UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

☑ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2019

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

Commission File Number 000-51405

FEDERAL HOME LOAN BANK OF DALLAS

(Exact name of registrant as specified in its charter)

Federally chartered corporation (State or other jurisdiction of incorporation or organization)	**71-6013989** (I.R.S. Employer Identification Number)
8500 Freeport Parkway South, Suite 600 **Irving, TX** (Address of principal executive offices)	**75063-2547** (Zip Code)

Registrant’s telephone number, including area code: **(214) 441-8500**

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading symbol(s)	Name of each exchange on which registered

Securities registered pursuant to Section 12(g) of the Act: Class B Capital Stock, $100 par value per share

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☑

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☑

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☑ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☑ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of “large accelerated filer,” “accelerated filer,” “smaller reporting company” and "emerging growth company" in Rule 12b-2 of the Exchange Act:

Large accelerated filer ☐	Accelerated filer ☐	Non-accelerated filer ☑	Smaller reporting company ☐	Emerging growth company ☐
		(Do not check if a smaller reporting company)		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☑

The registrant’s capital stock is not publicly traded and is only issued to members of the registrant. Such stock is issued and redeemed at par value ($100 per share), subject to certain regulatory and statutory requirements. At March 6, 2020, the registrant had 25,242,531 shares of its capital stock outstanding. As of June 30, 2019 (the last business day of the registrant’s most recently completed second fiscal quarter), the aggregate par value of the registrant’s capital stock outstanding was approximately $2.590 billion

Documents Incorporated by Reference: None.

FEDERAL HOME LOAN BANK OF DALLAS
TABLE OF CONTENTS

PART I

ITEM 1. BUSINESS

Background

The Federal Home Loan Bank of Dallas (the “Bank”) is one of 11 Federal Home Loan Banks (each individually a “FHLBank” and collectively the “FHLBanks,” and, together with the Office of Finance, a joint office of the FHLBanks, the “FHLBank System,” or the “System”). The FHLBanks were created by the Federal Home Loan Bank Act of 1932, as amended (the “FHLB Act”). Each of the 11 FHLBanks is a member-owned cooperative that operates as a separate federally chartered corporation with its own management, employees and board of directors. Each FHLBank helps finance housing, community lending, and community development needs in the specified states in its respective district. Federally insured commercial banks, savings banks, savings and loan associations, and federally or privately insured credit unions, as well as insurance companies and Community Development Financial Institutions that are certified under the Community Development Banking and Financial Institutions Act of 1994, are all eligible for membership in the FHLBank of the district in which the institution’s principal place of business is located. Housing associates, including state and local housing authorities, that meet certain statutory and regulatory criteria may also borrow from the FHLBanks.

The public purpose of the Bank is to promote housing, jobs and general prosperity through products and services that assist its members in providing affordable credit in their communities. The Bank’s primary business is to serve as a financial intermediary between the capital markets and its members. In its most basic form, this intermediation process involves raising funds by issuing debt in the capital markets and lending the proceeds to member institutions (in the form of loans known as advances) at rates that are slightly higher than the cost of the debt. The interest spread between the cost of the Bank’s liabilities and the yield on its assets, combined with the earnings on its invested capital, are the Bank’s primary sources of earnings. The Bank endeavors to manage its assets and liabilities in such a way that its net interest spread is consistent across a wide range of interest rate environments. The intermediation of its members’ credit needs with the investment requirements of the Bank’s creditors is made possible by the extensive use of interest rate exchange agreements. These agreements, commonly referred to as derivatives or derivative instruments, are discussed below in the section entitled “Use of Interest Rate Exchange Agreements.”

The Bank’s principal source of funds is debt issued in the capital markets. All 11 FHLBanks issue debt in the form of consolidated obligations through the Office of Finance as their agent, and each FHLBank uses these funds to make loans to its members, invest in debt securities, or for other business purposes. Generally, consolidated obligations are traded in the over-the-counter market. All 11 FHLBanks are jointly and severally liable for the repayment of all consolidated obligations. Although consolidated obligations are not obligations of or guaranteed by the U.S. government, FHLBanks are considered to be government-sponsored enterprises (“GSEs”) and thus have historically been able to borrow at the more favorable rates generally available to GSEs. Consolidated obligations are currently rated Aaa/P-1 by Moody’s Investors Service (“Moody’s”) and AA+/A-1+ by S&P Global Ratings (“S&P”). In the application of S&P's Government Related Entities criteria, the ratings of the FHLBanks are constrained by the long-term sovereign credit rating of the United States. These ratings indicate that each of these nationally recognized statistical rating organizations ("NRSROs") has concluded that the FHLBanks have a very strong capacity to meet their financial commitments on consolidated obligations. The ratings also reflect the FHLBank System’s status as a GSE. Historically, the FHLBanks' GSE status and very high credit ratings on consolidated obligations have provided the FHLBanks with excellent capital markets access. Deposits, other borrowings and the proceeds from the issuance of capital stock to members are also sources of funds for the Bank.

In addition to the ratings on the FHLBanks’ consolidated obligations, each FHLBank is rated individually by both S&P and Moody’s. These individual FHLBank ratings apply to the individual obligations of the respective FHLBanks, such as interest rate derivatives, deposits, and letters of credit. As of December 31, 2019, Moody’s had assigned a deposit rating of Aaa/P-1 to each of the FHLBanks and S&P had rated each of the FHLBanks AA+/A-1+.

Current and prospective shareholders and debtholders should understand that these credit ratings are not a recommendation to buy, hold or sell securities and they may be revised or withdrawn at any time by the NRSRO. The ratings from each of the NRSROs should be evaluated independently.

All members of the Bank are required to purchase capital stock in the Bank as a condition of membership and in proportion to their asset size and borrowing activity with the Bank. The Bank’s capital stock is not publicly traded and all stock is owned by members of the Bank, by non-member institutions that acquire stock by virtue of acquiring member institutions, by a federal or state agency or insurer acting as a receiver of a closed institution, or by former members of the Bank that retain capital stock to support advances or other obligations that remain outstanding or until any applicable stock redemption or withdrawal notice period expires.

The Federal Housing Finance Agency (“Finance Agency”), an independent agency in the executive branch of the U.S. government, is responsible for supervising and regulating the FHLBanks and the Office of Finance. The Finance Agency’s stated mission is to ensure that the housing GSEs, including the FHLBanks, operate in a safe and sound manner so that they serve as a reliable source of liquidity and funding for housing finance and community investment. Consistent with this mission, the Finance Agency establishes policies and regulations covering the operations of the FHLBanks.

The Bank's debt and equity securities are exempt from registration under the Securities Act of 1933 and are "exempted securities" under the Securities Exchange Act of 1934 (the "Exchange Act"). On June 23, 2004, the Finance Agency's predecessor, the Federal Housing Finance Board, adopted a rule requiring each FHLBank to voluntarily register a class of its equity securities with the Securities and Exchange Commission ("SEC") under Section 12(g) of the Exchange Act and the Housing and Economic Recovery Act of 2008 (the "HER Act") subsequently codified this requirement. The Bank's registration with the SEC became effective on April 17, 2006. As a registrant, the Bank is subject to the periodic reporting and disclosure regime as administered and interpreted by the SEC. The SEC maintains an Internet site (https://www.sec.gov) that contains reports and other information filed with the SEC. Reports and other information that the Bank files with the SEC are also available free of charge through the Bank's website at www.fhlb.com. To access these reports and other information through the Bank's website, click on "News," then "Investor Relations," and then "SEC" under the heading SEC Filings. The information on the Bank's website is not, and shall not be deemed to be, a part hereof or incorporated into this or any of the Bank's other filings with the SEC.

Membership

The Bank's members are financial institutions with their principal place of business in the Ninth Federal Home Loan Bank District, which consists of Arkansas, Louisiana, Mississippi, New Mexico and Texas (the "Ninth District"). The following table summarizes the Bank's membership, by type of institution, as of December 31, 2019, 2018 and 2017.

MEMBERSHIP SUMMARY

	December 31,		
	2019	2018	2017
Commercial banks	565	585	608
Savings institutions	54	57	58
Credit unions	122	118	114
Insurance companies	47	43	35
Community Development Financial Institutions	7	7	6
Total members	795	810	821
Housing associates	8	8	8
Non-member borrowers	4	5	6
Total	807	823	835
Community Financial Institutions ("CFIs") (1)	551	572	600

(1) The figures presented above reflect the number of members that were CFIs as of December 31, 2019, 2018 and 2017 based upon the definitions of CFIs that applied as of those dates.

As of December 31, 2019, approximately 69 percent of the Bank's members were Community Financial Institutions ("CFIs"). CFIs are defined by the FHLB Act (as amended by the HER Act) to include all institutions insured by the Federal Deposit Insurance Corporation ("FDIC") with average total assets over the three-year period preceding measurement of less than $1.0 billion, as adjusted annually for inflation. For 2019, CFIs were FDIC-insured institutions with average total assets as of December 31, 2018, 2017 and 2016 of less than $1.199 billion. For 2018 and 2017, the asset cap was $1.173 billion and $1.148 billion, respectively. For 2020, the asset cap is $1.224 billion.

As of December 31, 2019, 2018 and 2017, approximately 48.2 percent, 52.8 percent and 53.8 percent, respectively, of the Bank's members had outstanding advances from the Bank. These usage rates are calculated excluding housing associates and non-member borrowers. While eligible to borrow, housing associates are not members of the Bank and, as such, are not required to hold capital stock. Non-member borrowers consist of institutions that have acquired former members and assumed the advances and/or other extensions of credit of those former members and former members who have withdrawn from membership but that continue to have advances and/or other extensions of credit outstanding. Non-member borrowers are required to hold capital stock to support outstanding advances or other extensions of credit until the time when those advances have been repaid or the extensions of credit have expired, as applicable. During the period that their obligations remain outstanding, non-member borrowers may not request new extensions of credit, nor are they permitted to extend or renew the assumed advances.

As of December 31, 2016, the Bank had 831 members. The decline in the Bank's membership during the three years ended December 31, 2019 was largely attributable to intra-district merger activity.

The Bank’s membership currently includes the majority of commercial banks and savings institutions in its district that are eligible to become members. Eligible non-members are primarily insurance companies, credit unions and smaller commercial banks that have thus far elected not to join the Bank. While the Bank anticipates that some number of these eligible non-member institutions will apply for membership each year, the Bank also anticipates that some number of its existing members will be acquired or merge with other institutions and it does not currently anticipate a substantial increase in the number of member institutions.

As a cooperative, the Bank is managed with the primary objectives of enhancing the value of membership for member institutions and fulfilling its public purpose. The value of membership includes access to readily available credit and other services from the Bank, the value of the cost differential between Bank advances and other potential sources of funds, and the dividends paid on members’ investments in the Bank’s capital stock.

Business Segments

The Bank manages its operations as one business segment. Management and the Bank’s Board of Directors review enterprise-wide financial information in order to make operating decisions and assess performance. All of the Bank’s revenues are derived from U.S. operations.

Interest Income

The Bank’s interest income is derived primarily from advances and investment activities. Each of these revenue sources is more fully described below. During the years ended December 31, 2019, 2018 and 2017, interest income derived from each of these sources (expressed as a percentage of the Bank’s total interest income) was as follows:

	Year Ended December 31,		
	2019	2018	2017
Advances (including prepayment fees)	50.3%	53.8%	52.4%
Investments	43.5	42.8	45.8
Mortgage loans held for portfolio	6.2	3.4	1.8
Total	100.0%	100.0%	100.0%
Total interest income (in thousands)	$ 1,805,705	$ 1,546,768	$ 808,677

Substantially all of the Bank’s interest income from advances is derived from financial institutions domiciled in the Bank’s five-state district.

Products and Services

Advances. The Bank’s primary function is to provide its members with a reliable source of secured credit in the form of loans known as advances. The Bank offers advances to its members with a wide variety of terms designed to meet members’ business and risk management needs. Standard offerings include the following types of advances:

Fixed-rate, fixed-term advances. The Bank offers fixed-rate, fixed-term advances with maturities ranging from overnight to 20 years, and with maturities as long as 30 years for Community Investment advances. Interest is generally paid monthly and principal repaid at maturity for fixed-rate, fixed-term advances.

Fixed-rate, amortizing advances. The Bank offers fixed-rate advances with a variety of final maturities and fixed amortization schedules. Standard advances offerings include fully amortizing advances with final maturities of 5, 7, 10, 15 or 20 years, and advances with amortization schedules based on those maturities but with shorter final maturities accompanied by balloon payments of the remaining outstanding principal balance. Borrowers may also request alternative amortization schedules and maturities. Amortizing Community Investment advances can have maturities as long as 40 years. Interest is generally paid monthly and principal is repaid in accordance with the specified amortization schedule. Although these advances have fixed amortization schedules, borrowers may elect to pay a higher interest rate and have an option to prepay the advance without a fee after a specified lockout period (typically five years). Otherwise, early repayments are subject to the Bank’s standard prepayment fees.

Variable-rate advances. The Bank has historically offered term variable-rate advances with maturities between one and ten years. Standard offerings include variable-rate advances indexed to either one-month LIBOR or three-month LIBOR that are priced at a constant spread to the relevant index. Beginning in December 2018, the Bank no longer offers variable-rate advances indexed to LIBOR with maturities beyond December 31, 2021. The Bank also offers variable-rate advances indexed to discount notes that reset every 8, 13 or 26 weeks based on the results of the FHLBank System's discount note auctions that typically occur twice every week. In addition, the Bank offers short term variable-rate advances (maturities of 30 days or less) indexed to the daily federal funds rate. Further, beginning in December 2019, the Bank offers variable-rate advances indexed to the daily Secured Overnight Financing Rate ("SOFR") for terms ranging from 3 months to 18 months. Variable-rate advances may also include an embedded cap.

Putable advances. The Bank also makes advances that include a put feature that allows the Bank to terminate the advance at specified points in time. If the Bank exercises its option to terminate the putable advance, the Bank offers replacement funding to the member for a period selected by the member up to the remaining term to maturity of the putable advance, provided the Bank determines that the member is able to satisfy the normal credit and collateral requirements of the Bank for the replacement funding requested.

Symmetrical prepayment advances. The Bank also offers fixed-rate, fixed-term or amortizing advances that include a symmetrical prepayment feature which allows a member to prepay an advance at the lower of par value or fair value plus a make-whole amount, thus allowing the member to realize a portion of the decrease in fair value that would arise if interest rates have increased since the advance was originated.

Expander advances. The Bank also offers fixed-rate, fixed-term, non-amortizing advances that provide the member with a one-time option to increase the principal amount of the advance generally up to twice the amount of the original advance at the original interest rate for the remaining term of the advance.

Fixed-rate, fixed-term advances, including Community Investment Program and Economic Development Program advances, can be forward-starting, which allows a member to lock in a rate for an advance that will settle at a future date. Amortizing advances and certain advances containing the symmetrical prepayment feature are also available on a forward-starting basis.

Finance Agency regulations require the Bank to establish a formula for and to charge, if necessary, a prepayment fee on an advance that is repaid prior to maturity in an amount sufficient to make the Bank financially indifferent to the borrower's decision to repay the advance prior to its scheduled maturity date. Currently, these fees are generally calculated as the present value of the difference (if positive) between the interest rate on the prepaid advance and the rate derived from the FHLBank System consolidated obligations curve for the remaining term to maturity of the repaid advance.

Members are required by statute and regulation to use the proceeds of advances with an original term to maturity of greater than five years to purchase or fund new or existing residential housing finance assets which, for CFIs, are defined by statute and regulation to include small business, small farm and small agribusiness loans, loans for community development activities (subject to the Finance Agency's requirements as described below) and securities representing a whole interest in such loans. Community Investment Cash Advances (described below) are exempt from these requirements.

The Bank prices its credit products with the objective of providing benefits of membership that are greatest for those members that use the Bank's products most actively, while maintaining sufficient profitability to pay dividends at a rate that makes members financially indifferent to holding the Bank's capital stock and that will allow the Bank to increase its retained earnings over time. Generally, that set of objectives results in small mark-ups over the Bank's cost of funds for its advances. In keeping with its cooperative philosophy, the Bank provides the same pricing for advances to all similarly situated members regardless of asset or transaction size, charter type, or geographic location.

The Bank is required by the FHLB Act to obtain collateral that is sufficient, in the judgment of the Bank, to fully secure advances and other extensions of credit to members/borrowers. The Bank has not suffered any credit losses on advances since it was established in 1932. In accordance with the Bank's Capital Plan, members and former members must hold Class B-2 capital stock in proportion to their outstanding advances. In addition, members must hold Class B-1 capital stock to meet their membership investment requirement. Pursuant to the FHLB Act, the Bank has a lien upon and holds the Bank's Class B-1 and Class B-2 capital stock owned by each of its shareholders as additional collateral for all of the respective shareholder's obligations to the Bank.

In order to comply with the requirement to fully secure advances and other extensions of credit, the Bank and each of its members/borrowers execute a written security agreement that establishes the Bank's security interest in a variety of the members'/borrowers' assets. The Bank, pursuant to the FHLB Act and Finance Agency regulations, originates, renews, or extends advances only if it has obtained and is maintaining a security interest in sufficient eligible collateral at the time such advance is made, renewed, or extended. Eligible collateral includes whole first mortgages on improved residential real property (not more than 90 days delinquent) or securities representing an undivided interest in such mortgages; securities issued, insured, or guaranteed by the U.S. government or any of its agencies, including mortgage-backed and other debt securities issued or guaranteed by the Federal National Mortgage Association ("Fannie Mae"), the Federal Home Loan Mortgage Corporation ("Freddie Mac"), or the Government National Mortgage Association; term deposits in the Bank; and other real estate-related collateral acceptable to the Bank, provided that such collateral has a readily ascertainable value and the Bank can perfect a security interest in such assets.

In the case of CFIs, the Bank may also accept as eligible collateral secured small business, small farm, and small agribusiness loans, secured loans for community development activities, and securities representing a whole interest in such loans, provided the Bank can perfect a security interest in such collateral and the collateral (i) has a readily ascertainable value, (ii) can be reliably discounted to account for liquidation, and (iii) can be liquidated in due course.

The HER Act added secured loans for community development activities as a new type of eligible collateral for CFIs. To date, the Bank has not been requested to accept secured loans for community development activities as collateral.

Except as set forth in the next sentence, the FHLB Act affords any security interest granted to the Bank by any member/borrower of the Bank, or any affiliate of any such member/borrower, priority over the claims and rights of any party, including any receiver, conservator, trustee, or similar party having rights of a lien creditor. The Bank's security interest is not entitled to priority over the claims and rights of a party that (i) would be entitled to priority under otherwise applicable law and (ii) is an actual bona fide purchaser for value or is a secured party who has a perfected security interest in such collateral in accordance with applicable law (e.g., a prior perfected security interest under the Uniform Commercial Code or other applicable law). For example, as discussed further below, the Bank usually perfects its security interest in collateral by filing a Uniform Commercial Code financing statement against the borrower. If another secured party, without knowledge of the Bank's lien, perfected its security interest in that same collateral by taking possession of the collateral, rather than or in addition to filing a Uniform Commercial Code financing statement against the borrower, then that secured party's security interest that was perfected by possession may be entitled to priority over the Bank's security interest that was perfected by filing a Uniform Commercial Code financing statement.

From time to time, the Bank agrees to subordinate its security interest in certain assets or categories of assets granted by a member/borrower of the Bank to the security interest of another creditor (typically, a Federal Reserve Bank or another FHLBank). If the Bank agrees to subordinate its security interest in certain assets or categories of assets granted by a member/borrower of the Bank to the security interest of another creditor, the Bank will not extend credit against those assets or categories of assets.

As stated above, each member/borrower of the Bank executes a security agreement pursuant to which such member/borrower grants a security interest in favor of the Bank in certain assets of such member/borrower. The assets in which a member grants a security interest fall into one of two general structures. In the first structure, the member grants a security interest in all of its assets that are included in the eligible collateral categories, as described above, which the Bank refers to as a "blanket lien." A member may request that its blanket lien be modified, such that the member grants in favor of the Bank a security interest limited to certain of the eligible collateral categories (i.e., whole first residential mortgages, securities, term deposits in the Bank and other real estate-related collateral). In the second structure, the member grants a security interest in specifically identified assets rather than in the broad categories of eligible collateral covered by the blanket lien and the Bank identifies those members as being on "specific collateral only status."

The basis upon which the Bank will lend to a member that has granted the Bank a blanket lien depends on numerous factors, including, among others, that member's financial condition and general creditworthiness. Generally, and subject to certain limitations, a member that has granted the Bank a blanket lien may borrow up to a specified percentage of the value of eligible collateral categories, as determined from that member's financial reports filed with its federal regulator, without specifically identifying each item of collateral or delivering the collateral to the Bank. Under certain circumstances, including, among others, a deterioration of a member's financial condition or general creditworthiness, the amount a member may borrow is determined only on the basis of the collateral that such member delivers to the Bank or a third-party custodian approved by the Bank. Under these circumstances, the Bank places the member on "custody status." In addition, members on blanket lien status may choose to deliver some or all of the collateral to the Bank.

