

## CREDIT OPINION

26 January 2023

Update

Send Your Feedback

### Contacts

Allen Tischler +1.212.553.4541  
 Senior Vice President  
 allen.tischler@moodys.com

Warren Kornfeld +1.212.553.1932  
 Senior Vice President  
 warren.kornfeld@moodys.com

Rui Wu, CFA +1.647.417.6294  
 Associate Analyst  
 rebecca.wu@moodys.com

Jill Cetina, CFA +1.212.335.7000  
 Associate Managing Director  
 jill.cetina@moodys.com

Ana Arsov +1.212.553.3763  
 MD-Financial Institutions  
 ana.arsov@moodys.com

# Federal Home Loan Banks

## Update to credit analysis

### Summary

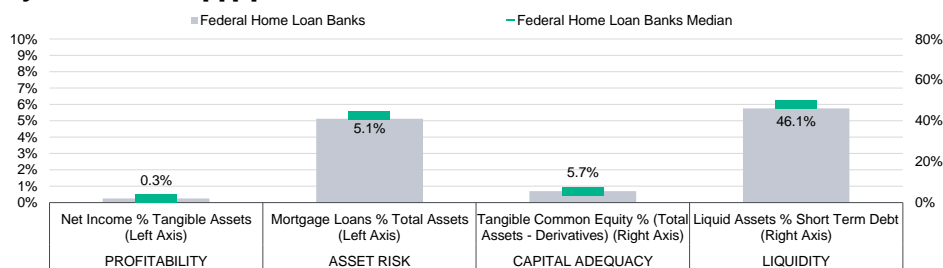
The [Federal Home Loan Bank System's](#) (FHLBank System) Aaa long-term senior unsecured debt rating and Prime-1 short-term issuer rating reflect the combination of the FHLBank System's a1 baseline credit assessment (BCA) and our assumption of a very high likelihood of support from the US Government (Aaa stable) due to the FHLBank system's special role as a provider of liquidity to the US banking system. As such, the assigned ratings incorporate the benefits to creditors from the FHLBank Systems' status as a government-sponsored enterprise (GSE). The rating outlook is stable.

The FHLBank System's a1 BCA reflects its excellent asset quality, stable but modest profitability, and good capitalization. In arriving at the FHLBank System's BCA, we consider the eleven FHLBanks' individual BCAs, ten of which are a1 (FHLBank New York's BCA is aa3), and the credit profile of the FHLBank System as if it were a combined entity. The FHLBank System's BCA also incorporates the benefits to its debt holders from the joint and several liability of all eleven banks for the System's consolidated bonds and consolidated discount notes.

Through the first nine months of 2022, Systemwide advances grew 86%, or more than \$300 billion, from year-end 2021 and returned to pre-pandemic levels. The growth was driven by liquidity needs at depositories as banks sought alternative funding to support loan demand amid some reluctance to sell their investment securities at a loss. In addition, higher interest rates made bank deposit growth more challenging. These dynamics highlight the FHLBank System's ability to provide significant liquidity to its members in a short time frame. The growth resulted in advances reaching 60% of the FHLBank System's total assets at 30 September 2022, up from less than 50% at year-end 2021.

Exhibit 1

### Key Financial Ratios [1] [2]



[1] All ratios are as of 30 September 2022 [2] All figures and ratios are adjusted using Moody's standard adjustments  
 Source: Moody's Investors Service

## Credit strengths

- » Joint and several liability reduces default risk of the FHLBank System's consolidated obligations
- » Although narrowly focused, the FHLBanks are central liquidity providers to US banks and other members, underscoring their systemic importance
- » Excellent credit quality of FHLBanks' advance portfolio, investment portfolio (excluding a small legacy private label RMBS book), and mortgage portfolio minimizes asset risk

## Credit challenges

- » Reliant on confidence-sensitive market funding, but market access is strong because of consolidated issuance and FHLBank status as a government-sponsored enterprise (GSE)
- » Some single borrower concentrations at the individual FHLBank level

## Outlook

The stable rating outlook reflects our stable outlook on the ratings for the US government. Any rating actions on the US Government would likely result in the FHLBank System's long-term bond rating moving in lock step with any US sovereign rating action.

