptibility to event risk associated with entrenched political polarization. The score also incorporates the negative effects from the high level of private-sector debt and continuing challenges from the large and long-established shadow banking sector, including private credit.

Support and Structural Considerations

Loss Given Failure (LGF) Analysis and Government Support Considerations

In the event that FHLBank Topeka were to require support, we do not believe there is an existing regulatory framework in place that provides a clear understanding of the impact of a resolution on creditors. Therefore, we do not apply the Advanced LGF approach to FHLBank Topeka as we do for US banks subject to an FDIC resolution, which we consider to be an operational resolution regime. Instead we apply the Basic LGF approach.

Under that approach, the rating on senior unsecured systemwide debt is Aa1, or three notches above the BCA. This reflects our assumptions about the probability of government support for FHLBank systemwide debt where we consider the likelihood of support to be 'Government-Backed', corresponding to a 95 – 100% probability of government support. For the deposit ratings assigned to FHLBank Topeka and the other regional FHLBanks, we assume a 'Very High' probability of government support, corresponding to a 70 – 95% probability.

Methodology and scorecard

Our BCA scorecard is designed to capture, express and explain in summary form our Rating Committee's judgment. When read in conjunction with our research, a fulsome presentation of our judgment is expressed. As a result, the output of our BCA scorecard may materially differ from that suggested by raw data alone (though it has been calibrated to avoid the frequent need for strong divergence). The BCA scorecard output and the individual scores are discussed in rating committees and may be adjusted up or down to reflect conditions specific to each rated entity.

Exhibit 8

Rating Factors

Macro Factors						
Weighted Macro Profile	Strong +	100%				
Factor	Historic Ratio	Initial Score	Expected Trend	Assigned Score	Key driver #1	Key driver #2
Solvency						
Asset Risk						
Problem Loans / Gross Loans	0.1%	aa1	↔	aa3	Long-run loss performance	
Capital						
Tangible Common Equity / Risk Weighted Assets (Basel I)				aa2	Recognition of risk-weighted assets	
Profitability						
Net Income / Tangible Assets	0.5%	ba1	↔	baa1	Earnings stability	
Combined Solvency Score				a1		
Liquidity						
Funding Structure						
Less-stable Funds / Tangible Banking Assets	66.2%	b1	↔	baa1	Market funding quality	
Liquid Resources						
Core Banking Liquidity / Tangible Banking Assets	9.5%	baa2	↔	baa1	Expected trend	
Combined Liquidity Score		ba2		baa1		
Financial Profile		--		a2		
Qualitative Adjustments				Adjustment		
Business and Geographic Diversification				0		
Complexity and Opacity				0		
Strategy, Risk Appetite and Governance				0		
Total Qualitative Adjustments				0		
Sovereign or Affiliate constraint				Aa1		
BCA Scorecard-indicated Outcome - Range				a1 - a3		
Assigned BCA				a1		
Affiliate Support notching				-		
Adjusted BCA				a1		
Balance Sheet						
		in-scope (USD Million)		% in-scope	at-failure (USD Million)	
Other liabilities		74,270		95.8%	74,361	
Deposits		910		1.2%	819	
Preferred deposits		910		1.2%	819	
Equity		2,325		3.0%	2,325	
Total Tangible Banking Assets		77,505		100.0%	77,505	
Debt Class						
	De Jure waterfall		De Facto waterfall		Notching	
	Instrument	Sub-	Instrument	Sub-	De Jure	De Facto
	volume +	ordination	volume +	ordination		
	subordination	subordination	subordination	subordination		
					LGF	Assigned
					Notching	Additional
					Guidance	Preliminary
					vs.	Rating
					Adjusted	Assessment
					BCA	
Deposits	4.1%	3.0%	4.1%	3.0%	na	na
					0	0
					0	0
					0	a1

Instrument Class	Loss Given Failure notching	Additional notching	Preliminary Rating Assessment	Government Support notching	Local Currency Rating	Foreign Currency Rating
Deposits	0	0	a1	-	Aa1	

[1] Where dashes are shown for a particular factor (or sub-factor), the score is based on non-public information.

Source: Moody's Ratings

Ratings

Exhibit 9

Category	Moody's Rating
FEDERAL HOME LOAN BANK OF TOPEKA	
Outlook	Stable
Bank Deposits	Aa1/P-1
Baseline Credit Assessment	a1
Adjusted Baseline Credit Assessment	a1
FEDERAL HOME LOAN BANKS	
Outlook	Stable
Senior Unsecured	Aa1
ST Issuer Rating	P-1

Source: Moody's Ratings

© 2026 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 LEGAL, COMPLIANCE, INVESTMENT, FINANCIAL OR OTHER PROFESSIONAL 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 or assessment 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 or assessment 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 or assessment 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., Moody's Local PA Calificadora de Riesgo S.A., Moody's Local CR Calificadora de Riesgo S.A., Moody's Local ES S.A. de CV Clasificadora de Riesgo, Moody's Local RD Sociedad Calificadora de Riesgo S.R.L. and Moody's Local GT 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. EU: In the European Union, each of Moody's Deutschland GmbH and Moody's France SAS provide services as an external reviewer in accordance with the applicable requirements of the EU Green Bond Regulation. 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.

REPORT NUMBER 1481377