The members/borrowers that are granted specific collateral only status by the Bank are typically either insurance companies or members/borrowers with an investment grade credit rating from at least two NRSROs that have requested this type of structure. Insurance companies are permitted to borrow only against the eligible collateral that is delivered to the Bank, and insurance companies generally grant a security interest only in collateral they have delivered. Members/borrowers with an investment grade credit rating from at least two NRSROs may grant a security interest in, and would be permitted to borrow only against, delivered eligible securities and specifically identified, eligible first-lien mortgage loans. Such loans must be delivered to the Bank or a third-party custodian approved by the Bank, or the Bank and the member/borrower must otherwise take actions that ensure the priority of the Bank's security interest in the loans. Investment grade rated members/borrowers that choose this option are subject to fewer provisions that allow the Bank to demand additional collateral or exercise other remedies based on the Bank's discretion.

As of December 31, 2019, 668 of the Bank's borrowers/potential borrowers with a total of $29.5 billion in outstanding advances were on blanket lien status, 25 borrowers/potential borrowers with $3.0 billion in outstanding advances were on specific collateral only status and 114 borrowers/potential borrowers with $4.4 billion in outstanding advances were on custody status.

The Bank perfects its security interest in members'/borrowers' collateral in a number of ways. The Bank usually perfects its security interest in collateral by filing a Uniform Commercial Code financing statement against the relevant assets of the member/borrower. In the case of certain borrowers, the Bank perfects its security interest by taking possession or control of the collateral, which may be in addition to the filing of a financing statement. In these cases, the Bank also generally takes assignments of most of the mortgages and deeds of trust that are designated as collateral. Instead of requiring delivery of the collateral to the Bank, the Bank may allow certain borrowers to deliver specific collateral to a third-party custodian approved by the Bank or otherwise take actions that ensure the priority of the Bank's security interest in such collateral.

On at least a quarterly basis, the Bank obtains updated information relating to collateral pledged to the Bank by depository institution members/borrowers, including those on blanket lien status. This information is either obtained directly from the member/borrower or obtained by the Bank from appropriate regulatory filings. In addition, on a monthly basis or as otherwise requested by the Bank, members/borrowers on custody status and members/borrowers on specific collateral only status must update information relating to collateral pledged to the Bank. Bank personnel regularly verify the existence and eligibility of collateral securing advances to members/borrowers on blanket lien status and members/borrowers on specific collateral only status with respect to any collateral not delivered to the Bank. The frequency and the extent of these collateral verifications depend on the average amount by which a member's/borrower's outstanding obligations to the Bank during the year exceed the collateral value of its securities, loans and term deposits held by the Bank. Collateral verifications are not required for members/borrowers that have had no, or only a *de minimis* amount of, outstanding obligations to the Bank secured by a blanket lien during the prior 12-month period ending on November 30, are on custody status, or are on blanket lien status but at all times have delivered to the Bank or an approved custodian eligible loans, securities and term deposits with a collateral value in excess of the advances and other extensions of credit to the member/borrower.

As of December 31, 2019, the Bank's outstanding advances (at par value) totaled $36.9 billion. As of that date, advances outstanding to the Bank's five largest borrowers represented 36.5 percent of the Bank's total outstanding advances. Advances to the Bank's two largest borrowers (Comerica Bank and American General Life Insurance Company) represented 10.3 percent and 8.5 percent, respectively, of the Bank's total outstanding advances as of December 31, 2019. For additional information regarding the composition and concentration of the Bank's advances, see Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations — Financial Condition — Advances.

Community Investment Offerings. The Bank offers a Community Investment Cash Advances ("CICA") program (which includes a Community Investment Program and an Economic Development Program) as authorized by Finance Agency regulations. Advances made under the CICA program benefit low- to moderate-income households by providing funds for housing or economic development projects. CICA advances are made at rates below the rates the Bank charges on standard advances. CICA advances are provided separately from and do not count toward the Bank's statutory obligations under the Affordable Housing Program, through which the Bank provides grants to support projects that benefit low-income households (see the "Affordable Housing Program" section below). As of December 31, 2019, the par value of advances outstanding under the CICA program totaled approximately $377.4 million, representing approximately 1.0 percent of the Bank's total advances outstanding as of that date.

Prior to 2019, if a member institution was approved for an Economic Development Program ("EDP") advance, the member's customer could then be eligible for an accompanying EDP Plus grant. In 2018, a total of $750,000 in EDP Plus grants were available to members' customers. Beginning in January 2019, the Bank launched a Small Business Boost ("SBB") Program, which is designed to provide recoverable assistance to small businesses in their first few years of operation. SBB funds awarded to small businesses are disbursed through member institutions. With the launch of the SBB Program, the Bank no longer offers EDP Plus grants. At December 31, 2019, $3.0 million of SBB loans were outstanding.

The Bank also offers an Affordable Housing Program ("AHP") as required by the FHLB Act and in accordance with Finance Agency regulations. The Bank sets aside 10 percent of each year's earnings (as adjusted for interest expense on mandatorily redeemable capital stock) for its AHP, which provides grants for projects that facilitate development of rental and owner-occupied housing for low-income households. Each year, a portion of the amount set aside is typically allocated specifically for the Bank's Homebuyer Equity Leverage Partnership ("HELP") program and its Special Needs Assistance Program ("SNAP"). HELP provides grant funds for down payment and closing cost assistance for eligible first-time homebuyers. SNAP provides grant funds to special needs homeowners for rehabilitation costs. The calculation of the amount to be set aside is further discussed below in the section entitled "AHP Assessments." Each year, the Bank conducts a competitive application process to allocate the AHP funds set aside from the prior year's earnings. Applications submitted by Bank members and their community partners are scored in accordance with Finance Agency regulations and the Bank's AHP Implementation Plan. The highest scoring proposals are approved to receive funds, which are disbursed upon receipt of documentation that the projects are progressing as specified in the original applications or in approved modifications thereto.

In addition, the Bank offers a Housing Assistance for Veterans program that is designed to provide grants to households of veterans or active service members who were disabled as a result of an injury during their active military service since September 11, 2001.

Further, the Bank offers a Partnership Grant Program which provides funding for the operational needs of community-based organizations ("CBOs"). CBOs include non-profit organizations involved in affordable housing, local community development funds and small business technical assistance providers.

Letters of Credit. The Bank's credit services also include letters of credit issued or confirmed on behalf of members to facilitate business transactions with third parties that support residential housing finance, community lending, or asset/liability management or to provide liquidity to members. Letters of credit are also issued on behalf of members to secure the deposits of public entities that are held by such members. All letters of credit must be fully collateralized as though they were funded advances. At December 31, 2019 and 2018, outstanding letters of credit totaled $21.8 billion and $18.5 billion, respectively, of which $0.3 billion had been issued or confirmed under the Bank's CICA program at each of those dates.

Correspondent Banking and Collateral Services. The Bank provides its members with a variety of correspondent banking and collateral services. These services include overnight and term deposit accounts, wire transfer services, securities safekeeping, and securities pledging services.

SecureConnect. The Bank provides secure on-line access to many of its products, services and reports through SecureConnect, a proprietary, secure on-line product delivery system. A substantial portion of the Bank's advances and wire transfers are initiated by members through SecureConnect. In addition, a large proportion of account statements and other reports are made available through SecureConnect. Further, members may participate in auctions for Bank advances and deposits through SecureConnect.

Interest Rate Swaps, Caps and Floors. The Bank offers interest rate swaps, caps and floors to its member institutions. In these transactions, the Bank acts as an intermediary for its members by entering into an interest rate exchange agreement with a member and then entering into an offsetting interest rate exchange agreement with one of the Bank's approved derivative counterparties which, if required, will be a third-party central clearinghouse. In order to be eligible, a member must have executed a master swap agreement with the Bank. The Bank requires the member to post eligible collateral in an amount equal to the sum of the net market value of the member's derivative transactions with the Bank (if the value is positive to the Bank) plus a percentage of the notional amount of any interest rate swaps, with market values determined on at least a monthly basis. At December 31, 2019 and 2018, the total notional amount of interest rate exchange agreements with members totaled $0.5 billion and $0.9 billion, respectively.

Standby Bond Purchase Agreements. The Bank offers standby bond purchase services to state housing finance agencies within its district. In these transactions, in order to enhance the liquidity of bonds issued by a state housing finance agency, the Bank, for a fee, agrees to stand ready to purchase, in certain circumstances specified in the standby agreement, a state housing finance agency's bonds that the remarketing agent for the bonds is unable to sell. The specific terms for any bonds purchased by the Bank are specified in the standby bond purchase agreement entered into by the Bank and the state housing finance agency. The Bank reserves the right to sell any bonds it purchases at any time, subject to any conditions the Bank agrees to in the standby bond purchase agreement. In November 2017, June 2018 and December 2019, the Bank entered into standby bond purchase agreements with a state housing finance agency located within its district. At December 31, 2019, the Bank had outstanding standby bond purchase agreements totaling $484.9 million, which expire in 2022, 2023 and 2024. The Bank was not required to purchase any bonds under these agreements during the years ended December 31, 2019, 2018 or 2017. The Bank was not a party to any standby bond purchase agreements prior to 2017.

MPF Xtra. The Bank offers MPF Xtra® to its members. MPF Xtra is offered under the Mortgage Partnership Finance® ("MPF"®) program administered by the FHLBank of Chicago, which is discussed on pages 9-10 of this report ("Mortgage Partnership Finance," "MPF," and "MPF Xtra" are registered trademarks of the FHLBank of Chicago). MPF Xtra provides members that participate in the MPF program (known as participating financial institutions or "PFIs") an opportunity to sell certain fixed-rate, conforming mortgage loans into the secondary market. Under this program, loans are sold to the FHLBank of Chicago and are concurrently sold to Fannie Mae as a third-party investor. These loans are not held by the Bank, nor are they recorded on the Bank's balance sheet. Unlike other products offered under the MPF program, PFIs are not required to provide credit enhancement and do not receive credit enhancement fees when using the MPF Xtra product. Under the MPF Xtra program, the Bank receives a fee for any loans sold by its PFIs. During 2019, 2018 and 2017, $46.2 million, $40.2 million and $41.4 million, respectively, of loans were sold through the MPF Xtra program and the fees earned on the sale of these loans totaled $32,000, $28,000 and $29,000, respectively.

Investment Activities

The Bank maintains a portfolio of investments to enhance interest income and meet liquidity needs, including certain regulatory liquidity requirements, as discussed in Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations — Liquidity and Capital Resources. To ensure the availability of funds to meet members' credit needs, the Bank's operating needs, and its other general and regulatory liquidity requirements, the Bank maintains a portfolio of short-term investments typically consisting of overnight federal funds issued by highly rated domestic banks and U.S. branches of foreign financial institutions, overnight reverse repurchase agreements, interest-bearing deposits with highly rated domestic banks and U.S. Treasury Bills and Notes. From time to time, the Bank may also invest in short-term commercial paper and GSE discount notes. At December 31, 2019, the Bank's short-term investments were comprised of $4.5 billion of overnight federal funds sold, $4.4 billion of U.S. Treasury Notes, $4.3 billion of overnight reverse repurchase agreements, $1.7 billion of overnight interest-bearing deposits and $0.9 billion of U.S. Treasury Bills.

To enhance net interest income, the Bank maintains a long-term investment portfolio, which currently includes mortgage-backed securities ("MBS") issued by U.S. government-sponsored enterprises (i.e., Fannie Mae and Freddie Mac); non-agency (i.e., private label) residential MBS; non-MBS debt instruments issued or guaranteed by the U.S. government or secured by U.S. government guaranteed obligations; non-MBS debt instruments issued by U.S. government-sponsored enterprises (i.e., Fannie Mae, Freddie Mac and the Farm Credit System); and state housing agency obligations. The interest rate and, in the case of MBS, prepayment risk inherent in the securities is managed through a variety of debt and interest rate derivative instruments. As of December 31, 2019, 2018 and 2017, the composition of the Bank's long-term investment portfolio was as follows (dollars in millions):

	December 31,					
	2019		2018		2017	
	Amortized Cost	Percentage	Amortized Cost	Percentage	Amortized Cost	Percentage
Government-sponsored enterprises						
Commercial MBS	$ 10,628	59.2%	$ 9,478	54.8%	$ 7,669	47.2%
Debentures	5,501	30.6	5,611	32.5	5,912	36.4
Residential MBS	1,037	5.8	1,254	7.3	1,656	10.2
Government-guaranteed securities	556	3.1	557	3.2	586	3.6
Non-agency residential MBS	63	0.4	76	0.4	95	0.6
Other	155	0.9	306	1.8	333	2.0
Total	$ 17,940	100.0%	$ 17,282	100.0%	$ 16,251	100.0%

The Bank is precluded from purchasing additional MBS if such purchase would cause the aggregate amortized cost of its MBS holdings to exceed an amount equal to 300 percent of its total regulatory capital at the time of purchase. At December 31, 2019, the Bank's MBS holdings (at amortized cost) represented 316 percent of its total regulatory capital.

The Bank has historically attempted to maintain its investments in MBS close to the regulatory dollar limit. While the Finance Agency has established limits with respect to the types and structural characteristics of the FHLBanks' MBS investments, the Bank has generally adhered to a more conservative set of guidelines.

Prior to January 1, 2020, the Bank was permitted to invest in the non-MBS debt obligations of any GSE provided such investments in any single GSE did not exceed the lesser of the Bank's total regulatory capital or that GSE's total capital (taking into account the financial support provided by the U.S. Department of the Treasury, if applicable) at the time new investments were made. As further discussed in the Legislative and Regulatory Developments section beginning on page 16 of this report, the Bank's authority to invest in the non-MBS debt obligations of GSEs that are not operating with capital support or some other form of direct financial assistance from the U.S. government was reduced beginning January 1, 2020. The Bank's investments in the non-MBS debt obligations of Fannie Mae and Freddie Mac are each currently limited to an amount equal to 100 percent of the Bank's total regulatory capital while investments in the non-MBS debt obligations of the Farm Credit System are now limited to an amount equal to 15 percent of the Bank's total regulatory capital. Although the Bank's holdings of Farm Credit System debentures exceeded this new limit on January 1, 2020, the Bank was not required to sell or otherwise reduce any of these investments. Instead, the Bank is precluded from purchasing any additional Farm Credit System debentures until such time as its holdings are reduced to an amount that is less than 15 percent of the Bank's total regulatory capital.

In accordance with Finance Agency policy and regulations, total capital for purposes of determining the Bank's MBS and non-MBS investment limitations excludes accumulated other comprehensive income (loss) and includes all amounts paid in for the Bank's capital stock regardless of accounting classification (see Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations). The Bank is not required to sell or otherwise reduce any investments that exceed these regulatory limits due to reductions in capital or changes in value after the investments are made, but it is precluded from making additional investments that exceed these limits.

Finance Agency regulations include a variety of restrictions and limitations on the FHLBanks' investment activities, including limits on the types, amounts, and maturities of unsecured investments in private issuers. Finance Agency rules and regulations also prohibit the Bank from investing in certain types of securities, including:

- instruments, such as common stock, that represent an ownership interest in an entity, other than stock in small business investment companies, or certain investments targeted to low-income persons or communities;
- instruments issued by non-United States entities, other than those issued by United States branches and agency offices of foreign commercial banks;
- debt instruments that are not investment quality, other than certain investments targeted to low-income persons or communities and instruments that became non-investment quality after purchase by the Bank;
- whole mortgages or other whole loans, other than 1) those acquired by the Bank through a duly authorized Acquired Member Assets program such as the Mortgage Partnership Finance program discussed below; 2) certain investments targeted to low-income persons or communities; 3) certain marketable direct obligations of state, local, or tribal government units or agencies that are investment quality; 4) MBS or asset-backed securities backed by manufactured housing loans or home equity loans; and 5) certain foreign housing loans authorized under Section 12(b) of the FHLB Act;
- non-U.S. dollar denominated securities;
- interest-only or principal-only stripped MBS;
- residual-interest or interest-accrual classes of collateralized mortgage obligations and real estate mortgage investment conduits; and
- fixed-rate MBS or floating-rate MBS that, on trade date, are at rates equal to their contractual cap and that have average lives that vary by more than six years under an assumed instantaneous interest rate change of 300 basis points.

Beginning January 1, 2020, the Bank is also prohibited, pursuant to a Finance Agency directive, from purchasing LIBOR-indexed investments that mature after December 31, 2021. For further information, see the Legislative and Regulatory Developments section beginning on page 16 of this report.

Acquired Member Assets ("AMA")

Through the MPF program, the Bank currently invests in conventional residential mortgage loans originated by its PFIs. The Bank previously purchased conventional mortgage loans and government-guaranteed/insured mortgage loans (i.e., those insured or guaranteed by the Federal Housing Administration or the Department of Veterans Affairs) during the period from 1998 to mid-2003, and resumed acquiring conventional mortgage loans under this program in early 2016. All of the mortgage loans acquired during the period from 2016 to 2019 were originated by certain of the Bank's PFIs and the Bank acquired a 100 percent interest in such loans. For the loans that were acquired from its members during the period from 1998 to mid-2003, the Bank retained title to the mortgage loans, subject to any participation interest in such loans that was sold to the FHLBank of Chicago; the interest in the loans retained by the Bank ranged from 1 percent to 49 percent. Additionally, during the period from 1998 to 2000, the Bank also acquired from the FHLBank of Chicago a percentage interest (ranging up to 75 percent) in certain MPF loans originated by PFIs of other FHLBanks. Substantially all of the $4.0 billion (unpaid principal balance) of mortgage loans on the Bank's balance sheet at December 31, 2019 were conventional loans acquired during the period from 2016 through 2019.

The Bank manages the liquidity, interest rate and prepayment risk of these loans, while the PFIs or their designees retain the servicing activities. The Bank and the PFIs share in the credit risk of the loans with the Bank assuming a limited first loss obligation defined as the First Loss Account ("FLA"), and the PFIs assuming credit losses in excess of the FLA, up to the amount of the required credit enhancement obligation ("CE Obligation") as specified in the master agreement ("Second Loss Credit Enhancement"). Depending on the MPF product structure, the FLA is either a memo account calculated as the cumulative amount of a specified portion of the monthly interest payments on the MPF loans (e.g., 4 basis points, annualized, per month), or a specified percentage amount of MPF loans outstanding (e.g., 35 basis points of the principal amount of the loans). In the first case, the Bank's first loss obligation is limited to the accumulated amount of the FLA, while in the second case the Bank's first loss obligation is limited to the specified percentage of the loans outstanding, subject to recovery from future credit enhancement fees otherwise payable to the PFI as described below.

The CE Obligation is the amount of credit enhancement needed for a pool of loans delivered under a master commitment to be considered "AMA investment grade," which is defined in the Finance Agency's regulations as sufficient credit enhancement such that the Bank expects to be "paid principal and interest in all material respects, even under reasonably likely adverse changes to expected economic conditions." Prior to December 2016, credit enhancements were required to be established such that each master commitment would have an estimated rating equivalent to an investment grade rated MBS and to be set by the Bank using an NRSRO model. Prior to December 22, 2016, the Bank set the credit enhancement level at a double-A equivalent. For loans delivered on and after that date, the credit enhancement level has been set at a triple-B equivalent, which the Bank has determined is sufficient to meet the AMA investment grade standard. The Bank assumes all losses in excess of the Second Loss Credit Enhancement. As further described below, the PFIs are paid a fee by the Bank for assuming a portion of the credit risk of the loans.

The PFI's CE Obligation arises under its PFI Agreement while the amount and nature of the obligation are determined with respect to each master commitment. Under the Finance Agency's Acquired Member Asset regulation (12 C.F.R. part 1268) ("AMA Regulation"), the PFI must "bear the economic consequences" of certain credit losses with respect to a master commitment based upon the MPF product and other criteria. Under the MPF program, the PFI's credit enhancement protection may take the form of the CE Obligation, which represents the direct liability to pay credit losses incurred with respect to that master commitment, or may require the PFI to obtain and pay for a supplemental mortgage insurance ("SMI") policy insuring the Bank for a portion of the credit losses arising from the master commitment, and/or the PFI may contract for a contingent performance-based credit enhancement fee whereby such fees are reduced by losses up to a certain amount arising under the master commitment. The credit risk-sharing structures utilized by the Bank during the period from 2016 through 2019 did not include SMI. Under the AMA Regulation, any portion of the CE Obligation that is a PFI's direct liability must be collateralized by the PFI in the same way that advances are collateralized. The PFI Agreement provides that the PFI's obligations under the PFI Agreement are secured along with other obligations of the PFI under its regular advances agreement with the Bank and, further, that the Bank may request additional collateral to secure the PFI's obligations. PFIs are paid a credit enhancement fee ("CE fee") as an incentive to minimize credit losses, to share in the risk of loss on MPF loans and to pay for SMI (if applicable), rather than paying a guaranty fee to other secondary market purchasers. CE fees are paid monthly and are determined based on the remaining unpaid principal balance of the MPF loans. The required CE Obligation may vary depending on the MPF product alternatives selected. The Bank also pays performance-based CE fees that are based on the actual performance of the pool of MPF loans under each individual master commitment. To the extent that losses incurred by the Bank as part of its first loss obligation in the current month exceed accrued performance-based CE fees, the remaining losses may be recovered from future performance-based CE fees payable to the PFI.