## Factors that could lead to an upgrade

At Aaa, an upgrade of the FHLBank System's long-term debt is not possible. A higher BCA could occur if the FHLBanks' advances represented more than 70% of assets while they also maintained: 1) strong profitability, 2) a stable member risk profile, 3) continued strong asset risk, including modest asset-liability and operational risk, and 4) robust capital and liquidity.

## Factors that could lead to a downgrade

Any negative rating action on the US Government would likely result in the FHLBank System's long-term senior unsecured debt rating moving in lock step with any US sovereign rating action.

Barring a downgrade of the US sovereign rating, a decline in our government support assumptions for the FHLBank System, or a material downgrade of the FHLBank System's a1 BCA, we do not expect changes to the FHLBank System's debt and issuer ratings. This is due to the fact that the ratings incorporate an expectation of a very high degree of US Government support.

Factors that could lead to a downgrade of the FHLBank System's BCA of a1 include materially higher loss expectations on the FHLBanks' mortgage holdings and/or private-label MBS portfolios, multiple quarterly net losses or significant asset-liability mismatches. In addition, an expansion of the FHLBanks' risk profile, for example due to a change in their government mandate or self-initiated, could result in lower standalone BCAs. The BCA for the FHLBank System could then be downgraded based on downgraded BCAs at individual FHLBanks.

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.com> for the most updated credit rating action information and rating history.

## Key indicators

Exhibit 2

### Federal Home Loan Banks (Consolidated Financials) [1]

	09-22 <sup>2</sup>	12-21 <sup>2</sup>	12-20 <sup>2</sup>	12-19 <sup>2</sup>	12-18 <sup>2</sup>	CAGR/Avg. <sup>3</sup>
Total Assets (USD Billion)	1,094.9	723.2	820.7	1,099.1	1,102.9	(0.2) <sup>4</sup>
Net Income / Tangible Assets (%)	0.3	0.3	0.4	0.3	0.3	0.3 <sup>5</sup>
Liquid Assets (GSE) / Short Term Debt (%)	46.1	66.5	46.1	36.8	27.6	44.6 <sup>5</sup>
Tangible Common Equity / (Total Assets - Derivatives) (%)	5.7	6.7	6.1	5.1	5.4	5.8 <sup>5</sup>
Mortgage Loans / Total Assets (%)	5.1	7.7	7.7	6.6	5.7	6.5 <sup>5</sup>

[1] All figures and ratios are adjusted using Moody's standard adjustments. [2] 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.

Sources: Moody's Investors Service 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 6,500 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 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 short-term and 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. The FHLBanks also invest in securities, principally agency MBS, subject to an investment limit of three times regulatory capital without approval by the FHFA. Some FHLBanks offer correspondent services to their member institutions, including wire transfer, security safekeeping, and settlement services.

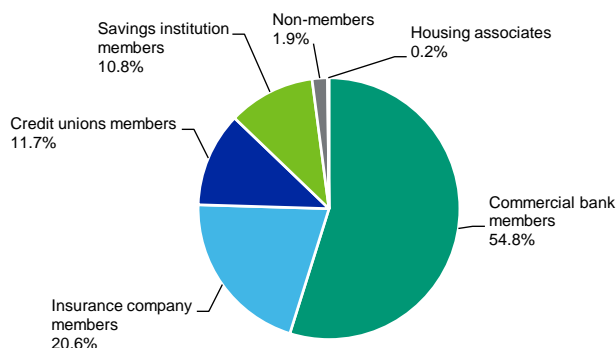
Although each FHLBank is primarily liable for its portion of consolidated obligations, each FHLBank is also jointly and severally liable with the other FHLBanks for the payment of principal and interest on all consolidated obligations. Despite our expectation of a high likelihood of government support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

As of 30 September 2022, the Federal Home Loan Banks' combined balance sheet showed \$1.1 trillion in total assets and \$655 billion in advances, accounting for 60% of total assets.

Exhibit 3

**Banks and savings institutions, insurance companies and credit unions are the FHLBanks System's primary members**

Principal amount of FHLBanks advances by type of borrower, 30 September 2022



Non-members include captive insurance companies that had their memberships terminated no later than 19 February 2021.

Source: Company filings, Moody's Investors Service

## Detailed rating considerations

### Asset quality and credit risk management

The FHLBank System's asset quality remains exceptional. In particular, advances, which are over-collateralized, have not resulted in any losses since the System was formed in the 1930s. As of 30 September 2022, advances represented about three-fifths of the System's total assets. From year-end 2021 to 30 September 2022, liquidity needs at depository members resulted in advance growth at all of the individual FHLBanks.

The FHLBanks' liquidity portfolios (mostly US Treasuries, fed funds sold and cash) as well as their term investment portfolios (largely agency MBS and other GSE debt) are high-quality. On a combined basis, the System has a small legacy non-agency MBS portfolio, but it continues to shrink.

The System's pristine credit quality track record is attributable to the over-collateralization and generally short-term nature of all advances, conservative underwriting standards and strong credit monitoring policies in which members' credit strength is actively monitored. Furthermore, the FHLBanks have strong requirements for membership, which is fundamental to their no-loss track record because it incentivizes members to maintain sufficient financial strength.

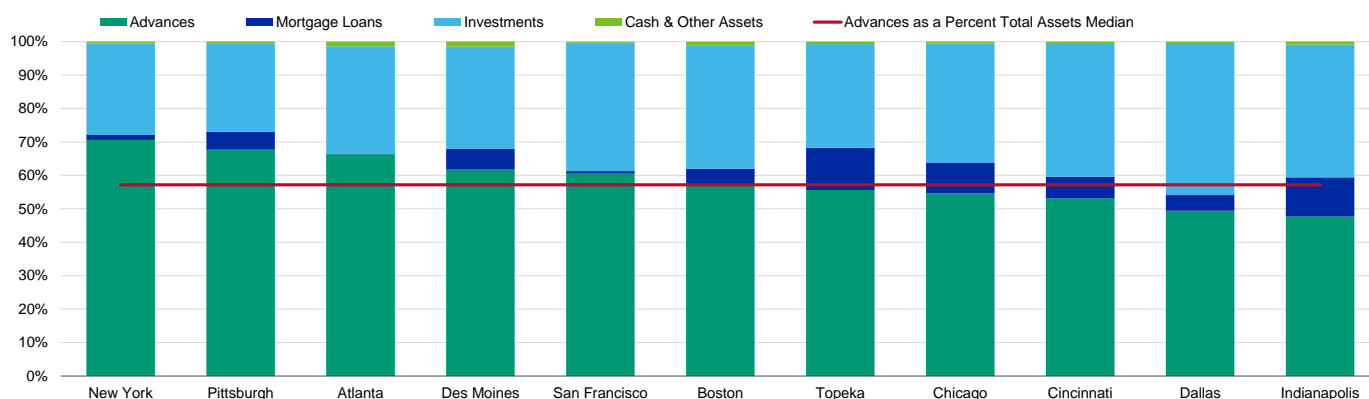
Importantly, the FHLBanks also benefit from their statutory super lien priority, which gives them the equivalent of a first priority claim to the collateral that will be senior to all but a very narrow category of competing creditors. The super lien priority also has value against a receiver, such as the FDIC, because it provides a statutory priority over most, if not all, of the claims that the FDIC could assert to the collateral. For FDIC-insured institutions, a member's failure has historically resulted in the FDIC paying off FHLBank advances in order for it to obtain collateral free of any liens held by the FHLBank, as this has been the most expeditious resolution of the failed bank or thrift.

We assign a high aa2 score for Asset Risk in our scorecard, as shown at the back of this report.

The exhibit below reveals that the eleven FHLBanks do have somewhat different asset mixes. In particular, advances as a percentage of total assets ranged from a high of 71% at FHLBank New York to a low of 48% at FHLBank Indianapolis as of 30 September 2022.