PFIs must comply with the requirements of the PFI agreement, MPF guides, applicable law and the terms of mortgage documents. If a PFI fails to comply with any of these requirements, it may be required to repurchase the MPF loans that are impacted by such failure. The reasons that a PFI could be required to repurchase an MPF loan include, but are not limited to, the failure of the loan to meet underwriting standards, the PFI's failure to deliver a qualifying promissory note and certain other relevant documents to an approved custodian, a servicing breach, fraud or other misrepresentations by the PFI. In addition, a PFI may, under the terms of the MPF servicing guide, elect to repurchase any government-guaranteed/insured loan for an amount equal to the loan's then current scheduled principal balance and accrued interest thereon, provided no payment has been made by the borrower for three consecutive months. This policy allows PFIs to comply with loss mitigation requirements of the applicable government agency in order to preserve the insurance guaranty coverage.

As of December 31, 2019 and 2018, MPF loans held for portfolio (net of allowance for credit losses) were $4.075 billion and $2.186 billion, respectively, representing approximately 5.4 percent and 3.0 percent, respectively, of the Bank's total assets at each of those dates. Over time, the Bank expects to increase the balance of its mortgage loan portfolio to an amount that approximates 10 percent to 15 percent of its total assets. Currently, the Bank intends to continue to acquire a 100 percent interest in the mortgage loans that it purchases from its PFIs.

Core Mission Achievement

On July 14, 2015, the Finance Agency issued an Advisory Bulletin ("AB 2015-05") that provides guidance to the FHLBanks regarding core mission achievement. As stipulated in AB 2015-05, the Finance Agency assesses each FHLBank's core mission achievement by calculating the ratio of a FHLBank's primary mission assets (defined for this purpose as advances and mortgage loans held for portfolio) relative to its consolidated obligations (hereinafter referred to as the core mission asset or "CMA" ratio). On August 23, 2018, the Finance Agency issued an Advisory Bulletin that, among other things, allows each FHLBank (beginning January 1, 2019) to adjust its CMA ratio (as defined in AB 2015-05) by deducting from the ratio's denominator the average par value of the FHLBank's holdings of U.S. Treasury securities with a remaining maturity no greater than 10 years that are classified as trading or available-for-sale. The CMA ratio is calculated for each calendar year using annual average par values.

AB 2015-05 also provides the Finance Agency's expectations for each FHLBank's strategic plan based on the FHLBank's CMA ratio, which are:

- when the CMA ratio is 70 percent or higher, the strategic plan should include an assessment of the FHLBank's prospects for maintaining that level of core mission achievement;

- when the CMA ratio is at least 55 percent but less than 70 percent, the strategic plan should explain the FHLBank’s plans to increase its mission focus; and
- when the CMA ratio is below 55 percent, the strategic plan should include a robust explanation of the circumstances that caused the CMA ratio to be below that level, as well as a detailed description of the FHLBank's plans to increase the ratio. The Advisory Bulletin provides that if a FHLBank has a CMA ratio below 55 percent over the course of several consecutive reviews, then the FHLBank’s board of directors should consider possible strategic alternatives as part of its strategic planning.

Currently, the Bank's core mission assets are comprised primarily of advances. For the years ended December 31, 2019, 2018 and 2017, the Bank's CMA ratio was 65.7 percent, 64.7 percent and 62.9 percent, respectively. As noted previously in the Acquired Member Assets section (and for reasons unrelated to AB 2015-05), the Bank began to purchase mortgage loans through the MPF Program in early 2016. Over time, mortgage loan purchases are expected to further increase the Bank's core mission assets. For 2020, the Bank's goal is to increase its CMA ratio to approximately 67 percent for the first nine months of the year and 70 percent for the last three months of the year.

Notwithstanding the negative impact that holding higher amounts of liquidity has on its CMA ratio, the Bank has at times maintained, and may continue from time to time to maintain higher balances of liquidity if short-term debt markets are volatile (as they have been recently in response to the outbreak of the novel coronavirus known as COVID-19) or if, in management's judgment, they are expected to become more volatile, or if the returns from holding those higher balances are attractive. Since late 2018, the Bank has used and it will likely continue to use more U.S Treasury securities to meet its liquidity requirements given the favorable treatment afforded such investments in the Bank's CMA ratio relative to other short-term investment alternatives. Currently, the Bank intends to focus its efforts on growing its advances and mortgage loans held for portfolio to increase its CMA ratio. If necessary, the Bank could elect to reduce the size of its long-term investment portfolio by selling assets (which would have the effect of increasing the Bank's CMA ratio but at the same time reducing its earnings).

Funding Sources

General. The principal funding source for the Bank is consolidated obligations issued in the capital markets through the Office of Finance. Member deposits and the proceeds from the issuance of capital stock are also funding sources for the Bank. Consolidated obligations consist of consolidated obligation bonds and consolidated obligation discount notes. Discount notes are consolidated obligations with maturities of one year or less, and consolidated obligation bonds typically have maturities in excess of one year.

The Bank determines its participation in the issuance of consolidated obligations based upon, among other things, its own funding and operating requirements and the amounts, maturities, rates of interest and other terms available in the marketplace. The issuance terms for consolidated obligations are established by the Office of Finance, subject to policies established by its board of directors and the regulations of the Finance Agency. In addition, the Government Corporation Control Act provides that, before a government corporation issues and offers obligations to the public, the U.S. Secretary of the Treasury shall prescribe the form, denomination, maturity, interest rate, and conditions of the obligations, the way and time issued, and the selling price.

Consolidated obligation bonds generally satisfy long-term funding needs. Typically, the maturities of these securities range from 1 to 20 years, but their maturities are not subject to any statutory or regulatory limit. Consolidated obligation bonds can be fixed-rate or variable-rate and may be callable or non-callable.

Consolidated obligation bonds are issued and distributed through negotiated or competitively bid transactions with underwriters or bidding group members. The Bank receives 100 percent of the proceeds of bonds issued through direct negotiation with underwriters of System debt when it is the sole primary obligor on consolidated obligation bonds. When the Bank and one or more other FHLBanks jointly agree to the issuance of bonds directly negotiated with underwriters, the Bank receives the portion of the proceeds of the bonds agreed upon with the other FHLBanks; in those cases, the Bank is the primary obligor for a pro rata portion of the bonds based on the proceeds it receives. In these cases, the Bank records on its balance sheet only that portion of the bonds for which it is the primary obligor. The majority of the Bank’s consolidated obligation bond issuance has been conducted through direct negotiation with underwriters of System debt, and a majority of that issuance has been without participation by the other FHLBanks.

The Bank may also request that specific amounts of specific bonds be offered by the Office of Finance for sale through competitive auction conducted with underwriters that are bidding group members. One or more other FHLBanks may also request that amounts of these same bonds be offered for sale for their benefit through the same auction. The Bank may receive from zero to 100 percent of the proceeds of the bonds issued through competitive auction depending on the amounts and costs for the bonds bid by underwriters, the maximum costs the Bank or other FHLBanks, if any, participating in the same issue are willing to pay for the bonds, and Office of Finance guidelines for allocation of bond proceeds among multiple participating FHLBanks.

Consolidated obligation discount notes are a significant funding source for money market instruments and for advances with short-term maturities or repricing frequencies of less than one year, or advances for which the interest rate is indexed to discount notes. Discount notes are generally sold at a discount and mature at par, and are offered daily through a consolidated obligation discount notes selling group and through other authorized securities dealers.

On a daily basis, the Bank may request that specific amounts of consolidated obligation discount notes with specific maturity dates be offered by the Office of Finance at a specific cost for sale to securities dealers in the discount note selling group. One or more other FHLBanks may also request that amounts of discount notes with the same maturities be offered for sale for their benefit on the same day. The Office of Finance commits to issue discount notes on behalf of the participating FHLBanks when securities dealers in the selling group submit orders for the specific discount notes offered for sale. The Bank may receive from zero to 100 percent of the proceeds of the discount notes issued through this sales process depending on the maximum costs the Bank or other FHLBanks, if any, participating in the same discount notes are willing to pay for the discount notes, the amounts of orders for the discount notes submitted by securities dealers, and Office of Finance guidelines for allocation of discount note proceeds among multiple participating FHLBanks. Under the Office of Finance guidelines, FHLBanks generally receive funding on a first-come-first-served basis subject to threshold limits within each category of discount notes. For overnight discount notes, sales are allocated to the FHLBanks in lots of $250 million for identical commitments. For all other discount note maturities, sales are allocated in lots of $50 million. Within each category of discount notes, the allocation process is repeated until all orders are filled or canceled.

Twice weekly, the Bank may also request that specific amounts of consolidated obligation discount notes with fixed maturity dates ranging from 4 to 26 weeks be offered by the Office of Finance through competitive auctions conducted through securities dealers in the discount note selling group. One or more other FHLBanks may also request that amounts of those same discount notes be offered for sale for their benefit through the same auction. The discount notes offered for sale through competitive auction are not subject to a limit on the maximum costs the FHLBanks are willing to pay. The FHLBanks receive funding at a single price based on a Dutch auction format. If the bids submitted are less than the total of the FHLBanks' requests, the Bank receives funding based on the ratio of the Bank's regulatory capital (defined on page 35 of this report) relative to the regulatory capital of the other FHLBanks offering discount notes. The majority of the Bank's discount note issuance in maturities of 4 weeks or longer is conducted through the auction process. Regardless of the method of issuance, as with consolidated obligation bonds, the Bank is the primary obligor for the portion of discount notes issued for which it has received the proceeds.

On occasion, and as an alternative to issuing new debt, the Bank may assume the outstanding consolidated obligations for which other FHLBanks are the original primary obligors. This occurs in cases where the original primary obligor may have participated in a large consolidated obligation issue to an extent that exceeded its immediate funding needs in order to facilitate better market execution for the issue. The original primary obligor might then warehouse the funds until they were needed, or make the funds available to other FHLBanks. Transfers may also occur when the original primary obligor's funding needs change, and that FHLBank offers to transfer debt that is no longer needed to other FHLBanks. Transferred debt is typically fixed-rate, fixed-term, non-callable debt, and may be in the form of discount notes or bonds. In connection with these transactions, the Bank becomes the primary obligor for the transferred debt.

The Bank participates in such transfers of funding from other FHLBanks when the transfer represents favorable pricing relative to a new issue of consolidated obligations with similar features. The Bank did not assume any consolidated obligations from other FHLBanks during the years ended December 31, 2019, 2018 or 2017.

In addition, the Bank occasionally transfers debt that it no longer needs to other FHLBanks. The Bank did not transfer any consolidated obligations to other FHLBanks during the years ended December 31, 2019, 2018 or 2017.

Joint and Several Liability. Although the Bank is primarily liable only for its portion of consolidated obligations (i.e., those consolidated obligations issued on its behalf and those that have been assumed from other FHLBanks), it is also jointly and severally liable with the other FHLBanks for the payment of principal and interest on all of the consolidated obligations issued by the FHLBanks. The Finance Agency, in its discretion, may require any FHLBank to make principal or interest payments due on any consolidated obligation, regardless of whether there has been a default by a FHLBank having primary liability. To the extent that a FHLBank makes any payment on a consolidated obligation on behalf of another FHLBank, the paying FHLBank shall be entitled to reimbursement from the FHLBank with primary liability. The FHLBank with primary liability would have a corresponding liability to reimburse the FHLBank providing assistance to the extent of such payment and other associated costs (including interest to be determined by the Finance Agency). However, if the Finance Agency determines that the primarily liable FHLBank is unable to satisfy its obligations, then the Finance Agency may allocate the outstanding liability among the remaining FHLBanks on a pro rata basis in proportion to each FHLBank's participation in all consolidated obligations outstanding, or on any other basis that the Finance Agency may determine. No FHLBank has ever failed to make any payment on a consolidated obligation for which it was the primary obligor; as a result, the regulatory provisions for directing other FHLBanks to make payments on behalf of another FHLBank or allocating the liability among other FHLBanks have never been invoked. Consequently, the Bank has no means to determine how the Finance Agency might allocate the obligations of a

FHLBank that is unable to pay consolidated obligations for which such FHLBank is primarily liable. If principal of or interest on any consolidated obligation issued by the FHLBank System is not paid in full when due, the Bank may not pay dividends to, or repurchase shares of stock from, any shareholder of the Bank.

The FHLBanks and the Office of Finance are parties to the Amended and Restated Federal Home Loan Banks P&I Funding and Contingency Plan Agreement which is designed to facilitate the timely funding of principal and interest payments on FHLBank System consolidated obligations in the event that a FHLBank is not able to meet its funding obligations in a timely manner. For additional information regarding this agreement, see Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations — Liquidity and Capital Resources.

According to the Office of Finance, the 11 FHLBanks had (at par value) approximately $1.026 trillion and $1.032 trillion in consolidated obligations outstanding at December 31, 2019 and 2018, respectively. The Bank was the primary obligor on $70.1 billion and $68.0 billion (at par value), respectively, of these consolidated obligations.

Certification and Reporting Obligations. Under Finance Agency regulations, before the end of each calendar quarter and before paying any dividends for that quarter, the President and Chief Executive Officer of the Bank must certify to the Finance Agency that, based upon known current facts and financial information, the Bank will remain in compliance with its depository and liquidity requirements and will remain capable of making full and timely payment of all current obligations (which includes the Bank's obligation to pay principal of and interest on consolidated obligations) coming due during the next quarter. The Bank is required to provide notice to the Finance Agency if it (i) is unable to provide the required certification, (ii) projects at any time that it will fail to comply with its liquidity requirements or will be unable to meet all of its current obligations due during the quarter, (iii) actually fails to comply with its liquidity requirements or to meet all of its current obligations due during the quarter, or (iv) negotiates to enter into or enters into an agreement with one or more other FHLBanks to obtain financial assistance to meet its current obligations due during the quarter. The Bank has been in compliance with the applicable reporting requirements at all times since they became effective in 1999.

A FHLBank must file a consolidated obligation payment plan for the Finance Agency's approval if (i) the FHLBank becomes a non-complying FHLBank as a result of failing to provide the required certification, (ii) the FHLBank becomes a non-complying FHLBank as a result of being required to provide the notice described above to the Finance Agency, except in the case of a failure to make a payment on a consolidated obligation caused solely by an external event such as a power failure, or (iii) the Finance Agency determines that the FHLBank will cease to be in compliance with its liquidity requirements or will lack the capacity to meet all of its current obligations due during the quarter.

A non-complying FHLBank is permitted to continue to incur and pay normal operating expenses in the regular course of business, but may not incur or pay any extraordinary expenses, or declare or pay dividends, or redeem any capital stock, until such time as the Finance Agency has approved the FHLBank's consolidated obligation payment plan or inter-FHLBank assistance agreement, or ordered another remedy, and all of the non-complying FHLBank's direct obligations have been paid.

Negative Pledge Requirements. Each FHLBank must maintain specified assets free from any lien or pledge in an amount at least equal to its participation in outstanding consolidated obligations. Eligible assets for this purpose include (i) cash; (ii) obligations of, or fully guaranteed by, the U.S. government; (iii) secured advances; (iv) mortgages having any guaranty, insurance, or commitment from the U.S. government or any related agency; and (v) investments described in Section 16(a) of the FHLB Act, which, among other items, include securities that a fiduciary or trust fund may purchase under the laws of the state in which the FHLBank is located. At December 31, 2019 and 2018, the Bank had eligible assets free from pledge of $74.4 billion and $72.0 billion, respectively, compared to its participation in outstanding consolidated obligations of $70.1 billion and $68.0 billion, respectively. In addition, the Bank was in compliance with its negative pledge requirements at all times during the years ended December 31, 2019, 2018 and 2017.

Office of Finance. The Office of Finance ("OF") is a joint office of the 11 FHLBanks that executes the issuance of consolidated obligations, as agent, on behalf of the FHLBanks. The OF also services all outstanding consolidated obligation debt, serves as a source of information for the FHLBanks on capital market developments, manages the FHLBank System's relationship with rating agencies as it pertains to the consolidated obligations, and prepares and distributes the annual and quarterly combined financial reports for the FHLBanks.

The OF's board of directors is comprised of 16 directors: the 11 FHLBank presidents, who serve *ex officio*, and 5 independent directors, who each serve five-year terms that are staggered so that not more than one independent directorship is scheduled to become vacant in any one year. Independent directors are limited to two consecutive full terms. Independent directors must be United States citizens. As a group, the independent directors must have substantial experience in financial and accounting matters and they must not have any material relationship with any FHLBank or the OF.

One of the responsibilities of the board of directors of the OF is to establish policies regarding consolidated obligations to ensure that, among other things, such obligations are issued efficiently and at the lowest all-in funding costs for the FHLBanks over time consistent with prudent risk management practices and other market and regulatory factors.

The Finance Agency has regulatory oversight and enforcement authority over the OF and its directors and officers generally to the same extent as it has such authority over a FHLBank and its respective directors and officers. The FHLBanks are responsible for jointly funding the expenses of the OF, which are shared on a pro rata basis with two-thirds based on each FHLBank's total consolidated obligations outstanding (as of each month end) and one-third divided equally among all of the FHLBanks.

Use of Interest Rate Exchange Agreements

Finance Agency regulations authorize and establish general guidelines for the FHLBanks' use of derivative instruments, and the Bank's Enterprise Market Risk Management Policy establishes specific guidelines for their use. The Bank can use interest rate swaps, swaptions, cap and floor agreements, calls, puts, and futures and forward contracts as part of its interest rate risk management and funding strategies. Regulations prohibit derivative instruments that do not qualify as hedging instruments pursuant to U.S. generally accepted accounting principles unless a non-speculative use is documented.

In general, the Bank uses interest rate exchange agreements in three ways: (1) by designating the agreement as a fair value hedge of a specific financial instrument or firm commitment; (2) by designating the agreement as a cash flow hedge of a forecasted transaction; or (3) by designating the agreement as a hedge of some defined risk in the course of its balance sheet management. For example, the Bank uses interest rate exchange agreements in its overall interest rate risk management activities to adjust the interest rate sensitivity of consolidated obligations to approximate more closely the interest rate sensitivity of its assets, including advances and investments, and/or to adjust the interest rate sensitivity of advances and investments to approximate more closely the interest rate sensitivity of its liabilities. In addition to using interest rate exchange agreements to manage mismatches between the coupon features of its assets and liabilities, the Bank uses interest rate exchange agreements to manage embedded options in assets and liabilities, to preserve the market value of existing assets and liabilities and to reduce funding costs.

The Bank frequently enters into interest rate exchange agreements concurrently with the issuance of consolidated obligation bonds and it simultaneously designates the agreement as a fair value hedge. This strategy of issuing bonds while simultaneously entering into interest rate exchange agreements enables the Bank to offer a wider range of attractively priced advances to its members. The attractiveness of such debt generally depends on yield relationships between the consolidated obligation bond and interest rate exchange markets. As conditions in these markets change, the Bank may alter the types or terms of the consolidated obligations that it issues.

To a lesser extent, the Bank uses interest rate exchange agreements to hedge the variability of cash flows associated with the forecasted issuances of consolidated obligation discount notes.

In addition, as discussed in the section above entitled "Products and Services," the Bank offers interest rate swaps, caps and floors to its member institutions. In these transactions, the Bank acts as an intermediary for its members by entering into an interest rate exchange agreement with a member and then entering into an offsetting interest rate exchange agreement with one of the Bank's approved derivative counterparties.

For further discussion of interest rate exchange agreements, see Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations — Financial Condition — Derivatives and Hedging Activities and the audited financial statements accompanying this report.

Competition

Demand for the Bank's advances is affected by, among other things, the cost of other available sources of funds for its members, including deposits. The Bank competes with other suppliers of wholesale funding, both secured and unsecured, including investment banking concerns, commercial banks and, in certain circumstances, other FHLBanks. Historically, sources of wholesale funds for its members have included unsecured long-term debt, unsecured short-term debt such as federal funds, repurchase agreements and deposits issued into the brokered certificate of deposit market. The availability of funds through these wholesale funding sources can vary from time to time as a result of a variety of factors including, among others, market conditions, members' creditworthiness and availability of collateral. The availability of these alternative private funding sources could significantly influence the demand for the Bank's advances. The Bank competes against other financing sources on the basis of cost, the relative ease by which the members can access the various sources of funds, collateral requirements, and the flexibility desired by the member when structuring the liability.

As a debt issuer, the Bank competes with Fannie Mae, Freddie Mac and other GSEs, as well as corporate, sovereign and supranational entities for funds raised in the national and global debt markets. Increases in the supply of competing debt products could, in the absence of increases in demand, result in higher debt costs for the FHLBanks. Although investor demand for FHLBank debt has historically been sufficient to meet the Bank's funding needs, there can be no assurance that this will always be the case.

Capital

The Bank's capital consists of capital stock owned by its members (and, in some cases, non-member borrowers or former members as described below), plus retained earnings and accumulated other comprehensive income (loss). Consistent with the FHLB Act and the Finance Agency's regulations, the Bank's Capital Plan requires each member to own Class B stock (redeemable with five years' written notice subject to certain restrictions) in an amount equal to the sum of a membership investment requirement and an activity-based investment requirement. Specifically, the Bank's Capital Plan requires members to hold capital stock in proportion to their total asset size and borrowing activity with the Bank.