Exhibit 4

Advances represent around 60% of the System's total assets, though the regional FHLBank median is modestly lower



As of 30 September 2022

Source: Company Filings

With respect to collateral, each FHLBank has sole credit approval power and establishes its own underwriting standards and eligible collateral within FHFA guidelines. Eligible collateral includes current first-lien residential mortgages (overwhelmingly single-family) or securities backed by such mortgages, Federal Agency securities, FHLBank deposits and other real estate-related assets approved by the relevant FHLBank's board of directors, such as commercial real estate loans.

Investments, as noted, are primarily high quality US government and agency guaranteed securities, and they comprise much of the remainder of the banks' balance sheets. Although no FHLBank has purchased private-label mortgage-backed securities (PLMBS) since 2008 and that portfolio is significantly reduced in size, the remaining PLMBS exposures continue to present some degree of credit risk to the respective FHLBanks.

The FHLBanks' conforming mortgage portfolio programs provide members with an alternative to Fannie Mae and Freddie Mac execution. The System's mortgage portfolio represented a little more than 5% of total assets as of 30 September 2022, compared to 8% at year-end 2021. The FHLBanks' mortgage assets are more susceptible to credit losses, and in particular, carry heightened operational complexity relative to the FHLBanks' core advance business. However, the mortgage portfolio program's credit risk performance has been very good to date, exceeding that of similar programs of Fannie Mae and Freddie Mac, reflecting the quality of mortgage assets purchased and credit enhancements of the program.

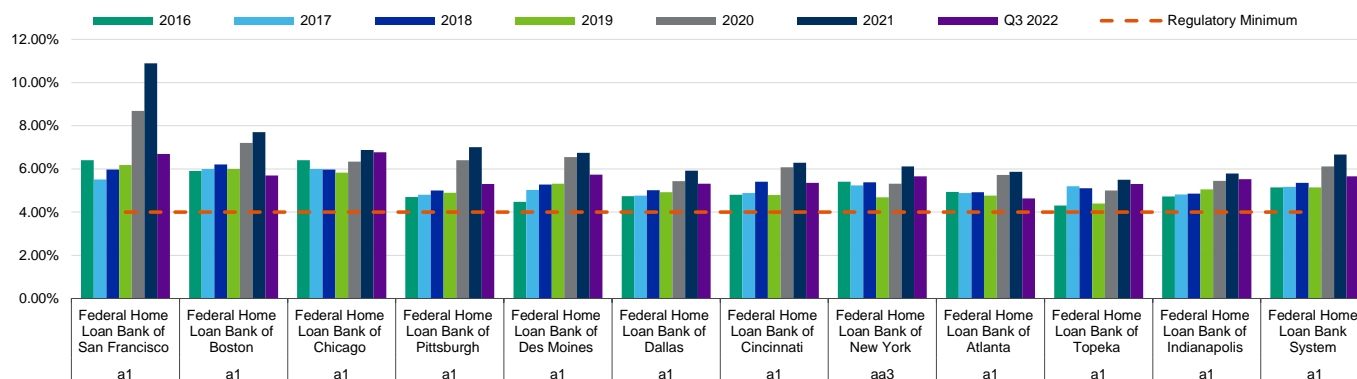
### Capital adequacy

Each FHLBank is required by legislation to maintain minimum regulatory capital of 4% of its total assets. As of 30 September 2022, the capital ratio of the FHLBank System was 5.65%, down from 6.67% at year-end 2021 as the System's combined balance sheet expanded significantly.

Should advance growth continue in the coming quarters as we anticipate, net issuance of activity-based capital stock will maintain the System's good capital levels. This is so because 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. The aa1 assigned score for capital in our scorecard incorporates our estimate of the FHLBank System's TCE ratio on a risk-weighted basis, which is very strong.

Exhibit 5

Each FHLBank's capital ratio has declined in 2022 as their balance sheet grew, but capital ratios remain above the regulatory minimum  
 FHLBanks' total regulatory capital ratio, Q4 2016 - Q3 2022



Source: Moody's Investors Service; Company Filings

### Profitability

The FHLBank System's low but consistent profitability (as measured by ROAA) reflects the primarily low risk profile of its asset base. For the first nine months of 2022, the FHLBank System's net income to tangible assets was roughly 0.3%, similar to its level over the past several years. The FHLBank System's profitability measures are generally weaker than those of rated US commercial banks. In 2022, most rated US banks have generated an ROAA of 1.0% or greater. We assign a baa1 score for Profitability, which balances the System's low absolute level of earnings with its low earnings volatility.

### Liquidity and Funding

The FHLBank System's GSE status provides it with consistent and stable access to the debt markets and informs the baa1 assigned score for Funding Structure in our scorecard. The FHLBanks' internal sources of liquidity are modest, but have strengthened as a result of regulation.

Specifically, FHFA, the regulator of the FHLBanks, implemented liquidity guidance that took full effect at year-end 2019. The FHFA established requirements for the FHLBanks' base case liquidity and added new 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 all FHLBanks will remain in compliance with the updated liquidity requirements.

In times of severe credit market disruption, the System can be impacted, notwithstanding its GSE status. For example, in the March 2020 market disruption that resulted from the spread of the pandemic, longer-dated bond issuance was challenging as investors preferred short-term instruments. Still, the FHLBank System enjoyed market access throughout, which validated our view of its funding resilience.

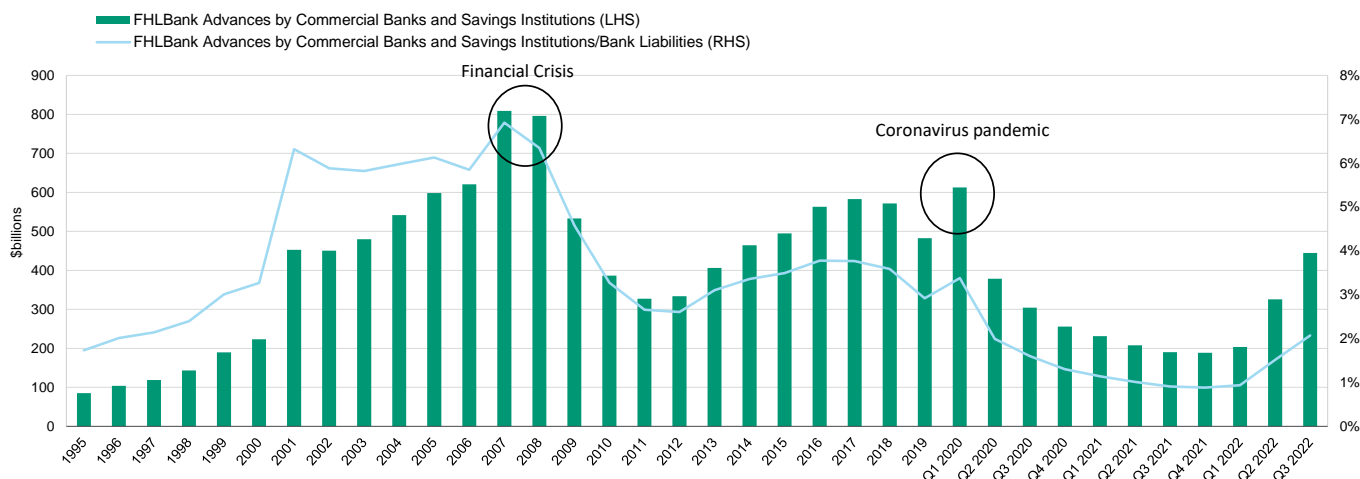
### Special role as a provider of liquidity to US financial institutions

As GSEs, the FHLBanks' ability to access funding throughout the cycle underpins their importance to the financial system. This is particularly true during times of extreme market disruption when they become a primary source of contingent liquidity for their members. As shown below, at the height of the global financial crisis, advances to members climbed a few hundred billion dollars for the system as a whole before receding as the financial markets and overall economy recovered. Although 2020 began with a spike in liquidity demands due to the pandemic, bank liquidity needs quickly receded, also shown in the exhibit, influenced by significant fiscal and monetary stimulus. In 2022, FHLBank advances picked up again as banks sought alternative funding given both declines in their deposit balances and rising unrealized losses in their AFS securities portfolios that increased banks' reluctance to utilize their liquidity buffers.