The Bank's capital stock is not publicly traded and it may be issued, repurchased, redeemed and, with the prior approval of the Bank, transferred only at its par value. In addition, the Bank's capital stock may only be held by members of the Bank, by non-member institutions that acquire stock by virtue of acquiring member institutions, by a federal or state agency or insurer acting as a receiver of a closed institution, or by former members of the Bank that retain capital stock to support advances or other obligations that remain outstanding or until any applicable stock redemption or withdrawal notice period expires.

The Bank has two sub-classes of Class B Stock. Class B-1 Stock is used to meet the membership investment requirement and Class B-2 Stock is used to meet the activity-based investment requirement. Subject to the limitations in the Capital Plan, the Bank converts shares of one sub-class of Class B Stock to the other sub-class of Class B Stock under the following circumstances: (i) shares of Class B-2 Stock held by a shareholder in excess of its activity-based investment requirement are converted into Class B-1 Stock, if necessary, to meet that shareholder's membership investment requirement and (ii) shares of Class B-1 Stock held by a shareholder in excess of the amount required to meet its membership investment requirement are converted into Class B-2 Stock as needed in order to satisfy that shareholder's activity-based investment requirement. All excess stock is held as Class B-1 Stock at all times.

For more information about the Bank's minimum capital requirements, see Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations — Risk-Based Capital Rules and Other Capital Requirements.

Retained Earnings. The Bank has a retained earnings policy that calls for the Bank to maintain retained earnings in an amount at least sufficient to protect the par value of the Bank's capital stock against potential economic losses that could arise from a variety of designated risk factors. The Bank updates its retained earnings target calculations quarterly under an analytic framework that takes into account the potential losses for each risk factor at the 99 percent confidence stress level, or a stress scenario that approximates the 99th percentile. The Board of Directors reviews the Bank's retained earnings policy annually and revises the methodology as appropriate. The Bank's current retained earnings policy target is described in Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

On February 28, 2011, the Bank entered into a Joint Capital Enhancement Agreement (the "JCE Agreement") with the other FHLBanks. Effective August 5, 2011, the FHLBanks amended the JCE Agreement (the "Amended JCE Agreement"), and the Finance Agency approved an amendment to the Bank's Capital Plan to incorporate its provisions on that same date. The Amended JCE Agreement provides that the Bank (and each of the other FHLBanks) will, on a quarterly basis, allocate at least 20 percent of its net income to a separate restricted retained earnings account ("RRE Account"). Pursuant to the provisions of the Amended JCE Agreement, the Bank is required to build its RRE Account to an amount equal to one percent of its total outstanding consolidated obligations, which for this purpose is based on the most recent quarter's average carrying value of all consolidated obligations, excluding hedging adjustments ("Total Consolidated Obligations").

The Amended JCE Agreement provides that any quarterly net losses incurred by the Bank may be netted against its net income, if any, for other quarters during the same calendar year to determine the minimum required year-to-date or annual allocation to its RRE Account. In the event the Bank incurs a net loss for a cumulative year-to-date or annual period, the Bank may decrease the amount of its RRE Account such that the cumulative year-to-date or annual addition to its RRE Account is zero and the Bank shall apply any remaining portion of the net loss first to reduce retained earnings that are not restricted retained earnings until such retained earnings are reduced to zero, and thereafter may apply any remaining portion of the net loss to reduce its RRE Account. For any subsequent calendar quarter in the same calendar year, the Bank may decrease the amount of its quarterly allocation to its RRE Account in that subsequent calendar quarter such that the cumulative year-to-date addition to the RRE Account is equal to 20 percent of the amount of such cumulative year-to-date net income. In the event the Bank sustains a net loss for a calendar year, any such net loss first shall be applied to reduce retained earnings that are not restricted retained earnings until such retained earnings are reduced to zero, and thereafter any remaining portion of the net loss for the calendar year may be applied to reduce the Bank's RRE Account. If during a period in which the Bank's RRE Account is less than one percent of its Total Consolidated Obligations, the Bank incurs a net loss for a cumulative year-to-date or annual period that results in a decrease to the balance of its RRE Account as of the beginning of that calendar year, the Bank's quarterly allocation requirement shall thereafter increase to 50 percent of quarterly net income until the cumulative difference between the allocations made at the 50 percent rate and the allocations that would have been made at the regular 20 percent rate is equal to the amount of the decrease to the balance of its RRE Account at the beginning of that calendar year.

The Amended JCE Agreement provides that if the Bank's RRE Account exceeds 1.5 percent of its Total Consolidated Obligations, the Bank may transfer amounts from its RRE Account to its unrestricted retained earnings account, but only to the extent that the balance of its RRE Account remains at least equal to 1.5 percent of the Bank's Total Consolidated Obligations immediately following such transfer.

The Amended JCE Agreement further provides that the Bank may not pay dividends out of its RRE Account, nor may it reallocate or transfer amounts out of its RRE Account except as described above. In addition, during periods in which the Bank's RRE Account is less than one percent of its Total Consolidated Obligations, the Bank may not pay dividends out of the amount of its quarterly net income that is required to be allocated to its RRE Account.

Dividends. Subject to the FHLB Act, Finance Agency regulations and other Finance Agency directives, the Bank pays dividends to holders of its capital stock quarterly or as otherwise determined by its Board of Directors. The Board of Directors may declare dividends at the same rate for all shares of Class B Stock, or at different rates for Class B-1 Stock and Class B-2 Stock, provided that in no event can the dividend rate on Class B-2 Stock be lower than the dividend rate on Class B-1 Stock. Dividends may be paid in the form of cash, additional shares of either, or both, sub-classes of Class B Stock, or a combination thereof as determined by the Bank's Board of Directors. The dividend rates on Class B-1 Stock and Class B-2 Stock are paid on all shares of Class B-1 Stock and Class B-2 Stock, respectively, regardless of their classification for accounting purposes. The Bank is permitted by statute and regulation to pay dividends only from previously retained earnings or current net earnings, and the payment of dividends is also subject to the terms of the Amended JCE Agreement.

Because the Bank's returns from net interest income generally track short-term interest rates, the Bank benchmarks the dividend rate that it pays on capital stock to a short-term index. While there can be no assurances about future dividends or future dividend rates, the current target for quarterly dividends on Class B-1 Stock is an annualized rate that approximates the average one-month LIBOR rate for the immediately preceding quarter. The current target range for quarterly dividends on Class B-2 Stock is an annualized rate that approximates the average one-month LIBOR rate for the immediately preceding quarter plus 0.5 – 1.0 percent.

The Bank generally pays dividends in the form of capital stock. When dividends are paid, capital stock is issued in full shares and any fractional shares are paid in cash. For a more detailed discussion of the Bank's dividend policy and the restrictions relating to its payment of dividends, see Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

Legislative and Regulatory Developments

Proposed Rule on Housing Goals

On November 2, 2018, the Finance Agency published a proposed rule that would amend the existing FHLBank Housing Goals regulation. The proposed amendments are intended to replace existing FHLBank housing goals with a more streamlined set of goals. While the existing housing goals are established retrospectively, the proposed rule would establish the levels of annual housing goals in advance, thereby eliminating uncertainty about housing goals from year to year. If adopted as proposed, the amendments would:

- eliminate the annual $2.5 billion AMA mortgage purchase volume threshold that triggers the application of housing goals;
- establish the target level for the new prospective AMA mortgage purchase housing goal at 20 percent of total AMA mortgage purchases that are for very low-income families, low-income families, or families in low-income areas, and require that at least 75 percent of all mortgage purchases that count toward the goal be for borrowers with incomes at or below 80 percent of the area median income;
- establish a goal that 50 percent of AMA program users meet the definition of "small members" whose assets do not exceed the CFI asset cap; and
- allow the FHLBanks to request Finance Agency approval of alternative target percentages for mortgage purchase housing goals and small member participation goals.

Comments on the proposed rule were due by January 31, 2019.

Final Rule on Reciprocal Deposits

On February 4, 2019, the FDIC issued a final rule related to the treatment of "reciprocal deposits" that implements Section 202 of the Economic Growth, Regulatory Relief, and Consumer Protection Act of 2018 (the "EGRRCP Act"). The rule exempts, for certain insured depository institutions ("depositories"), certain reciprocal deposits (deposits acquired by a depository from a network of participating depositories that enables depositors to receive FDIC insurance coverage for the entire amount of their deposits) from being subject to FDIC restrictions on brokered deposits. Under the rule, which became effective on March 6, 2019, well-capitalized and well-rated depositories are not required to treat reciprocal deposits as brokered deposits up to the lesser of 20 percent of their total liabilities or $5 billion. Reciprocal deposits held by depositories that are not well-capitalized and well-rated may also be excluded from brokered deposit treatment in certain circumstances.

This rule could enhance depositories' liquidity by increasing the attractiveness of deposits that exceed FDIC insurance limits, which could adversely affect demand for the Bank's advances.

Final Rule on FHLBank Capital Requirements

On February 20, 2019, the Finance Agency published a final rule that adopted, with amendments, the regulations of the Federal Housing Finance Board pertaining to the capital requirements for the FHLBanks. The rule, which became effective on January 1, 2020, carries over most of the then-existing regulations without material change but substantively revises the credit risk component of the risk-based capital requirement, as well as the limitations on certain extensions of unsecured credit.

The revisions removed the requirements that the FHLBanks calculate credit risk capital charges and unsecured credit limits based on ratings issued by an NRSRO, and instead require that the FHLBanks establish and use their own internal rating methodology. The rule imposes a new credit risk capital charge for cleared derivatives. The rule also revises the percentages used in the regulation's tables to calculate credit risk capital charges for advances and non-mortgage assets. These changes are not expected to materially impact the Bank's risk-based capital requirement.

The rule also reduces the amount of unsecured credit that the Bank can extend to GSEs that are not operating with capital support or some other form of direct financial assistance from the U.S. government ("Non-supported GSEs"), which could adversely impact the Bank's future operating results by limiting the amount of its long-term investments. At the time the rule became effective, the Bank was not required to sell Non-supported GSE investments that exceeded the new exposure limit, but it is now precluded from purchasing additional Non-supported GSE investments until such time that its unsecured exposure falls below that limit.

Finally, the rule rescinds certain contingency liquidity requirements set forth in existing regulations, as the Finance Agency's liquidity requirements are now addressed in an Advisory Bulletin that was issued in August 2018 (for additional discussion regarding the liquidity requirements stipulated in the Advisory Bulletin, see the section entitled Liquidity and Capital Resources on page 66 of this report).

Advisory Bulletin Regarding Capital Stock Management

On August 14, 2019, the Finance Agency issued an Advisory Bulletin that augments existing statutory and regulatory capital requirements to require each FHLBank to maintain a capital stock-to-assets ratio of at least two percent, as measured on a daily average basis at each month end.

The Bank does not expect this Advisory Bulletin, which became effective in February 2020, to have an impact on the Bank's capital management practices, financial condition or results of operations.

Finance Agency Supervisory Letter Regarding Potential LIBOR Phase-Out

On September 27, 2019, the Finance Agency issued a supervisory letter to the FHLBanks relating to their preparations for the potential phase-out of LIBOR after December 31, 2021. Under the supervisory letter, with limited exceptions, the FHLBanks were directed, by December 31, 2019, to no longer purchase LIBOR-indexed investments which mature after December 31, 2021 and, by March 31, 2020, to no longer issue, make, purchase or otherwise enter into financial liabilities, derivatives or other assets that reference LIBOR and which mature after December 31, 2021. The foregoing includes, among other financial instruments, LIBOR-indexed advances and other structured advance products for which a LIBOR-indexed derivative is used to hedge the advance. While these phase-out dates do not apply to collateral accepted by the FHLBanks, the supervisory letter directed the FHLBanks to update their pledged collateral certification reporting requirements by March 31, 2020 in an effort to encourage members to distinguish LIBOR-linked collateral maturing after December 31, 2021.

In light of the recent market volatility caused by the COVID-19 outbreak, the Finance Agency (on March 16, 2020) extended the date after which the FHLBanks can no longer issue, make, purchase or otherwise enter into financial liabilities, derivatives or other assets that reference LIBOR and which mature after December 31, 2021 from March 31, 2020 to June 30, 2020, except for option-embedded products. This directive did not in any way modify the previous guidance relating to investments. On March 20, 2020, the Finance Agency extended the date by which the FHLBanks should update their pledged collateral certification reporting requirements from March 31, 2020 to September 30, 2020.

Since January 1, 2020, the Bank has not purchased any LIBOR-indexed investments which mature after December 31, 2021, nor has it purchased any fixed rate investments that were hedged with LIBOR-indexed derivatives maturing after December 31, 2021. On and after April 1, 2020 or July 1, 2020 (as the case may be), the Bank will no longer issue, make, purchase or otherwise enter into financial liabilities, derivatives or other assets that reference LIBOR and which mature after December 31, 2021, subject to any exceptions that may be granted by the Finance Agency.

The guidance provided by the supervisory letter could have an effect on some of the structured advance products offered by the Bank after March 31, 2020 which, if either no longer offered or offered on less favorable terms, could cause a decline in the Bank's total advances. Similarly, the Bank's inability to purchase LIBOR-indexed investments and fixed rate investments that are hedged with LIBOR-indexed derivatives could limit the Bank's investments and/or its ability to maximize the return on its investments. In addition, the Bank's inability to use LIBOR-indexed swaps and swaptions will make it more difficult to hedge the interest rate risk associated with the Bank's mortgage loans held for portfolio. Further, the Bank's inability to hedge fixed rate consolidated obligation bonds with LIBOR-indexed derivatives could increase the Bank's funding costs. Each of these factors could, in turn, negatively affect the Bank's financial condition and results of operations.

For additional discussion and information regarding the Bank's LIBOR-indexed financial instruments that mature after December 31, 2021, see Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations - Financial Condition - Potential LIBOR Phase-Out on page 59 of this report.

FDIC Brokered Deposits Restrictions

On December 12, 2019, the FDIC issued a proposed rule to amend its brokered deposits restrictions that apply to insured depository institutions that are less than well-capitalized. The FDIC noted that the proposed amendments are intended to modernize its brokered deposit regulations and would establish a new framework for analyzing whether deposits placed through deposit placement arrangements qualify as brokered deposits. These deposit placement arrangements include those between insured depository institutions and third parties, such as financial technology companies, for a variety of business purposes, including access to deposits. By creating a new framework for analyzing certain provisions of the "deposit broker" definition, including shortening the list of activities considered "facilitating" and expanding the scope of the "primary purpose" exception, the proposed rule would narrow the definition of "deposit broker" and exclude more deposits from treatment as "brokered deposits." The proposed rule would also establish an application and reporting process with respect to the primary purpose exception.

Comments on the proposed rule are due by April 10, 2020. If adopted as proposed, the rule could adversely affect the demand for the Bank's advances, but the extent to which advances demand could be impacted is uncertain.

Activity-Based Capital Stock Requirement for Letters of Credit

On December 23, 2019, the Finance Agency directed the Bank to amend its Capital Plan for the purpose of including an activity-based capital stock investment requirement for letters of credit. Currently, the Bank's Capital Plan does not provide for an activity-based investment requirement related to its letters of credit. Other FHLBanks that similarly do not have an activity-based investment requirement associated with letters of credit received the same directive. The directive instructs the Bank to submit an amendment to its Capital Plan by no later than June 30, 2020, which amendment will first require approval by the Bank's Board of Directors. The directive stipulates that the Bank's activity-based capital stock investment requirement shall be no less than 10 basis points for letters of credit issued on and after January 1, 2021. If needed to accommodate information technology changes, the implementation date can be extended, but in no event can it be extended beyond June 30, 2021.

The implementation of an activity-based capital stock investment requirement could reduce demand for the Bank's letters of credit which, in turn, could reduce the Bank's future profitability.

Advisory Bulletin Regarding AMA Risk Management

On January 31, 2020, the Finance Agency issued an Advisory Bulletin that provides guidance to the FHLBanks regarding their risk management of AMA (the "AMA AB"). The AMA AB requires each FHLBank to have board-established limits for its AMA portfolio and, in support of those limits, management thresholds that are set at levels sufficiently below the board-established limits so that management would have adequate time to address any relevant developments that might otherwise result in a breach of a board-established limit.

To manage the risks associated with a FHLBank's AMA holdings, the Finance Agency expects each FHLBank to have, at a minimum, the following: (1) portfolio limits; (2) loan concentration limits; (3) third-party loan origination limits; and (4) pricing limits. For portfolio limits, the Finance Agency expects each FHLBank to have limits with respect to (i) maximum holdings of AMA, (ii) growth in AMA over defined periods of time (e.g., during a calendar year), and (iii) annual purchases from any single PFI. Among other things, PFI limits should provide reasonable assurance that a FHLBank's smaller members (which, as compared to larger members, may not have the same capacity or access to sell loans in the secondary mortgage market) will be able to continue to sell AMA to the FHLBank during any given year, regardless of the amount of AMA purchased from that FHLBank's larger members. Loan concentration limits should include, at a minimum, geographic area concentration and high-balance loan concentration.

The FHLBanks should be able to demonstrate their progress toward compliance with the AMA AB by September 30, 2020 and should have final limits in place by December 31, 2020. The Bank is currently evaluating the impact that the AMA AB could have on its ability to purchase mortgage loans from individual PFIs and in aggregate. If its mortgage loan acquisitions are ultimately limited by the AMA AB, the Bank's financial condition and results of operations could be adversely impacted.

FHLBank Membership Request for Input

On February 24, 2020, the Finance Agency issued a Request for Input on FHLBank membership (the "Membership RFI"). The Membership RFI, as part of a holistic review of FHLBank membership, seeks public input on whether the Finance Agency's existing regulation on FHLBank membership remains adequate to ensure: (i) the FHLBank System remains safe and sound and able to provide liquidity to members in a variety of conditions and (ii) the advancement of the FHLBanks' housing finance and community development mission. The Finance Agency is seeking input on several broad questions relating to FHLBank membership requirements, as well as on certain more specific questions related to the implementation of the current membership regulation. Responses are due by no later than June 23, 2020.

Rulemaking actions, if any, that are taken by the Finance Agency as a result of the Membership RFI could impact membership eligibility and/or requirements, and ultimately the Bank's business and its business prospects.

Amendments to Stress Test Rule

On March 24, 2020, the Finance Agency published a final rule that amends its stress testing rule, consistent with section 401 of the EGRRCP Act, to: (i) raise the minimum threshold for conducting periodic stress tests for entities regulated by the Finance Agency from those with consolidated assets greater than $10 billion to those with consolidated assets greater than $250 billion and (ii) remove the adverse scenario from the list of required scenarios. Under the final rule, none of the FHLBanks will be required to conduct periodic stress tests. However, the Finance Agency retains under its general supervisory powers the discretion to require stress testing by the FHLBanks if the Finance Agency determines that such testing would be useful. The amendments align the Finance Agency's stress testing rule with rules adopted by other financial institution regulators that implement the Dodd-Frank Wall Street Reform and Consumer Protection Act (the "Dodd-Frank Act") stress testing requirements, as amended by the EGRRCP Act.

Significant Developments Applicable to Derivatives

Uncertainty Regarding Brexit

In June 2016, the United Kingdom ("UK") voted in favor of leaving the European Union ("EU") and, in March 2017, Article 50 of the Lisbon Treaty was invoked, commencing a period of negotiations between the UK and the European Council regarding the UK's withdrawal from the EU, which was subsequently extended by the European Council members in agreement with the UK. On January 31, 2020, the UK withdrew from the EU under the European Union (Withdrawal Agreement) Act 2020, with a transition period to last until December 31, 2020, which period may be extended for an additional two years. During this transition period, the UK and the EU will negotiate the details of their future relationship, including what conditions will apply to EU-based entities that want to do business with the UK, and vice versa, after the transition period.

From time to time, the Bank has exposure to UK-based and EU-based derivative counterparties and one of its derivative clearinghouse counterparties is based in the UK. At this time, it is not possible to predict the date on which the transition period will end or whether any agreement that is reached between the UK and the EU will have a material adverse effect on the derivatives that the Bank has entered into with these counterparties.

CFTC No-action Relief for LIBOR Amendments

On December 17, 2019, three divisions of the CFTC issued no-action letters to provide relief with respect to the transition away from LIBOR and other interbank offered rates ("IBORs"). Among other forms of relief, the letters, subject to certain limitations:

(i) permit registered swap dealers, major swap participants, security-based swap participants, and major security-based swap participants (collectively, "Covered Swap Entities") to amend a non-cleared derivative entered into before the compliance date of the CFTC's non-cleared derivative margin requirements (such derivative, a "legacy derivative," and such requirements, the "CFTC margin rules") to include LIBOR or other IBOR fallbacks without the legacy derivative becoming subject to the CFTC margin rules; and

(ii) provide time-limited relief, until December 31, 2021, for (a) derivatives that are not subject to the central clearing requirement because they were executed prior to the relevant compliance date and (b) derivatives that are subject to the trade execution requirement to be amended to include LIBOR or other IBOR fallbacks without becoming subject to such clearing or trade execution requirements.