Exhibit 6

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

Systemwide advances to regulated depository members 1995 - Q3 2022



Source: FDIC

**FHFA review**

In the fall of 2022, the FHFA began a comprehensive review of the System that could result in proposed changes to the FHLBs' mission, organizational structure, membership criteria and/or other areas. The review will continue in 2023 and any recommendations or changes that result may not be known for several months.

Although the FHFA's review is broad and it remains unclear what will be proposed, for creditors, expansion of FHLBank membership will be a particular area of interest. In a scenario where firms with large non-depository and non-insurance operations, such as non-bank mortgage companies, are given access to FHLBank advances, that could increase the FHLBanks' asset risk. However, any expansion of FHLBank membership to nonbank mortgage companies would require legislative authorization. Other areas of the review center on the banks' mission, organization, efficiency, role in promoting a resilient housing market, ability and effectiveness in addressing the needs of rural and vulnerable communities, and the FHLBanks' products, services and collateral requirements.

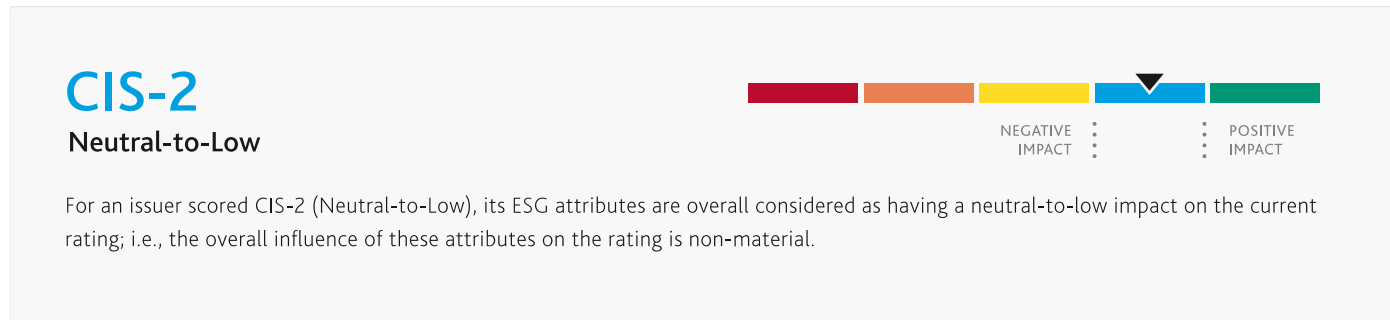
Because the FHFA's review includes an examination of the FHLBank System's mission, the recent high-profile use of billions of dollars in FHLB advances to counter deposit runoff at Silvergate Bank will add to questions about the System's membership criteria and the purpose of its advances. Although the FHLBank advances to Silvergate Bank were well-collateralized, the primary focus of Silvergate's banking activities is serving the cryptocurrency market as opposed to the housing and housing finance markets. As such, we believe FHLB membership of institutions that primarily serve the cryptocurrency market has the potential to negatively influence the FHLBank System's reputation and could be closely examined by the FHFA and policymakers.

## ESG considerations

### Federal Home Loan Banks' ESG Credit Impact Score is Neutral-to-Low CIS-2

Exhibit 7

#### ESG Credit Impact Score



Source: Moody's Investors Service

The Federal Home Loan Bank System's ESG Credit Impact Score is neutral-to-low (**CIS-2**), reflecting the limited credit impact of environmental and social factors on the rating to date. The bank faces neutral-to-low governance risks.

Exhibit 8

#### ESG Issuer Profile Scores



Source: Moody's Investors Service

### Environmental

The Federal Home Loan Bank System faces low environmental risks. Its combined 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, the System is only indirectly exposed to these risks and its advance portfolio is diversified.

### Social

The Federal Home Loan Bank System 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 the System 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

The Federal Home Loan Bank System faces low governance risks. None of the System's banks has ever reported credit losses on advances, their primary product, highlighting strong financial strategy and risk management. The System's strategy and asset composition is based on its Congressional mission and reinforced by its regulators. Each of the eleven FHLBanks is a separately chartered cooperative owned by its respective members, with its own board of directors, management and employees. The System's mandate, regulatory oversight and policies limit the ability of any bank's 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.