Margin and Capital Requirements for Covered Swap Entities

On November 7, 2019, the Office of the Comptroller of the Currency, the Federal Reserve Board, the FDIC, the Farm Credit Administration and the Finance Agency (collectively, the "Agencies") jointly published a proposed rule that would amend the Agencies' regulations that established minimum margin and capital requirements for non-cleared derivatives (the "prudential margin rules") for Covered Swap Entities that are subject to the jurisdiction of one of the Agencies. In addition to other changes, the proposed amendments would permit those non-cleared derivatives entered into by a Covered Swap Entity before the compliance date of the prudential margin rules to retain their legacy status and not become subject to the prudential margin rules in the event that such legacy derivatives are amended to replace LIBOR or another rate that is reasonably expected to be discontinued or is reasonably determined to have lost its relevance as a reliable benchmark due to a significant impairment. Among other things, the proposed rule would also amend the prudential margin rules to (i) extend (for Covered Swap Entities) the phase-in compliance date for initial margin requirements from September 1, 2020 to September 1, 2021 for its counterparties that have an average daily aggregate notional amount of non-cleared derivatives between $8 billion and $50 billion, (ii) clarify that a Covered Swap Entity does not have to execute initial margin trading documentation with a counterparty prior to the time that the counterparty is required to collect or post initial margin, and (iii) permit legacy derivatives to retain their legacy status and not become subject to the prudential margin rules in the event that they are amended due to certain life-cycle activities, such as reductions of notional amounts or portfolio compression exercises.

On October 24, 2019, the CFTC proposed an amendment to its CFTC margin rules which, among other changes, would similarly extend the phase-in compliance date for initial margin requirements from September 1, 2020 to September 1, 2021 for counterparties with an average daily aggregate notional amount of non-cleared derivatives between $8 billion and $50 billion. On March 18, 2020, the CTFC announced that it had voted unanimously to finalize the one-year extension of the initial margin compliance deadline.

CFTC Advisory on Initial Margin Documentation Requirements

On July 9, 2019, the CFTC issued an advisory (the "CFTC Advisory") on the CFTC margin rules to clarify that documentation governing the posting, collection, and custody of initial margin (and posting itself) is not required to be completed until such time as the aggregate unmargined exposure to a counterparty (and its margin affiliates) exceeds an initial margin threshold of $50 million imposed by the regulation. The CFTC Advisory instructs CFTC Covered Swap Entities to closely monitor initial margin amounts if they are approaching the $50 million initial margin threshold with a counterparty and to take appropriate steps to ensure that the required documentation is in place at such time as the threshold is reached.

While the Bank is not a Covered Swap Entity under the prudential margin rules, it transacts its non-cleared derivatives with Covered Swap Entities and it is likely that it will have an aggregate notional amount of non-cleared derivatives between $8 billion and $50 billion when the initial margin requirements become effective on September 1, 2021 (at December 31, 2019, the aggregate notional balance of the Bank's non-cleared derivatives was $21.2 billion). If the Bank's aggregate notional balance of its non-cleared derivatives is between $8 billion and $50 billion on September 1, 2021, its obligation to post initial margin would occur when its unmargined exposure (excluding legacy derivatives) exceeds $50 million on a counterparty-by-counterparty basis. If the Bank is ultimately required to post initial margin, it anticipates that its costs of engaging in non-cleared derivatives may increase.

Regulatory Oversight

As discussed above, the Finance Agency supervises and regulates the FHLBanks and the OF. The Finance Agency has a statutory responsibility and corresponding authority to ensure that the FHLBanks operate in a safe and sound manner. Consistent with that duty, the Finance Agency has an additional responsibility to ensure the FHLBanks carry out their housing and community development finance mission. In order to carry out those responsibilities, the Finance Agency establishes regulations governing the entire range of operations of the FHLBanks, conducts ongoing off-site monitoring and supervisory reviews, performs annual on-site examinations and periodic interim on-site reviews, and requires the FHLBanks to submit monthly and quarterly information regarding their financial condition, results of operations and risk metrics.

The Comptroller General of the United States (the "Comptroller General") has authority under the FHLB Act to audit or examine the Finance Agency and the Bank and to decide the extent to which they fairly and effectively fulfill the purposes of the FHLB Act. Furthermore, the Government Corporation Control Act provides that the Comptroller General may review any audit of a FHLBank's financial statements conducted by an independent registered public accounting firm. If the Comptroller General conducts such a review, then he or she must report the results and provide his or her recommendations to Congress, the Office of Management and Budget, and the FHLBank in question. The Comptroller General may also conduct his or her own audit of the financial statements of any FHLBank.

As an SEC registrant, the Bank is subject to the periodic reporting and disclosure regime as administered and interpreted by the SEC. The Bank must also submit annual management reports to Congress, the President of the United States, the Office of

Management and Budget, and the Comptroller General; these reports are required to include a statement of financial condition, a statement of operations, a statement of cash flows, a statement of internal accounting and administrative control systems, and the report of the independent registered public accounting firm on the financial statements. In addition, the Treasury receives the Finance Agency's annual report to Congress and other reports reflecting the operations of the FHLBanks.

Employees

As of December 31, 2019, the Bank employed 203 people, all but one of whom was located in one office in Irving, Texas. None of the Bank's employees are subject to a collective bargaining agreement and the Bank believes its relationship with its employees is good.

AHP Assessments

Although the Bank is exempt from all federal, state, and local income taxes, the FHLB Act requires each FHLBank to establish and fund an AHP. Annually, the FHLBanks must collectively set aside for the AHP the greater of $100 million or 10 percent of their current year's income before AHP expenses. Interest expense on capital stock that is classified as a liability (i.e., mandatorily redeemable capital stock) is added back to income for purposes of computing the Bank's AHP assessment. The Bank's AHP funds are made available to members in the form of direct grants to assist in the purchase, construction, or rehabilitation of housing for very low-, low- and moderate-income households.

Business Strategy and Outlook

The Bank maintains a Strategic Business Plan that provides the framework for its future business direction. The goals and strategies for the Bank's major business activities are encompassed in this plan, which is updated and approved by the Board of Directors at least annually and at any other time that revisions are deemed necessary.

As described in its Strategic Business Plan, the Bank operates under a cooperative business model that is intended to maximize the overall value of membership in the Bank. This business model envisions that the Bank will limit and carefully manage its risk profile while generating sufficient profitability to maintain an appropriate level of retained earnings, to pay dividends on Class B-1 Stock at a rate at least equal to average one-month LIBOR and on Class B-2 Stock at a rate at least equal to average one-month LIBOR plus 0.5-1.0 percent, and to absorb periodic earnings volatility related to hedging and derivatives or other external shocks. Consistent with this business model, the Bank places the highest priority on being able to meet its members' liquidity and funding needs in all market environments.

The Bank intends to continue to operate under its cooperative business model for the foreseeable future. All other things being equal, the Bank's earnings are typically expected to rise and fall with the general level of market interest rates, particularly short-term money market rates, and the Bank's total capital and asset size. Other factors that could have an effect on the Bank's future earnings include the level, volatility of and relationships between short-term money market rates such as federal funds, SOFR and one-month and three-month LIBOR; the availability and cost of the Bank's short- and long-term debt relative to benchmark rates such as federal funds, SOFR, one- and three-month LIBOR, and long-term fixed mortgage rates; the availability of interest rate exchange agreements at competitive prices; whether the Bank's larger borrowers continue to be members of the Bank and the level at which they maintain their borrowing activity; the extent to which the Bank's members continue to sell mortgage loans to the Bank; and the impact of the ongoing credit market disruption and rapidly deteriorating economic conditions on the longer-term demand for the Bank's credit products.

Demand for advances has been elevated since the current credit market disruption began in late February/early March 2020 in response to the COVID-19 outbreak. The Bank believes the current unsettled nature of the credit markets has led some members to increase their borrowings in order to increase their liquidity. Meanwhile, the Bank's mortgage loan purchases have declined significantly and are not expected to increase again until market conditions improve. At this time, it is impossible to estimate how long the current credit market conditions will continue or whether they will worsen further before they begin to improve. If markets ultimately return to more normal conditions, whether as a result of the various initiatives that have been undertaken by the Federal Reserve or otherwise, demand for advances may fall. The extent to which advances could fall will likely depend upon the severity and duration of the economic downturn that may result from the COVID-19 event. Similarly, the volume of the Bank's mortgage loan purchases could for some time be adversely impacted by a slowdown in economic activity.

Notwithstanding the uncertain economic outlook, sustained long-term growth in both advances and mortgage loans held for portfolio continue to be strategic priorities for the Bank as these assets contribute to the value the Bank provides its members, as well as the Bank's earnings, core mission assets and, correspondingly, its CMA ratio.

Aside from these economic uncertainties, the potential phase-out of LIBOR by December 31, 2021, and the Finance Agency guidance issued to address this economic event, could limit the Bank's advances offerings and/or its ability to hedge the interest rate risk associated with the Bank's mortgage loans held for portfolio. Further, the Bank's inability to hedge fixed rate consolidated obligation bonds with LIBOR-indexed derivatives could increase the Bank's funding costs. Beginning January 1, 2020, the Bank is no longer able to invest in LIBOR-indexed investments (or fixed rate investments that are hedged with LIBOR-indexed derivatives) which mature after December 31, 2021. Each of these factors could, in turn, negatively affect the Bank's financial condition and results of operations.

While the Bank's primary focus will continue to be ensuring its ability to meet the liquidity and funding needs of its members, in order to become a more valuable resource to its members, the Bank will also continue to consider ways in which it can enhance its product and/or service offerings. The FHLB Act and Finance Agency regulations limit the products and services that the Bank can offer to its members and govern many of the terms of the products and services that the Bank offers. The Bank is also required by regulation to file New Business Activity notices with the Finance Agency for any new products or services that would constitute new business activities under the regulation and, therefore, it will have to assess any potential new products or services offerings in light of these statutory and regulatory restrictions.

ITEM 1A. RISK FACTORS

A natural or man-made disaster or a pandemic, especially one affecting our region, could adversely affect our profitability and/or financial condition.

Portions of our district are subject to risks from hurricanes, tornadoes, floods and other natural disasters and the entire district is subject to the risk of a pandemic. In addition to natural disasters, our business could also be negatively impacted by man-made disasters.

Pandemics can create significant economic and financial disruptions. For instance, the novel coronavirus known as COVID-19, which originated in Wuhan, Hubei Province, China in late 2019 and which has now spread to many other countries including the U.S., was recently declared a global pandemic. While still evolving, COVID-19 has to date caused significant economic and financial turmoil both in the U.S. and around the world, and has fueled concerns that it will lead to a global recession. These conditions are expected to continue (and likely worsen) in the near term. At this time, it is not possible to estimate how long it will take to halt the spread of the virus or the longer-term effects that COVID-19 could have on our business. Many businesses in our district and across the U.S. have been forced to shut down operations for an indefinite period of time in an attempt to slow the spread of the virus, and unemployment claims have increased dramatically in the last several weeks as more employers begin to layoff workers. California, Illinois and New York state (where many of the major financial institutions with whom we transact investments, derivatives and our debt issuance are located) recently ordered all residents to stay in their homes unless they have vital reasons to go out and other states have or may soon invoke similar orders. Ultimately, the significant slowdown in economic activity caused by COVID-19 could reduce members' demand for our products and services and could also lead to a devaluation of our assets and/or the collateral pledged by our members to secure advances and other extensions of credit, either of which could have an adverse impact on our financial condition and results of operations as a result of reduced business volumes or credit losses. Our financial condition and results of operations could also be adversely impacted if one or more of the major financial institutions with whom we conduct business were to fail as a result of the ongoing dislocation in the financial markets.

Since early March 2020, our access to the market for consolidated obligations has been adversely impacted as a result of reduced demand for our longer-term debt and higher costs for the shorter-term debt we have issued, which will adversely affect our future profitability. The extent to which our future profitability is negatively impacted will depend upon how long the current conditions persist.

Like many other businesses, almost all of our employees are currently working remotely and those who are not may begin working remotely very soon. With our employees working remotely, we could face operational difficulties that could impair our ability to conduct and manage our business effectively, which could lead to lost business and/or higher costs for us. In addition, some, most or all of our employees could become infected with the COVID-19 virus which, depending upon the number of employees and the severity of their cases, could similarly affect our ability to conduct and manage our business effectively. Counterparties, service providers and other third parties upon which we rely to conduct our business could be adversely impacted by closures, remote working arrangements or sickness among their employees which could, in turn, lead to operational challenges for us. These difficulties and challenges could increase the likelihood that we will experience operational errors that could adversely impact our financial condition and results of operations.

Natural or man-made disasters that occur within or outside our district may damage or dislocate our members' facilities, may damage or destroy collateral pledged to secure advances or other extensions of credit, may adversely affect the livelihood of MPF borrowers or members' customers or otherwise cause significant economic dislocation in the affected areas. If this were to occur, our business could be negatively impacted.

In the aftermath of a natural or man-made disaster or during or after a pandemic like COVID-19, significant borrower defaults on loans made by our members could occur and these defaults could cause members to fail. If one or more member institutions fail, and if the value of the collateral pledged to secure advances from us has declined below the amount borrowed, we could incur a credit loss that would adversely affect our financial condition and results of operations. A decline in the local economies in which our members operate could reduce members' needs for funding, which could reduce demand for our advances. We could be adversely impacted by the reduction in business volume that would arise either from the failure of one or more of our members or from a decline in member funding needs. In addition, it is possible that the protections we have in place for our MPF loans including, but not limited to, borrowers' equity, PMI, hazard insurance and, if applicable, flood insurance, along with MPF credit enhancements, may not be sufficient to prevent us from incurring losses on loans that are secured by properties located in areas that are affected by a natural or man-made disaster. Similarly, the protections we have in place for our MPF loans may not be sufficient to prevent us from incurring losses on loans to borrowers who are no longer able to make payments due to a decline in or loss of income as a result of the economic fallout from a disaster or pandemic.

Our profitability is vulnerable to interest rate fluctuations.

We are subject to significant risks from changes in interest rates because most of our assets and liabilities are financial instruments. Our profitability depends significantly on our net interest income and is impacted by changes in the fair value of interest rate derivatives and any associated hedged items. Changes in interest rates can impact our net interest income as well as the values of our derivatives and certain other assets and liabilities. Changes in overall market interest rates, changes in the relationships between short-term and long-term market interest rates, changes in the relationship between different interest rate indices, or differences in the timing of rate resets for assets and liabilities or related interest rate derivatives with interest rates tied to those indices, can affect the interest rates received from our interest-earning assets differently than those paid on our interest-bearing liabilities. This difference could result in an increase in interest expense relative to interest income, which would result in a decrease in our net interest spread, or a net decrease in earnings related to the relationship between changes in the valuation of our derivatives and any associated hedged items.

Our profitability may be adversely affected if we are not successful in managing our interest rate risk.

Like most financial institutions, our results of operations are significantly affected by our ability to manage interest rate risk. We use a number of tools to monitor and manage interest rate risk, including income simulations and duration/market value sensitivity analyses. Given the unpredictability of the financial markets, capturing all potential outcomes in these analyses is extremely difficult. Key assumptions used in our market value sensitivity analyses include interest rate volatility, mortgage prepayment projections and the future direction of interest rates, among other factors. Key assumptions used in our income simulations include projections of advances volumes and pricing, MPF volumes and pricing, market conditions for our debt, prepayment speeds and cash flows on mortgage-related assets, the level of short-term interest rates, and other factors. These assumptions are inherently uncertain and, as a result, the measures cannot precisely estimate net interest income or the market value of our equity nor can they precisely predict the effect of higher or lower interest rates or changes in other market factors on net interest income or the market value of our equity. Actual results will most likely differ from simulated results due to the timing, magnitude, and frequency of interest rate changes and changes in market conditions and management strategies, among other factors. Our ability to maintain a positive spread between the interest earned on our earning assets and the interest paid on our interest-bearing liabilities may be affected by the unpredictability of changes in interest rates.

Exposure to credit risk from our customers could have a negative impact on our profitability and financial condition.

We are subject to credit risk from advances and other extensions of credit to members, non-member borrowers and housing associates (collectively, our customers). Other extensions of credit include letters of credit issued or confirmed on behalf of customers, customers' credit enhancement obligations associated with MPF loans held in portfolio, and interest rate exchange agreements we enter into with our customers.

We require that all outstanding advances and other extensions of credit to our customers be fully collateralized. We evaluate the types of collateral pledged by our customers and assign a borrowing capacity to the collateral, generally based on either a percentage of its book value or estimated market value. The vast majority of the collateral is assigned a borrowing capacity based on its estimated market value. During economic downturns, the number of our member institutions exhibiting significant financial stress generally increases. If member institutions fail, and if the FDIC (or other receiver, conservator or acquiror) does not promptly repay all of the failed institution's obligations to us or assume the outstanding extensions of credit, we might be required to liquidate the collateral pledged by the failed institution in order to satisfy its obligations to us. A devaluation of or our inability to liquidate collateral in a timely manner in the event of a default by the obligor could cause us to incur a credit loss and adversely affect our financial condition or results of operations.

Exposure to credit risk on our investments and MPF loans could have a negative impact on our profitability and financial condition.

We are exposed to credit risk from our MPF loans held in portfolio and our secured and unsecured investment portfolio. A deterioration of economic conditions, declines in residential real estate values, changes in monetary policy or other events that could negatively impact the economy and the markets as a whole could lead to borrower defaults, which in turn could cause us to incur losses on our MPF loans and/or our investment portfolio. If delinquencies, default rates and loss severities on residential mortgage loans increase, and/or there is a decline in residential real estate values, we could experience losses on our MPF loans held in portfolio and/or our holdings of non-agency mortgage-backed securities.

Changes in overall credit market conditions and/or competition for funding may adversely affect our cost of funds and our access to the capital markets.

The cost of our consolidated obligations depends in part on prevailing conditions in the capital markets at the time of issuance, which are generally beyond our control. For instance, a decline in overall investor demand for debt issued by the FHLBanks and similar issuers could adversely affect our ability to issue consolidated obligations on favorable terms or in amounts that are sufficient to meet our funding needs. Investor demand is influenced by many factors including changes or perceived changes in general economic conditions, changes in investors' risk tolerances or balance sheet capacity, or, in the case of overseas investors, changes in preferences for holding dollar-denominated assets. Credit market disruptions similar to those that occurred during the period from late 2007 through early 2009 and which are currently occurring as a result of the COVID-19 crisis tend to dampen investor demand for longer-term debt, including longer-term FHLBank consolidated obligations, making it more difficult for us to match the maturities of our assets and liabilities. In addition, changes in the relationships between the cost of our consolidated obligations and interest rate swaps could increase our net cost of funds, which could negatively impact our results of operations. Further, higher long-term debt costs and/or lack of demand for our long-term debt at attractive prices (or at all) could cause us to fund some long-term assets with short-term debt, creating mismatches between the maturities of our assets and liabilities. Such mismatches expose us to refinancing risk, which is the risk that we may have difficulty rolling over our short-term obligations if market conditions change and/or investor demand for our debt is suddenly insufficient to satisfy our funding needs.

We compete with Fannie Mae, Freddie Mac and other GSEs, as well as commercial banking, corporate, sovereign and supranational entities for funds raised through the issuance of unsecured debt in the global debt markets. Increases in the supply of competing debt products may, in the absence of increased investor demand, result in higher debt costs, which could negatively affect our financial condition and results of operations. Further, if investors limit their demand for our debt, our ability to fund our operations and to meet the credit and liquidity needs of our members by accessing the capital markets could eventually be compromised.

Our inability to issue consolidated obligations for a relatively short period of time could jeopardize our ability to continue operating.

We typically issue consolidated obligations almost every day. We also maintain access to other sources of contingent liquidity. As more fully described in the Liquidity and Capital Resources section of this report, we currently manage our liquidity to ensure that, at a minimum, we maintain 10 calendar days or more of positive daily cash balances (or such higher or lower number of days as the Finance Agency may from time to time require us to maintain) assuming no access to the market for consolidated obligations or other unsecured funding sources and the renewal of all advances that are scheduled to mature during the measurement period. However, if we were unable to issue consolidated obligations for a relatively short period of time and our other sources of contingent liquidity were either not available or were not available in sufficient quantities, our ability to meet our obligations and otherwise conduct our operations would be compromised.

An interruption in our access to the capital markets would limit our ability to obtain funds.

We conduct our business and fulfill our public purpose primarily by acting as an intermediary between our members and the capital markets. Certain events, such as a natural disaster, terrorist act or global pandemic, could limit or prevent us from accessing the capital markets in order to issue consolidated obligations for some period of time. An event that precludes us from accessing the capital markets may also limit our ability to enter into transactions to obtain funds from other sources. External forces are difficult to predict or prevent, but can have a significant impact on our ability to manage our financial needs and to meet the credit and liquidity needs of our members.

Changes in investors' perceptions of the creditworthiness of the FHLBanks may adversely affect our ability to issue consolidated obligations on favorable terms.

We, and the other ten FHLBanks, currently have the highest credit rating from Moody's and are rated AA+/A-1+ by S&P. The consolidated obligations issued by the FHLBanks are rated Aaa/P-1 by Moody's and AA+/A-1+ by S&P. Each of these NRSROs has assigned a stable outlook to its long-term credit rating on the FHLBank System's consolidated obligations and to its long-term rating of each of the FHLBanks.

Pursuant to criteria used by S&P and Moody's, the FHLBank System's debt rating and the credit ratings of the individual FHLBanks are linked closely to the U.S. sovereign credit rating because of the FHLBanks' GSE status. The U.S. government's fiscal challenges could negatively impact the credit rating of the U.S. government, which could in turn result in a downgrade of the rating assigned to us and/or the consolidated obligations of the FHLBank System.

Because the FHLBanks have joint and several liability for all of the FHLBanks' consolidated obligations, negative developments at any FHLBank could also adversely affect S&P's and/or Moody's credit ratings on us and/or the FHLBanks' consolidated obligations or result in one or both of these NRSROs issuing a negative credit report on the FHLBank System.

Our primary source of liquidity is the issuance of consolidated obligations. Historically, the FHLBank System’s status as a GSE and its favorable credit ratings have provided us with excellent access to the capital markets. Any downgrades of the FHLBank System’s consolidated obligations by S&P and/or Moody’s, negative guidance from the rating agencies, or negative announcements by one or more of the FHLBanks could result in higher funding costs and/or disruptions in our access to the capital markets. To the extent that we cannot access funding when needed on acceptable terms, our financial condition and results of operations could be adversely impacted.

***Our joint and several liability for all consolidated obligations may adversely impact our earnings, our ability to pay dividends, and our ability to redeem or repurchase capital stock*.**

Under the FHLB Act and Finance Agency regulations, we are jointly and severally liable with the other FHLBanks for the consolidated obligations issued by the FHLBanks through the Office of Finance regardless of whether we receive all or any portion of the proceeds from any particular issuance of consolidated obligations.

If another FHLBank were to default on its obligation to pay principal of or interest on any consolidated obligations, the Finance Agency may allocate the outstanding liability among one or more of the remaining FHLBanks on a pro rata basis or on any other basis the Finance Agency may determine. In addition, the Finance Agency, in its discretion, may require any FHLBank to make principal or interest payments due on any consolidated obligations, whether or not the primary obligor FHLBank has defaulted on the payment of that obligation. Accordingly, we could incur significant liability beyond our primary obligation under consolidated obligations due to the failure of other FHLBanks to meet their payment obligations, which could negatively affect our financial condition and results of operations.

Further, the FHLBanks may not pay any dividends to members or redeem or repurchase any shares of stock unless the principal and interest due on all consolidated obligations has been paid in full. Accordingly, our ability to pay dividends or to redeem or repurchase stock could be affected not only by our own financial condition but also by the financial condition of one or more of the other FHLBanks.

Changes in our access to the interest rate derivatives market on acceptable terms may adversely affect our ability to maintain our current hedging strategies.

We actively use derivative instruments to manage interest rate risk. The effectiveness of our interest rate risk management strategy depends to a significant extent upon our ability to enter into these instruments with acceptable counterparties in the necessary quantities and under satisfactory terms to hedge our corresponding assets and liabilities. We currently enjoy ready access to the market for uncleared interest rate derivatives through a diverse group of investment grade rated counterparties. Several factors could have an adverse impact on our access to this market, including changes in our credit rating, changes in the current counterparties’ credit ratings, reductions in our counterparties’ allocation of resources to the interest rate derivatives business, and changes in the liquidity of that market created by a variety of regulatory or market factors. If mergers involving our financial institution counterparties were to occur, it could increase our concentration risk with respect to counterparties in the industry. Further, defaults by, or even negative rumors or questions about, one or more financial services institutions, or the financial services industry in general, could lead to market-wide disruptions in which it may be difficult for us to find acceptable counterparties for such transactions. If changes in our access to the derivatives market result in our inability to manage our hedging activities efficiently and economically, we may be unable to find economical alternative means to manage our interest rate risk effectively, which could adversely affect our financial condition and results of operations.

Prior to June 10, 2013, all of the derivatives we used to manage our interest rate risk were negotiated in the over-the-counter (“OTC”) derivatives market. Beginning on June 10, 2013, many of the derivative transactions that we enter into are required to be cleared through a third-party clearinghouse, which exposes us to credit risk to other parties that we do not have when transacting in the OTC market. In addition, many of the other derivatives that we continue to trade in the OTC market could eventually be subject to central clearing. For our derivative transactions that are not cleared, we will be subject to an initial margin requirement beginning in September 2021 if those transactions have an aggregate notional balance of $8 billion or more and, on a counterparty-by-counterparty basis, our unmargined exposure exceeds $50 million (for additional discussion, see the Legislative and Regulatory Developments section in Item 1. Business). If applicable, this requirement may increase our hedging costs, which would negatively impact our results of operations.

Defaults by or the insolvency of one or more of our derivative counterparties could adversely affect our profitability and financial condition.

We regularly enter into derivative transactions with major financial institutions and third-party clearinghouses. Our financial condition and results of operations could be adversely affected if derivative counterparties to whom we have exposure fail.

Cleared trades are subject to initial and variation margin requirements established by the clearinghouse and its clearing members. Currently, all of our cleared derivatives are settled daily and these daily settlements are not subject to any maximum unsecured credit exposure thresholds. With cleared transactions, we are exposed to credit risk in the event that the clearinghouse or the clearing member fails to meet its obligations to us.

We have entered into master agreements with all of our non-member bilateral derivative counterparties that require the delivery (or return) of collateral consisting of cash or very liquid, highly rated securities if credit risk exposures rise above certain minimum amounts (generally ranging from $50,000 to $500,000). Upon a request made by the unsecured counterparty, the party that has the unsecured obligation to the counterparty bearing the risk of the unsecured credit exposure must deliver sufficient collateral to reduce the unsecured credit exposure to zero. In addition, excess collateral must be returned by a party in an oversecured position. Delivery or return of the collateral generally occurs within one business day and, until such delivery or return, we may be in an undersecured position, which could result in a loss in the event of a default by the counterparty, or we may be due excess collateral, which could result in a loss in the event that the counterparty is unable or unwilling to return the collateral.

Because derivative valuations are determined based on market conditions at particular points in time, they can change quickly. Even after the settlement of a derivative or the delivery or return of collateral, as the case may be, we may be in an undersecured position (or be entitled to the return of excess collateral) as the values upon which the settlement, delivery or return was based may have changed since the valuation was performed. In addition, we may incur additional losses if any non-cash collateral held by us cannot be readily liquidated at prices that are sufficient to fully recover the value of the derivatives. Further, the initial margin and any excess variation margin that we post with third-party clearinghouses is over and above the amount that is needed to fully settle the value of our derivative positions and therefore exposes us to additional credit risk in the event that the clearinghouse or clearing member fails.

Our business operations, financial condition and profitability could be adversely affected if LIBOR is discontinued.

In July 2017, the United Kingdom’s Financial Conduct Authority ("FCA") announced that it intends to stop persuading or compelling banks to voluntarily submit LIBOR rates after 2021, and that the FCA will support the LIBOR indices through 2021 to allow for an orderly transition to an alternative reference rate (or rates). Other financial services regulators and industry groups, including the International Swaps and Derivatives Association, have been evaluating and are continuing to evaluate the possible phase-out of LIBOR and the development of alternative interest rate indices or reference rates. As noted throughout this report, many of our assets and liabilities are indexed to LIBOR. As of December 31, 2019, we had $35.3 billion (par/notional value) of financial instruments that are indexed to LIBOR and which mature after December 31, 2021. The vast majority of these instruments were derivatives. In 2014, the Federal Reserve Board convened the Alternative Reference Rates Committee (“ARRC”) to identify alternative reference rates for possible use as market benchmarks. In June 2017, the ARRC selected the Secured Overnight Financing Rate ("SOFR"), a broad measure of overnight Treasury financing transactions, as a replacement for U.S. dollar LIBOR.

The Federal Reserve Bank of New York began publishing SOFR rates in April 2018. During the third quarter of 2018, several market participants began issuing variable-rate debt securities indexed to SOFR. In November 2018, the FHLBank System issued its first SOFR-linked consolidated obligation bonds. Since that time, market activity in SOFR-linked financial instruments has continued to increase.

However, the market transition from LIBOR to SOFR is expected to be complicated, including the development of term SOFR rates and credit adjustments to accommodate differences between LIBOR and SOFR. During the transition period, LIBOR may exhibit increased volatility or become less representative, and the overnight Treasury repurchase market underlying SOFR may also experience disruptions from time to time, which may result in unexpected fluctuations in SOFR. The use of an alternative reference rate such as SOFR (and the transition to that rate) will likely create challenges for us with respect to our asset liability management activities including, but not limited to, managing the transition-related basis risk. While market activity in SOFR-linked financial instruments has continued to increase, there can be no assurance that SOFR will become widely accepted and/or used across market segments and various financial products in a timely manner.

We are unable to predict at this time whether LIBOR will cease to be available after 2021, whether the alternative rates that the Federal Reserve Board is publishing will become market benchmarks in place of LIBOR, or what impact a transition from LIBOR to an alternative reference rate (or rates) could have on our business, risk management practices (including, but not limited to, our hedging activities), financial condition and results of operations.

Loss of members or borrowers could adversely affect our earnings, which could result in lower investment returns and/or higher borrowing rates for remaining members.

One or more members or borrowers could withdraw their membership or decrease their business levels as a result of a merger with an institution that is not one of our members, or for other reasons, which could lead to a decrease in our total assets and capital.

As the financial services industry has consolidated, acquisitions involving some of our members have resulted in membership withdrawals or business level decreases. Additional acquisitions that lead to similar results are possible, including acquisitions in which the acquired institutions are merged into institutions located outside our district with which we cannot do business. We could also be adversely impacted by the reduction in business volume that would arise from the failure of one or more of our members.

The loss of one or more borrowers that represent a significant proportion of our business, or a significant reduction in the borrowing levels of one or more of these borrowers, could, depending on the magnitude of the impact, cause us to lower dividend rates, raise advances rates, attempt to reduce operating expenses (which could cause a reduction in service levels), or undertake some combination of these actions. The magnitude of the impact would depend, in part, on our size and profitability at the time such institution repays its advances to us.

Members' funding needs may decline, which could reduce loan demand and adversely affect our earnings.

Market factors or regulatory changes could reduce loan demand from our member institutions, which could adversely affect our earnings. Since 2005, our quarter-end advances balances (at par value) have ranged from a low of $15.2 billion at March 31, 2014 to a high of $67.9 billion at September 30, 2008. At December 31, 2019, our outstanding advances (at par value) were $36.9 billion. High deposit levels and/or low demand for loans at member institutions could limit members' needs for funding. A decline in the demand for advances, if significant, could negatively affect our results of operations.

We face competition for loan demand, which could adversely affect our earnings.

Our primary business is making advances to our members. We compete with other suppliers of wholesale funding, both secured and unsecured, including investment banks, commercial banks and, in certain circumstances, other FHLBanks. Our members have access to alternative funding sources, which may provide more favorable terms than we do on our advances, including more flexible credit or collateral standards.

The availability to our members of alternative funding sources that are more attractive than the funding products offered by us may significantly decrease the demand for our advances. Any change made by us in the pricing of our advances in an effort to compete more effectively with these competitive funding sources may reduce the profitability on advances. A decrease in the demand for advances or a decrease in our profitability on advances would negatively affect our financial condition and results of operations.

Alternatively, if we were to increase the pricing of our advances due to an increase in our debt costs or for any other reason, demand for our advances could decline, which would negatively affect our financial condition and results of operations.

A failure or interruption in our information systems or other technology may adversely affect our ability to conduct and manage our business effectively.

We rely heavily upon information systems and other technology to conduct and manage our business and deliver a very large portion of our services to members on an automated basis. Our operations rely on the secure processing, storage and transmission of confidential and other information in computer systems and networks. Computer systems, software and networks can be vulnerable to failures and interruptions, including "cyberattacks" (e.g., breaches, unauthorized access, misuse, computer viruses or other malicious code and other events) that could jeopardize the confidentiality or integrity of information, or otherwise cause interruptions or malfunctions in operations. To the extent that we experience a failure or interruption in any of these systems or other technology, we may be unable to conduct and manage our business effectively, including, without limitation, our hedging and advances activities. We can make no assurance that we will be able to prevent or timely and adequately address any such failure or interruption. Any failure or interruption could significantly harm our customer relations, reputation, risk management, and profitability, which could negatively affect our financial condition and results of operations.

Changes in the regulatory environment could negatively impact our operations and financial results and condition.

We could be materially adversely affected by the adoption of new laws, policies, regulations or directives or changes in existing laws, policies, regulations or directives, including, but not limited to, changes in the interpretations or applications by the Finance Agency or as the result of judicial reviews that modify the present regulatory environment. For instance, since 2013, several housing reform proposals have been introduced by members of the U.S. Congress. It is not possible to determine if or when legislation regarding housing reform will be enacted, nor are the ultimate provisions of any such legislation determinable at this time. To the extent that legislation is enacted, it is possible that the FHLBanks could be impacted.

In addition, the regulatory environment affecting our members could change in a manner that could have a negative impact on their ability to own our stock or take advantage of our products and services.

For a discussion of recent legislative and regulatory developments, see Item 1. Business — Legislative and Regulatory Developments beginning on page 16 of this report.

Finance Agency authority to approve changes to our capital plan and to impose other restrictions and limitations on us and our capital management may adversely affect members.

Under Finance Agency regulations and our capital plan, amendments to the capital plan must be approved by the Finance Agency. However, amendments to our capital plan are not subject to member consent or approval. While amendments to our capital plan must be consistent with the FHLB Act and Finance Agency regulations, it is possible that they could result in changes to the capital plan that could adversely affect the rights and obligations of members.

Moreover, the Finance Agency has significant supervisory authority over us and may impose various limitations and restrictions on us, our operations, and our capital management as it deems appropriate to ensure our safety and soundness, and the safety and soundness of the FHLBank System. Among other things, the Finance Agency may impose higher capital requirements on us that might include, but not be limited to, the imposition of a minimum retained earnings requirement, and may suspend or otherwise limit stock repurchases, redemptions and/or dividends. Recently, the Finance Agency directed us (and other similarly situated FHLBanks) to amend our capital plan for the purpose of including an activity-based capital stock investment requirement for letters of credit (for additional discussion, see the Legislative and Regulatory Developments section in Item 1. Business).

Limitations on our ability to pay dividends could result in lower investment returns for members.

Under Finance Agency regulations and our capital plan, we may pay dividends on our stock only out of unrestricted retained earnings or a portion of our current net earnings. However, if we are not in compliance with our minimum capital requirements or if the payment of dividends would make us noncompliant, we are precluded from paying dividends. In addition, we may not declare or pay a dividend if the par value of our stock is impaired or is projected to become impaired after paying such dividend. Further, we may not declare or pay any dividends in the form of capital stock if our excess stock is greater than one percent of our total assets or if, after the issuance of such shares, our outstanding excess stock would be greater than one percent of our total assets. Payment of dividends would also be suspended if the principal and interest due on any consolidated obligations issued on behalf of any FHLBank through the Office of Finance have not been paid in full or if we become unable to comply with regulatory liquidity requirements or satisfy our current obligations. In addition to these explicit limitations, it is also possible that the Finance Agency could restrict our ability to pay a dividend even if we have sufficient retained earnings to make the payment and are otherwise in compliance with the requirements for the payment of dividends.

Lack of a public market and restrictions on transferring our stock could result in an illiquid investment for the holder.

Under the Gramm-Leach-Bliley Act of 1999 (the "GLB Act"), Finance Agency regulations, and our capital plan, our stock may be redeemed upon the expiration of a five-year redemption period following a redemption request. Only stock in excess of a member’s minimum investment requirement, stock held by a member that has submitted a notice to withdraw from membership, or stock held by a member whose membership has been terminated may be redeemed at the end of the redemption period. Further, we may elect to repurchase excess stock of a member at any time at our sole discretion.

There is no guarantee, however, that we will be able to redeem stock held by an investor even at the end of the redemption period. If the redemption or repurchase of the stock would cause us to fail to meet our minimum capital requirements, then the redemption or repurchase is prohibited by Finance Agency regulations and our capital plan. Likewise, under such regulations and the terms of our capital plan, we could not honor a member’s capital stock redemption notice if the redemption would cause the member to fail to maintain its minimum investment requirement. Moreover, because our stock may only be owned by our members (or, under certain circumstances, former members and certain successor institutions), and our capital plan requires our approval before a member may transfer any of its stock to another member, there can be no assurance that a member would be allowed to sell or transfer any excess stock to another member at any point in time.

We may also suspend the redemption of stock if we reasonably believe that the redemption would prevent us from maintaining adequate capital against a potential risk, or would otherwise prevent us from operating in a safe and sound manner. In addition, approval from the Finance Agency for redemptions or repurchases would be required if the Finance Agency or our Board of Directors were to determine that we have incurred, or are likely to incur, losses that result in, or are likely to result in, charges against our capital. Under such circumstances, there can be no assurance that the Finance Agency would grant such approval or, if it did, upon what terms it might do so. Redemption and repurchase of our stock would also be prohibited if the principal and interest due on any consolidated obligations issued on behalf of any FHLBank through the Office of Finance have not been paid in full or if we become unable to comply with regulatory liquidity requirements or satisfy our current obligations.

Accordingly, there are a variety of circumstances that would preclude us from redeeming or repurchasing our stock that is held by a member. Because there is no public market for our stock and transfers require our approval, there can be no assurance that a member’s purchase of our stock would not effectively become an illiquid investment.

Failure by a member to comply with our minimum investment requirement could result in substantial penalties to that member and could cause us to fail to meet our capital requirements.

Members must comply with our minimum investment requirement at all times. Our Board of Directors may increase the members' minimum investment requirement within certain ranges specified in our capital plan. The minimum investment requirement may also be increased beyond such ranges pursuant to an amendment to the capital plan, which would have to be adopted by our Board of Directors and approved by the Finance Agency. We would provide members with 30 days' notice prior to the effective date of any increase in their minimum investment requirement. Under the capital plan, members are required to purchase an additional amount of our stock as necessary to comply with any new requirements or, alternatively, they may reduce their outstanding advances activity (subject to any prepayment fees applicable to the reduction in activity) on or prior to the effective date of the increase. To facilitate the purchase of additional stock to satisfy an increase in the minimum investment requirement, the capital plan authorizes us to issue stock in the name of the member and to correspondingly debit the member's demand deposit account maintained with us.

The GLB Act requires members to "comply promptly" with any increase in the minimum investment requirement to ensure that we continue to satisfy our minimum capital requirements. However, the Finance Agency's predecessor stated, when it published the final regulation implementing this provision of the GLB Act, that it did not believe this provision provides the FHLBanks with an unlimited call on the assets of their members. As a result, it is not clear whether we or our regulator would have the legal authority to compel a member to invest additional amounts in our capital stock.

Thus, while the GLB Act and our capital plan contemplate that members would be required to purchase whatever amounts of stock are necessary to ensure that we continue to satisfy our capital requirements, and while we may seek to enforce this aspect of the capital plan, our ability ultimately to compel a member, either through automatic deductions from a member's demand deposit account or otherwise, to purchase an additional amount of our stock is not free from doubt.

Nevertheless, even if a member could not be compelled to make additional stock purchases, the failure by a member to comply with the stock purchase requirements of our capital plan could subject it to substantial penalties, including the possible termination of its membership. In the event of termination for this reason, we may call any outstanding advances to the member prior to their maturity and the member would be subject to any fees applicable to the prepayment.

Furthermore, if our members fail to comply with the minimum investment requirement, we may not be able to satisfy our capital requirements, which could adversely affect our operations and financial condition.

The terms of any liquidation, merger or consolidation involving us may have an adverse impact on members' investments in us.

Under the GLB Act, holders of Class B Stock own our retained earnings, if any. With respect to liquidation, our capital plan provides that, after payment of creditors, all Class B Stock will be redeemed at par, or pro rata if liquidation proceeds are insufficient to redeem all of the stock in full. Any remaining assets will be distributed to the shareholders in proportion to their stock holdings relative to the total outstanding Class B Stock.

Our capital plan also stipulates that its provisions governing liquidation are subject to the Finance Agency's statutory authority to prescribe regulations or orders governing liquidations of a FHLBank, and that consolidations and mergers may be subject to any lawful order of the Finance Agency. We cannot predict how the Finance Agency might exercise its authority with respect to liquidations or reorganizations or whether any actions taken by the Finance Agency in this regard would be inconsistent with the provisions of our capital plan or the rights of holders of our Class B Stock. Consequently, there can be no assurance that any liquidation, merger or consolidation involving us will be consummated on terms that do not adversely affect our members' investment in us.

An increase in our AHP contribution rate could adversely affect our ability to pay dividends to our shareholders.

The FHLB Act requires each FHLBank to establish and fund an AHP. Annually, the FHLBanks are required to set aside, in the aggregate, the greater of $100 million or 10 percent of their current year's income (before charges for AHP, as adjusted for interest expense on mandatorily redeemable capital stock) for their AHPs. If the FHLBanks' combined income does not result in an aggregate AHP contribution of at least $100 million in a given year, we could be required to contribute more than 10 percent of our income to the AHP. An increase in our AHP contribution would reduce our net income and could adversely affect our ability to pay dividends to our shareholders.

ITEM 1B. UNRESOLVED STAFF COMMENTS

Not applicable.