## 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. We also assess the level of support and, consequently, the ratings uplift from the US Government (Aaa stable) using our [Government-Related Issuers methodology](#).

Exhibit 9

### Federal Home Loan Banks

#### Macro Factors

**Weighted Macro Profile**                      **Very Strong -**                      **100%**

Factor	Historic Ratio	Initial Score	Expected Trend	Assigned Score	Key driver #1	Key driver #2
<b>Solvency</b>						
<b>Asset Risk</b>						
Problem Loans / Gross Loans	0.1%	aa1	↔	aa2	Long-run loss performance	
<b>Capital</b>						
Tangible Common Equity / Risk Weighted Assets (Basel I)				aa1		
<b>Profitability</b>						
Net Income / Tangible Assets	0.3%	ba2	↔	baa1	Earnings quality	
Combined Solvency Score				aa3		
<b>Liquidity</b>						
<b>Funding Structure</b>						
Market Funds / Tangible Banking Assets	92.1%	caa3	↔	baa1	Market funding quality	
<b>Liquid Resources</b>						
Liquid Banking Assets / Tangible Banking Assets	36.5%	aa3	↔	baa2	Expected trend	
Combined Liquidity Score		ba3		baa1		
<b>Financial Profile</b>						
Qualitative Adjustments				Adjustment		
Business Diversification				0		
Opacity and Complexity				0		
Corporate Behavior				0		
Total Qualitative Adjustments				0		
Sovereign or Affiliate constraint				Aaa		
BCA Scorecard-indicated Outcome - Range				aa3 - a2		
Assigned BCA				a1		
Affiliate Support notching				-		
Adjusted BCA				a1		

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

Source: Moody's Investors Service

## Ratings

Exhibit 10

<u>Category</u>	<u>Moody's Rating</u>
<b>FEDERAL HOME LOAN BANKS</b>	
Outlook	Stable
Senior Unsecured	Aaa
ST Issuer Rating	P-1

Source: Moody's Investors Service

© 2023 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 BY MOODY'S (COLLECTIVELY, "PUBLICATIONS") 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 PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S PUBLICATIONS 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 PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS 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 ITS PUBLICATIONS 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 PUBLICATIONS 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 PUBLICATIONS 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.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS 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 Publications.

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 to Moody's Investors Service, Inc. for credit ratings opinions and services rendered by it fees ranging from \$1,000 to approximately \$5,000,000. MCO and Moody's Investors Service also maintain policies and procedures to address the independence of Moody's Investors Service 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 [www.moody.com](http://www.moody.com) under the heading "Investor Relations — Corporate Governance — Charter Documents - Director and Shareholder Affiliation Policy."

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 Japan only: Moody's Japan K.K. ("MJKK") is a wholly-owned credit rating agency subsidiary of Moody's Group Japan G.K., which is wholly-owned by Moody's Overseas Holdings Inc., a wholly-owned subsidiary of MCO. Moody's SF Japan K.K. ("MSFJ") is a wholly-owned credit rating agency subsidiary of MJKK. MSFJ is not a Nationally Recognized Statistical Rating Organization ("NRSRO"). Therefore, credit ratings assigned by MSFJ are Non-NRSRO Credit Ratings. Non-NRSRO Credit Ratings are assigned by an entity that is not a NRSRO and, consequently, the rated obligation will not qualify for certain types of treatment under U.S. laws. MJKK and MSFJ are credit rating agencies registered with the Japan Financial Services Agency and their registration numbers are FSA Commissioner (Ratings) No. 2 and 3 respectively.

MJKK or MSFJ (as applicable) hereby disclose that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MJKK or MSFJ (as applicable) have, prior to assignment of any credit rating, agreed to pay to MJKK or MSFJ (as applicable) for credit ratings opinions and services rendered by it fees ranging from JPY100,000 to approximately JPY550,000,000.

MJKK and MSFJ also maintain policies and procedures to address Japanese regulatory requirements.

REPORT NUMBER 1354671