ITEM 2. PROPERTIES

The Bank owns a 157,000 square foot office building located at 8500 Freeport Parkway South, Irving, Texas. The Bank occupies approximately 92,000 square feet of space in this building.

The Bank also maintains leased off-site business resumption, storage and co-location facilities comprising approximately 12,000, 5,000 and 500 square feet of space, respectively.

ITEM 3. LEGAL PROCEEDINGS

The Bank is not a party to any material pending legal proceedings.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

The Bank is a cooperative and all of its outstanding capital stock, which is known as Class B Stock, is owned by its members or, in some cases, by non-member institutions that acquire stock by virtue of acquiring member institutions, by a federal or state agency or insurer acting as a receiver of a closed institution, or by former members of the Bank that retain capital stock to support advances or other extensions of credit that remain outstanding or until any applicable stock redemption or withdrawal notice period expires. All members must hold stock in the Bank. All of the Bank's shareholders are financial institutions; no individual may own any of the Bank's capital stock. The Bank's capital stock is not publicly traded, nor is there an established market for the stock. The Bank's capital stock has a par value of $100 per share and it may be purchased, redeemed, repurchased and transferred only at its par value. By regulation, the parties to a transaction involving the Bank's stock can include only the Bank and its member institutions (or non-member institutions or former members, as described above). While a member could transfer stock to another member of the Bank, such transfer could occur only upon approval of the Bank and then only at par value. Members may redeem excess stock, or withdraw from membership and redeem all outstanding capital stock, with five years' written notice to the Bank. The Bank does not issue options, warrants or rights relating to its capital stock, nor does it provide any type of equity compensation plan. As of March 6, 2020, the Bank had 798 shareholders and 25,242,531 shares of capital stock outstanding.

The Bank has two sub-classes of Class B stock. Class B-1 Stock is used to meet the membership investment requirement and Class B-2 Stock is used to meet the activity-based investment requirement. Daily, subject to the limitations in the Bank's Capital Plan, the Bank converts shares of one sub-class of Class B Stock to the other sub-class of Class B Stock under the following circumstances: (i) shares of Class B-2 Stock held by a shareholder in excess of its activity-based investment requirement are converted into Class B-1 Stock, if necessary, to meet that shareholder's membership investment requirement and (ii) shares of Class B-1 Stock held by a shareholder in excess of the amount required to meet its membership investment requirement are converted into Class B-2 Stock as needed in order to satisfy that shareholder's activity-based investment requirement. All excess stock is held as Class B-1 Stock at all times.

Subject to Finance Agency directives and the terms of the Amended JCE Agreement described below, the Bank is permitted by statute and regulation to pay dividends on members' capital stock in either cash or capital stock only from previously retained earnings or a portion of current net earnings. The Bank's Board of Directors may not declare or pay a dividend based on projected or anticipated earnings, nor may it declare or pay a dividend if the Bank is not in compliance with its minimum capital requirements or if the Bank would fail to meet its minimum capital requirements after paying such dividend (for a discussion of the Bank's minimum capital requirements, see Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations — Risk-Based Capital Rules and Other Capital Requirements). Further, the Bank may not declare or pay any dividends in the form of capital stock if excess stock held by its shareholders is greater than one percent of the Bank's total assets or if, after the issuance of such shares, excess stock held by its shareholders would be greater than one percent of the Bank's total assets. Shares of capital stock issued as dividend payments have the same rights, obligations, and restrictions as all other shares of capital stock, including rights, privileges, and restrictions related to the repurchase and redemption of capital stock. To the extent such shares represent excess stock, they may be repurchased or redeemed by the Bank in accordance with the provisions of the Bank's Capital Plan.

The Bank, and the other FHLBanks, are parties to the Amended JCE Agreement, which provides that the Bank (and each of the other FHLBanks) will, on a quarterly basis, allocate at least 20 percent of its net income to an RRE Account. Pursuant to the provisions of the Amended JCE Agreement, the Bank is required to build its RRE Account to an amount equal to one percent of its total outstanding consolidated obligations, which for this purpose is based on the most recent quarter's average carrying value of all outstanding consolidated obligations, excluding hedging adjustments. The Amended JCE Agreement provides that during periods in which the Bank's RRE Account is less than the amount prescribed in the preceding sentence, it may pay dividends only from unrestricted retained earnings or from the portion of its quarterly net income that exceeds the amount required to be allocated to its RRE Account. The allocations to, and restrictions associated with, its RRE Account have not had, nor are they currently expected to have, an effect on the Bank's dividend payment practices. For additional information regarding the Amended JCE Agreement, see Item 1. Business — Capital — Retained Earnings.

The Bank has had a long-standing practice of paying quarterly dividends in the form of capital stock. While there can be no assurances about future dividends or future dividend rates, the target for quarterly dividends on Class B-1 Stock is currently an annualized rate that approximates average one-month LIBOR for the preceding quarter. The target range for quarterly dividends on Class B-2 Stock is currently an annualized rate that approximates average one-month LIBOR for the preceding quarter plus 0.5 – 1.0 percent. When stock dividends are paid, capital stock is issued in full shares and any fractional shares are paid in cash. Dividends are typically paid during the last week of each calendar quarter and are based upon the Bank's operating results, shareholders' average capital stock holdings and the applicable rate for the preceding quarter. All capital stock dividends are paid in the form of Class B-1 shares.

By way of example, the Bank's fourth quarter 2019 dividends on Class B-1 Stock and Class B-2 Stock were paid at annualized rates of 2.18 percent (a rate equal to average one-month LIBOR for the third quarter of 2019) and 3.18 percent (a rate equal to average one-month LIBOR for the third quarter of 2019 plus 1.0 percent), respectively. The annualized dividend rates of 2.18 percent and 3.18 percent were applied to shareholders' average balances of Class B-1 Stock and Class B-2 Stock, respectively, which were held during the period from July 1, 2019 through September 30, 2019.

The following table sets forth certain information regarding the quarterly dividends that were declared and paid by the Bank during the years ended December 31, 2019 and 2018.

DIVIDENDS PAID

(dollars in thousands)

	2019		2018	
	Amount[(1)]	Annualized Rate[(3)]	Amount[(2)]	Annualized Rate[(3)]
First Quarter	$ 19,123	2.955%	$ 11,064	1.963%
Second Quarter	19,326	3.069%	13,581	2.273%
Third Quarter	19,210	3.030%	16,168	2.609%
Fourth Quarter	18,264	2.768%	18,358	2.760%
Total Dividends Paid During the Year	$ 75,923		$ 59,171	

(1) Amounts exclude (in thousands) $50, $51, $54 and $46 of dividends paid on mandatorily redeemable capital stock for the first, second, third and fourth quarters of 2019, respectively. For financial reporting purposes, these dividends were classified as interest expense.

(2) Amounts exclude (in thousands) $22, $24, $6 and $21 of dividends paid on mandatorily redeemable capital stock for the first, second, third and fourth quarters of 2018, respectively. For financial reporting purposes, these dividends were classified as interest expense.

(3) Reflects the annualized rate paid on all of the Bank's average capital stock outstanding regardless of its classification for financial reporting purposes as either capital stock or mandatorily redeemable capital stock. Rates represent the blended rates paid on Class B-1 and Class B-2 stock (computed as the total dividend paid divided by the aggregate average balance of both classes of stock).

The following table sets forth the annualized dividend rates that were paid on Class B-1 and Class B-2 Stock during the years ended December 31, 2019 and 2018.

	2019		2018	
	Class B-1	Class B-2	Class B-1	Class B-2
First Quarter	2.35%	3.35%	1.33%	2.33%
Second Quarter	2.50%	3.50%	1.65%	2.65%
Third Quarter	2.44%	3.44%	1.97%	2.97%
Fourth Quarter	2.18%	3.18%	2.11%	3.11%

The Bank has a retained earnings policy that calls for the Bank to maintain retained earnings in an amount at least sufficient to protect the par value of the Bank's capital stock against potential economic losses that could arise from a variety of designated risk factors, including those related to potential permanent losses, potential earnings shortfalls or losses in periodic earnings, and potential reductions in the Bank's estimated market value of equity. Through 2019, the results of the Bank's annual stress test mandated by the Dodd-Frank Act were also considered when establishing the Bank's retained earnings targets. With certain exceptions, the Bank's policy calls for the Bank to maintain its total retained earnings balance at or above its policy target when determining the amount of funds available to pay dividends. The Bank's current retained earnings policy target, which was last updated as of December 31, 2019, calls for the Bank to maintain a total retained earnings balance of at least $524 million to protect against the risks identified in the policy. Notwithstanding the fact that the Bank's December 31, 2019 retained earnings balance of $1.233 billion exceeds the policy target balance, the Bank currently expects to continue to build its retained earnings in keeping with its long-term strategic objectives and the provisions of the Amended JCE Agreement.

While there can be no assurances, taking into consideration its current earnings expectations, the Bank currently expects to pay dividends on Class B-1 Stock in 2020 at a rate at least equal to average one-month LIBOR for the applicable dividend period. The Bank expects to pay dividends on Class B-2 Stock at an annualized rate that approximates average one-month LIBOR for the applicable dividend period plus 0.5 - 1.0 percent.

On March 19, 2020, the Bank's Board of Directors approved dividends on Class B-1 and Class B-2 Stock in the form of additional shares of Class B-1 Stock for the first quarter of 2020 at annualized rates of 1.79 percent (a rate equal to average one-month LIBOR for the fourth quarter of 2019) and 2.79 percent (a rate equal to average one-month LIBOR for the fourth quarter of 2019 plus 1.0 percent), respectively. The first quarter 2020 dividends, to be applied to average Class B-1 Stock and Class B-2 Stock held during the period from October 1, 2019 through December 31, 2019, will be paid on March 30, 2020.

Pursuant to the terms of an SEC no-action letter dated September 13, 2005, the Bank is exempt from the requirements to report: (1) sales of its equity securities under Item 701 of Regulation S-K and (2) repurchases of its equity securities under Item 703 of Regulation S-K. In addition, the HER Act specifically exempts the Bank from periodic reporting requirements under the securities laws pertaining to the disclosure of unregistered sales of equity securities.

ITEM 6. SELECTED FINANCIAL DATA

SELECTED FINANCIAL DATA
(dollars in thousands)

	Year Ended December 31,				
	2019	2018	2017	2016	2015
Balance sheet (at year end)					
Advances	$ 37,117,455	$ 40,793,813	$ 36,460,524	$ 32,506,175	$ 24,746,802
Investments [1]	33,918,055	29,551,929	30,941,464	25,419,421	16,323,518
Mortgage loans	4,076,613	2,185,996	878,123	124,102	55,258
Allowance for credit losses on mortgage loans	1,149	493	271	141	141
Total assets	75,381,605	72,773,290	68,524,301	58,212,077	42,082,027
Consolidated obligations — discount notes	34,327,886	35,731,713	32,510,758	26,941,782	20,541,329
Consolidated obligations — bonds	35,745,827	31,931,929	31,376,858	26,997,487	18,024,692
Total consolidated obligations[2]	70,073,713	67,663,642	63,887,616	53,939,269	38,566,021
Mandatorily redeemable capital stock[3]	7,140	6,979	5,941	3,417	8,929
Capital stock — putable	2,466,242	2,554,888	2,317,937	1,930,148	1,540,132
Unrestricted retained earnings	1,038,533	932,675	832,826	745,104	699,213
Restricted retained earnings	194,144	148,692	108,937	78,880	62,990
Total retained earnings	1,232,677	1,081,367	941,763	823,984	762,203
Accumulated other comprehensive income (loss)	99,049	128,001	220,326	63,210	(103,023)
Total capital	3,797,968	3,764,256	3,480,026	2,817,342	2,199,312
Dividends paid[3]	75,923	59,171	32,508	17,668	4,766
Income statement					
Net interest income after provision for mortgage loan losses[4]	$ 293,175	$ 310,466	$ 237,438	$ 165,030	$ 121,589
Other income[4]	56,320	1,961	22,483	7,824	29,774
Other expense	96,965	91,555	92,924	84,574	76,702
Assessments	25,272	22,097	16,710	8,831	7,468
Net income	227,258	198,775	150,287	79,449	67,193
Performance ratios					
Net interest margin[4][5]	0.41%	0.45%	0.39%	0.31%	0.29%
Net interest spread [4][6]	0.28%	0.34%	0.33%	0.28%	0.27%
Return on average assets	0.32%	0.29%	0.25%	0.15%	0.16%
Return on average equity	5.96%	5.22%	4.75%	3.16%	3.26%
Return on average capital stock [7]	8.90%	7.86%	7.04%	4.44%	4.98%
Total average equity to average assets	5.35%	5.60%	5.20%	4.75%	4.88%
Regulatory capital ratio[8]	4.92%	5.01%	4.77%	4.74%	5.49%
Dividend payout ratio [3][9]	33.41%	29.77%	21.63%	22.24%	7.09%
Interest rates					
Average effective federal funds rate [10]	2.16%	1.83%	1.00%	0.39%	0.13%
Average one-month LIBOR [11]	2.22%	2.02%	1.11%	0.50%	0.20%
Average three-month LIBOR [11]	2.33%	2.31%	1.26%	0.74%	0.32%

(1) Investments consist of interest-bearing deposits, federal funds sold, securities purchased under agreements to resell, loans to other FHLBanks and securities classified as held-to-maturity, available-for-sale and trading.

(2) The Bank is jointly and severally liable with the other FHLBanks for the payment of principal and interest on the consolidated obligations of all of the FHLBanks. At December 31, 2019, 2018, 2017, 2016 and 2015, the outstanding consolidated obligations (at par value) of all of the FHLBanks totaled approximately $1.026 trillion, $1.032 trillion, $1.034 trillion, $989 billion and $905 billion, respectively. As of those dates, the Bank's outstanding consolidated obligations (at par value) were $70.1 billion, $68.0 billion, $64.1 billion, $54.1 billion and $38.6 billion, respectively. The Bank records on its statement of condition only that portion of the consolidated obligations for which it has received the proceeds.

(3) Mandatorily redeemable capital stock represents capital stock that is classified as a liability under accounting principles generally accepted in the United States of America. Dividends on mandatorily redeemable capital stock are recorded as interest expense and excluded from dividends paid. Dividends paid on mandatorily redeemable capital stock totaled $201 thousand, $73 thousand, $91 thousand, $28 thousand and $17 thousand for the years ended December 31, 2019, 2018, 2017, 2016 and 2015, respectively.

(4) The Bank adopted ASU 2017-12, *"Targeted Improvements to Accounting for Hedging Activities"* ("ASU 2017-12") on January 1, 2019. In accordance with ASU 2017-12, changes in the fair value of a derivative in a qualifying fair value hedge along with changes in the fair value of the hedged asset or liability attributable to the hedged risk (the net amount of which is referred to as fair value hedge ineffectiveness) are recorded in net interest income. Prior to the adoption of ASU 2017-12, the Bank recorded fair value hedge ineffectiveness in other income (loss). Because prior period amounts have not been reclassified to conform to the new presentation requirements, net interest income after provision for mortgage loan losses, other income (loss), net interest margin and net interest spread for the year ended December 31, 2019 are not comparable to prior periods. For additional discussion, see the section entitled "Results of Operations" beginning on page 60 of this report.

(5) Net interest margin is net interest income as a percentage of average earning assets.

(6) Net interest spread is the difference between the yield on interest-earning assets and the cost of interest-bearing liabilities.

(7) Return on average capital stock is derived by dividing net income by average capital stock balances excluding mandatorily redeemable capital stock.

(8) The regulatory capital ratio is computed by dividing regulatory capital (the sum of capital stock — putable, mandatorily redeemable capital stock and retained earnings) by total assets at each year-end.

(9) Dividend payout ratio is computed by dividing dividends paid by net income for the year.

(10) Rates obtained from the Federal Reserve Statistical Release.

(11) Rates obtained from Bloomberg.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion and analysis of financial condition and results of operations should be read in conjunction with the annual audited financial statements and notes thereto for the years ended December 31, 2019, 2018 and 2017 beginning on page F-1 of this Annual Report on Form 10-K.

Forward-Looking Information

This annual report contains forward-looking statements that reflect current beliefs and expectations of the Bank about its future results, performance, liquidity, financial condition, prospects and opportunities. These statements are identified by the use of forward-looking terminology, such as "anticipates," "plans," "believes," "could," "estimates," "may," "should," "would," "will," "might," "expects," "intends" or their negatives or other similar terms. The Bank cautions that forward-looking statements involve risks or uncertainties that could cause the Bank's actual future results to differ materially from those expressed or implied in these forward-looking statements, or could affect the extent to which a particular objective, projection, estimate, or prediction is realized. As a result, undue reliance should not be placed on such statements.

These risks and uncertainties include, without limitation, evolving economic and market conditions, political events, and the impact of competitive business forces. The risks and uncertainties related to evolving economic and market conditions include, but are not limited to, changes in interest rates, changes in the Bank's access to the capital markets, changes in the cost of the Bank's debt, changes in the ratings on the Bank's debt, adverse consequences resulting from a significant regional, national or global economic downturn (including, but not limited to, reduced demand for the Bank's products and services), credit and prepayment risks, changes in the financial health of the Bank's members or non-member borrowers, the ongoing effects from the recent COVID-19 outbreak, and the recent significant drop in oil prices. Among other things, political events could possibly lead to changes in the Bank's regulatory environment or its status as a GSE, or to changes in the regulatory environment for the Bank's members or non-member borrowers. Risks and uncertainties related to competitive business forces include, but are not limited to, the potential loss of a significant amount of member borrowings through acquisitions or other means or changes in the relative competitiveness of the Bank's products and services for member institutions. For a more detailed discussion of the risk factors applicable to the Bank, see Item 1A. Risk Factors. The Bank undertakes no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events, changed circumstances, or any other reason.

Overview

The Bank serves eligible financial institutions in Arkansas, Louisiana, Mississippi, New Mexico and Texas (collectively, the Ninth District of the FHLBank System). The Bank's primary business is lending relatively low cost funds (known as advances) to its member institutions, which include commercial banks, savings institutions, insurance companies and credit unions. Community Development Financial Institutions that are certified under the Community Development Banking and Financial Institutions Act of 1994 are also eligible for membership in the Bank. While not members of the Bank, housing associates, including state and local housing authorities, that meet certain statutory criteria may also borrow from the Bank. The Bank also maintains a portfolio of investments, the vast majority of which are highly rated, for liquidity purposes and to provide additional earnings. Additionally, the Bank holds interests in a portfolio of predominately conventional mortgage loans that have been acquired through the MPF Program administered by the FHLBank of Chicago. Substantially all of the loans were acquired during the period from 2016 to 2019 and all of those loans are conventional loans. The remainder of the portfolio (less than one percent of the unpaid principal balance) is comprised of government-guaranteed/insured and conventional mortgage loans that were acquired during the period from 1998 to mid-2003. Shareholders' return on their investment includes dividends (which are typically paid quarterly in the form of capital stock) and the value derived from access to the Bank's products and services. Historically, the Bank has balanced the financial rewards to shareholders by seeking to pay a dividend that meets or exceeds the return on alternative short-term money market investments available to shareholders, while lending funds at the lowest rates expected to be compatible with that objective and its objective to build retained earnings over time.

The Bank's principal source of funds is debt issued in the capital markets. All 11 FHLBanks issue debt in the form of consolidated obligations through the Office of Finance as their agent and all 11 FHLBanks are jointly and severally liable for the repayment of all consolidated obligations.

The Bank conducts its business and fulfills its public purpose primarily by acting as a financial intermediary between its members and the capital markets. The intermediation of the timing, structure, and amount of its members' credit needs with the investment requirements of the Bank's creditors is made possible by the extensive use of interest rate exchange agreements, including interest rate swaps, swaptions and caps. The Bank's interest rate exchange agreements are accounted for in accordance with the provisions of Topic 815 of the Financial Accounting Standards Board Accounting Standards Codification entitled "*Derivatives and Hedging*" ("ASC 815"). For a discussion of ASC 815, see the sections below entitled "Financial Condition — Derivatives and Hedging Activities" and "Critical Accounting Policies and Estimates."

Financial Market Conditions

Economic growth in the United States expanded moderately during 2019, 2018 and 2017. The gross domestic product increased 2.4 percent, 2.9 percent and 2.3 percent in 2017, 2018 and 2019, respectively. The nationwide unemployment rate fell from 4.7 percent at the end of 2016 to 4.1 percent at the end of 2017, 3.9 percent at the end of 2018 and 3.5 percent at the end of 2019. Housing prices increased in most major metropolitan areas during 2017. In 2018 and 2019, housing prices continued to increase in most major metropolitan areas, albeit at a slower pace, and home sales slowed in many markets.

Throughout 2017 and 2018, the Federal Open Market Committee ("FOMC") raised its target for the federal funds rate in 0.25 percent increments from a range between 0.50 percent and 0.75 percent at the beginning of 2017 to a range of 2.25 percent to 2.50 percent at the end of 2018. In light of the implications of global developments for the economic outlook, as well as muted inflation pressures, the FOMC lowered its target for the federal funds rate to a range between 2.00 percent and 2.25 percent at its meeting held on July 30/31, 2019. For similar reasons, the FOMC lowered its target for the federal funds rate to a range between 1.75 percent and 2.00 percent at its meeting held on September 17/18, 2019 and to a range between 1.50 percent and 1.75 percent at its meeting held on October 29/30, 2019. This target was maintained throughout the remainder of 2019. At its most recent scheduled meeting held on January 28/29, 2020, the FOMC maintained its target for the federal funds rate at a range between 1.50 percent and 1.75 percent and stated that, in determining the timing and size of future adjustments to the target range for the federal funds rate, the FOMC would assess realized and expected economic conditions relative to its maximum employment objective and its inflation objective.

In addition, through September 2017, the FOMC maintained a policy of reinvesting principal payments from its holdings of agency debt and agency MBS in agency MBS and of rolling over maturing Treasury securities at auction. In October 2017, the FOMC began implementing a balance sheet normalization program, which was designed to gradually reduce the Federal Reserve's securities holdings by decreasing reinvestment of principal payments from those securities. At its March 2019 meeting, the FOMC announced that it would slow the pace of this program beginning in May 2019, and would end the runoff of its Treasury holdings at the end of September 2019. At its meeting held on July 30/31, 2019, the FOMC announced that it would conclude the reduction of its aggregate securities holdings in August 2019, earlier than previously announced.

During 2017, 2018 and 2019, the Federal Reserve paid interest on required and excess reserves held by depository institutions at a rate equivalent to or slightly below the upper boundary of the target range for federal funds. A sustained high level in bank reserves during those years combined with the rate of interest being paid on those reserves contributed to an effective federal funds rate that was generally below the upper end of the targeted range for all of 2017, 2018 and 2019.

One-month and three-month LIBOR rates were 0.77 percent and 1.0 percent, respectively, at the end of 2016. One-month and three-month LIBOR increased to 1.56 percent and 1.69 percent, respectively, at the end of 2017, to 2.50 percent and 2.81 percent, respectively, at the end of 2018 and then declined to 1.76 percent and 1.91 percent, respectively, at the end of 2019. Relatively stable one-month and three-month LIBOR rates, combined with relatively small spreads between those two indices and between those indices and overnight lending rates, suggest that inter-bank lending markets were reasonably stable during 2017, 2018 and 2019.

The following table presents information on various market interest rates at December 31, 2019 and 2018 and various average market interest rates for the years ended December 31, 2019, 2018 and 2017.

	Ending Rate		Average Rate		
	December 31, 2019	December 31, 2018	For the Year Ended December 31, 2019	2018	2017
Federal Funds Target [(1)]	1.75%	2.50%	2.28%	1.91%	1.10%
Average Effective Federal Funds Rate [(2)]	1.55%	2.40%	2.16%	1.83%	1.00%
1-month LIBOR [(1)]	1.76%	2.50%	2.22%	2.02%	1.11%
3-month LIBOR [(1)]	1.91%	2.81%	2.33%	2.31%	1.26%
2-year LIBOR [(1)]	1.70%	2.66%	2.03%	2.75%	1.65%
5-year LIBOR [(1)]	1.73%	2.57%	1.96%	2.87%	1.98%
10-year LIBOR [(1)]	1.90%	2.71%	2.09%	2.96%	2.29%
3-month U.S. Treasury [(1)]	1.55%	2.45%	2.11%	1.97%	0.95%
2-year U.S. Treasury [(1)]	1.58%	2.48%	1.97%	2.53%	1.40%
5-year U.S. Treasury [(1)]	1.69%	2.51%	1.95%	2.75%	1.91%
10-year U.S. Treasury [(1)]	1.92%	2.69%	2.14%	2.91%	2.33%

(1) Source: Bloomberg
(2) Source: Federal Reserve Statistical Release

In an unscheduled meeting held on March 3, 2020, the FOMC stated that the COVID-19 outbreak poses evolving risks to economic activity and, in support of achieving its maximum employment and price stability goals, it decided to lower the target range for the federal funds rate by 50 basis points, to a range between 1.00 percent and 1.25 percent, noting that it would closely monitor developments and their implications for the economic outlook and would act as appropriate to support the economy. On March 15, 2020, the FOMC again lowered the federal funds rate in another unscheduled meeting, this time to a target range between 0 percent and 0.25 percent, noting that the COVID-19 outbreak has harmed communities and disrupted economic activity in many countries, including the United States, and has significantly affected global financial conditions. To support the smooth functioning of markets for Treasury securities and agency MBS that are central to the flow of credit to households and businesses, the FOMC further stated that it will increase its holdings of Treasury securities by at least $500 billion and its holdings of agency MBS by at least $200 billion over the coming months. The FOMC will also reinvest all principal payments from the Federal Reserve's holdings of agency debt and agency MBS in agency MBS.

Due to the dramatic increase in volatility across the global capital markets, the Federal Reserve has also recently undertaken a number of other emergency actions. Notably, the Federal Reserve increased substantially its provision of liquidity to the repo and U.S. Treasury markets via open market operations while also providing liquidity to related markets, such as the commercial paper market, via an array of new programs.

In the weeks before and after the FOMC's early March reduction in the federal funds target rate, interest rates declined significantly. Generally, investor demand for high credit quality, fixed income investments, including the FHLBanks' consolidated obligations, increased relative to other investments. However, the spreads on FHLBank consolidated obligations relative to U.S. Treasury securities widened and fixed income market conditions became more challenging, with market participants favoring shorter-term obligations (predominantly those with maturities of three months or less).

2019 In Summary

- The Bank ended 2019 with total assets of $75.4 billion compared with $72.8 billion at the end of 2018. The $2.6 billion increase in total assets was attributable primarily to increases in the Bank's short-term liquidity portfolio ($3.7 billion), mortgage loans held for portfolio ($1.9 billion) and long-term available-for-sale securities portfolio ($0.9 billion), partially offset by decreases in the Bank's advances ($3.7 billion) and its long-term held-to-maturity securities portfolio ($0.2 billion).
- Total advances at December 31, 2019 were $37.1 billion, compared to $40.8 billion at the end of 2018.
- Mortgage loans held for portfolio increased from $2.2 billion at December 31, 2018 to $4.1 billion at December 31, 2019.

- The Bank’s net income for 2019 was $227.3 million, which represented a return on average capital stock of 8.90 percent. In comparison, the Bank's net income for 2018 was $198.8 million, which represented a return on average capital stock of 7.86 percent for that year. For discussion and analysis of the increase in net income, see the section entitled "Results of Operations" beginning on page 60 of this report.
- At all times during 2019, the Bank was in compliance with all of its regulatory capital requirements. In addition, the Bank’s total retained earnings increased to $1.233 billion at December 31, 2019 from $1.081 billion at December 31, 2018. Retained earnings represented 1.6 percent and 1.5 percent of total assets at December 31, 2019 and 2018, respectively. At December 31, 2019, the balance of the Bank's restricted retained earnings account was $194.1 million.
- In 2019, the Bank paid dividends totaling $75.9 million, which, based on the applicable average capital stock balances, equated to an overall blended rate of 2.954 percent for the year.

Financial Condition

The following table provides selected period-end balances as of December 31, 2019, 2018 and 2017, as well as selected average balances for the years ended December 31, 2019, 2018 and 2017. As shown in the table, the Bank’s total assets increased by 3.6 percent (or $2.6 billion) during the year ended December 31, 2019 after increasing by 6.2 percent (or $4.2 billion) during the year ended December 31, 2018. The increase in total assets during the year ended December 31, 2019 was attributable primarily to increases in the Bank's short-term liquidity portfolio ($3.7 billion), mortgage loans held for portfolio ($1.9 billion) and long-term available-for-sale securities portfolio ($0.9 billion), partially offset by decreases in the Bank's advances ($3.7 billion) and its long-term held-to-maturity securities portfolio ($0.2 billion). As the Bank’s assets increased, the funding for those assets also increased. During the year ended December 31, 2019, total consolidated obligations increased by $2.4 billion, as consolidated obligation bonds increased by $3.8 billion and consolidated obligation discount notes decreased by $1.4 billion.

The increase in total assets during the year ended December 31, 2018 was attributable primarily to increases in the Bank's advances ($4.3 billion), long-term available-for-sale securities portfolio ($1.4 billion) and mortgage loans held for portfolio ($1.3 billion), partially offset by decreases in the Bank's short-term liquidity portfolio ($2.3 billion) and its long-term held-to-maturity securities portfolio ($0.5 billion). As the Bank’s assets increased, the funding for those assets also increased. During the year ended December 31, 2018, total consolidated obligations increased by $3.8 billion, as consolidated obligation discount notes and consolidated obligation bonds increased by $3.2 billion and $0.6 billion, respectively.

The activity in each of the major balance sheet captions is discussed in the sections following the table. Activity for the year ended December 31, 2017 is discussed in the Bank's Annual Report on Form 10-K for the year ended December 31, 2018 which was filed with the SEC on March 25, 2019 (the "2018 10-K").

SUMMARY OF CHANGES IN FINANCIAL CONDITION
(dollars in millions)

	December 31, 2019			December 31, 2018			Balance at December 31, 2017
		Increase (Decrease)			Increase (Decrease)		
	Balance	Amount	Percentage	Balance	Amount	Percentage	
Advances	$ 37,117	$ (3,677)	(9.0)%	$ 40,794	$ 4,333	11.9%	$ 36,461
Short-term liquidity holdings							
Interest-bearing deposits	1,670	(830)	(33.2)	2,500	2,500	*	—
Securities purchased under agreements to resell	4,310	(1,905)	(30.7)	6,215	(485)	(7.2)	6,700
Federal funds sold	4,505	2,774	160.3	1,731	(6,049)	(77.8)	7,780
Trading securities							
U.S. Treasury Notes	4,426	2,709	157.8	1,717	1,717	*	—
U.S. Treasury Bills	928	928	*	—	—	—	—
Total short-term liquidity holdings	15,839	3,676	30.2	12,163	(2,317)	(16.0)	14,480
Long-term investments							
Trading securities (U.S. Treasury Note)	106	5	5.0	101	(1)	(1.0)	102
Available-for-sale securities	16,767	942	6.0	15,825	1,423	9.9	14,402
Held-to-maturity securities	1,206	(256)	(17.5)	1,462	(483)	(24.8)	1,945
Total long-term investments	18,079	691	4.0	17,388	939	5.7	16,449
Mortgage loans held for portfolio, net	4,075	1,889	86.4	2,186	1,308	149.0	878
Total assets	75,382	2,609	3.6	72,773	4,249	6.2	68,524
Consolidated obligations							
Consolidated obligations — bonds	35,746	3,814	11.9	31,932	555	1.8	31,377
Consolidated obligations — discount notes	34,328	(1,404)	(3.9)	35,732	3,221	9.9	32,511
Total consolidated obligations	70,074	2,410	3.6	67,664	3,776	5.9	63,888
Mandatorily redeemable capital stock	7	—	—	7	1	16.7	6
Capital stock	2,466	(89)	(3.5)	2,555	237	10.2	2,318
Retained earnings	1,233	152	14.1	1,081	139	14.8	942
Average total assets	71,323	3,248	4.8	68,075	7,267	12.0	60,808
Average capital stock	2,554	25	1.0	2,529	394	18.5	2,135
Average mandatorily redeemable capital stock	7	3	75.0	4	(5)	(55.6)	9

* The percentage increase is not meaningful.

Advances

The following table presents advances outstanding, by type of institution, as of December 31, 2019, 2018 and 2017.

ADVANCES OUTSTANDING BY BORROWER TYPE
(par value, dollars in millions)

	December 31,					
	2019		2018		2017	
	Amount	Percent	Amount	Percent	Amount	Percent
Commercial banks	$ 23,502	64%	$ 26,105	64%	$ 25,852	71%
Insurance companies	6,802	18	6,394	16	3,078	8
Savings institutions	4,185	11	4,631	11	3,903	11
Credit unions	2,244	6	3,459	9	3,479	10
Community Development Financial Institutions	21	—	16	—	12	—
Total member advances	36,754	99	40,605	100	36,324	100
Housing associates	172	1	170	—	126	—
Non-member borrowers	18	—	17	—	19	—
Total par value of advances	$ 36,944	100%	$ 40,792	100%	$ 36,469	100%
Total par value of advances outstanding to CFIs (1)	$ 4,490	12%	$ 5,869	14%	$ 7,273	20%

(1) The figures presented above reflect the advances outstanding to CFIs as of December 31, 2019, 2018 and 2017 based upon the definitions of CFIs that applied as of those dates.

The Bank's advances balances (at par value) decreased $3.8 billion during 2019 due primarily to decreases in overnight and short-term advances. Texas Capital Bank, N.A., the Bank's largest borrower at December 31, 2018, and Iberiabank, the Bank's fifth largest borrower at December 31, 2018, reduced their advances by $1.5 billion and $1.0 billion, respectively, in 2019. Advances declined broadly across the Bank's membership in 2019, as almost 70 percent of the Bank's borrowers reduced their borrowings during the year. The Bank believes the decline in advances was due in part to increases in members' liquidity levels, which were primarily the result of growth in their deposits and reduced lending activity.

Advances (at par value) increased $4.3 billion during 2018, due largely to increased demand for loans from the Bank's larger members, which the Bank attributed in part to increased loan demand at those institutions. The Bank's larger members also used advances to varying degrees to fund investment activities and to meet liquidity requirements. Texas Capital Bank, N.A. and Comerica Bank, the Bank's two largest borrowers at both December 31, 2018 and 2017, increased their advances by $1.1 billion and $1.0 billion, respectively, in 2018. American General Life Insurance Company, the Bank's third largest borrower at December 31, 2018, increased its advances by $2.5 billion in 2018.

At December 31, 2019, advances outstanding to the Bank's five largest borrowers totaled $13.5 billion, representing 36.5% percent of the Bank's total outstanding advances as of that date. The following table presents the Bank's five largest borrowers as of December 31, 2019.

FIVE LARGEST BORROWERS
(par value, dollars in millions)

	As of December 31, 2019	
Name	**Par Value of Advances**	**Percent of Total Par Value of Advances**
Comerica Bank	$ 3,800	10.3%
American General Life Insurance Company	3,148	8.5
Texas Capital Bank, N.A.	2,400	6.5
NexBank, SSB	2,108	5.7
Hancock Whitney Bank	2,036	5.5
	$ 13,492	36.5%

As of December 31, 2018 and 2017, advances outstanding to the Bank's five largest borrowers comprised $15.4 billion (38 percent) and $10.6 billion (29 percent), respectively, of the total advances portfolio at those dates.

On November 4, 2019, Iberiabank and Tennessee-based First Horizon National Corp. announced that they had entered into a definitive merger agreement. The combined company will be headquartered in Memphis, Tennessee. According to the announcement, the transaction is expected to close in the second quarter of 2020, subject to satisfaction of customary closing conditions, including receipt of customary regulatory approvals and approval by the shareholders of each company. With borrowings of $1.2 billion, Iberiabank was the Bank's ninth largest borrower as of December 31, 2019.

The following table presents information regarding the composition of the Bank's advances by product type as of December 31, 2019 and 2018.

ADVANCES OUTSTANDING BY PRODUCT TYPE
(par value, dollars in millions)

	December 31, 2019		December 31, 2018	
	Balance	**Percentage of Total**	**Balance**	**Percentage of Total**
Fixed-rate	$ 24,766	67.0%	$ 28,753	70.5%
Adjustable/variable-rate indexed	10,978	29.7	10,730	26.3
Amortizing	1,200	3.3	1,309	3.2
Total par value	$ 36,944	100.0%	$ 40,792	100.0%

The Bank is required by statute and regulation to obtain sufficient collateral from members/borrowers to fully secure all advances and other extensions of credit. The Bank's collateral arrangements with its members/borrowers and the types of collateral it accepts to secure advances are described in Item 1. Business. To ensure the value of collateral pledged to the Bank is sufficient to secure its advances, the Bank applies various haircuts, or discounts, to determine the value of the collateral against which borrowers may borrow. From time to time, the Bank reevaluates the adequacy of its collateral haircuts under a range of stress scenarios to ensure that its collateral haircuts are sufficient to protect the Bank from credit losses on advances and other extensions of credit.

In addition, as described in Item 1. Business, the Bank reviews the financial condition of its depository institution borrowers on at least a quarterly basis to identify any borrowers whose financial condition indicates they might pose an increased credit risk and, as needed, takes appropriate action. The Bank has not experienced any credit losses on advances since it was founded in 1932 and, based on its credit extension and collateral policies, management currently does not anticipate any credit losses on advances. Accordingly, the Bank has not provided any allowance for losses on advances.

Short-Term Liquidity Holdings

At December 31, 2019, the Bank's short-term liquidity holdings were comprised of $4.5 billion of overnight federal funds sold, $4.4 billion of U.S. Treasury Notes, $4.3 billion of overnight reverse repurchase agreements, $1.7 billion of overnight interest-bearing deposits and $0.9 billion of U.S. Treasury Bills. At December 31, 2018, the Bank's short-term liquidity holdings were comprised of $6.2 billion of overnight reverse repurchase agreements, $2.5 billion of overnight interest-bearing deposits, $1.7 billion of overnight federal funds sold and $1.7 billion of U.S. Treasury Notes. All of the Bank's federal funds sold during 2019 and 2018 were transacted with domestic bank counterparties and U.S. branches of foreign financial institutions on an overnight basis. To enhance the returns provided by its short-term liquidity portfolio, the Bank began investing in overnight interest-bearing deposits during the second half of 2018. All of the Bank's interest-bearing deposits were transacted on an overnight basis with domestic bank counterparties or U.S. subsidiaries of foreign holding companies.

As of December 31, 2019, the Bank's overnight federal funds sold consisted of $1.2 billion sold to counterparties rated double-A, $2.6 billion sold to counterparties rated single-A and $0.7 billion sold to counterparties rated triple-B. As of December 31, 2019, substantially all of the Bank's interest-bearing deposits were held in single-A rated banks. The credit ratings presented in the two preceding sentences represent the lowest long-term rating assigned to the counterparty by Moody's or S&P.

The amount of the Bank's short-term liquidity holdings fluctuates in response to several factors, including the anticipated demand for advances, the timing and extent of advance prepayments, changes in the Bank's deposit balances, the Bank's pre-funding activities, prevailing conditions (or anticipated changes in conditions) in the short-term debt markets, changes in the returns provided by short-term investment alternatives relative to the Bank's discount note funding costs, the level of liquidity needed to satisfy Finance Agency requirements and the Finance Agency's expectations with regard to the Bank's core mission achievement. For a discussion of the Finance Agency's liquidity requirements, see the section below entitled "Liquidity and Capital Resources." For a discussion of the Finance Agency's guidance regarding core mission achievement, see Item 1. Business (specifically, the section entitled Core Mission Achievement beginning on page 10 of this report).

Finance Agency regulations and Bank policies govern the Bank's investments in unsecured money market instruments, such as overnight and term federal funds and commercial paper. Those regulations and policies establish limits on the amount of unsecured credit that may be extended to borrowers or to affiliated groups of borrowers, and require the Bank to base its investment limits on the creditworthiness of its counterparties.

Long-Term Investments

The composition of the Bank's long-term investment portfolio at December 31, 2019 and 2018 is set forth in the table below.

COMPOSITION OF LONG-TERM INVESTMENT PORTFOLIO
(in millions)

	Balance Sheet Classification				
December 31, 2019	**Held-to-Maturity (at carrying value)**	**Available-for-Sale (at fair value)**	**Trading (at fair value)**	**Total Long-Term Investments (at carrying value)**	**Held-to-Maturity (at fair value)**
Debentures					
U.S. government-guaranteed obligations	$ 6	$ 453	$ 106	$ 565	$ 6
GSE obligations	—	5,584	—	5,584	—
State housing agency obligations	109	—	—	109	109
Other	—	46	—	46	—
Total debentures	115	6,083	106	6,304	115
MBS portfolio					
GSE residential MBS	1,037	—	—	1,037	1,036
GSE commercial MBS	—	10,684	—	10,684	—
Non-agency residential MBS	54	—	—	54	65
Total MBS	1,091	10,684	—	11,775	1,101
Total long-term investments	$ 1,206	$ 16,767	$ 106	$ 18,079	$ 1,216

	Balance Sheet Classification				
December 31, 2018	**Held-to-Maturity (at carrying value)**	**Available-for-Sale (at fair value)**	**Trading (at fair value)**	**Total Long-Term Investments (at carrying value)**	**Held-to-Maturity (at fair value)**
Debentures					
U.S. government-guaranteed obligations	$ 8	$ 453	$ 101	$ 562	$ 8
GSE obligations	—	5,687	—	5,687	—
State housing agency obligations	135	—	—	135	134
Other	—	171	—	171	—
Total debentures	143	6,311	101	6,555	142
MBS portfolio					
U.S. government-guaranteed residential MBS	1	—	—	1	1
GSE residential MBS	1,253	—	—	1,253	1,258
GSE commercial MBS	—	9,514	—	9,514	—
Non-agency residential MBS	65	—	—	65	78
Total MBS	1,319	9,514	—	10,833	1,337
Total long-term investments	$ 1,462	$ 15,825	$ 101	$ 17,388	$ 1,479

The Bank is precluded by regulation from purchasing additional MBS if such purchase would cause the aggregate amortized cost of its MBS holdings to exceed 300 percent of the Bank's total regulatory capital (the sum of its capital stock, mandatorily redeemable capital stock and retained earnings). As of December 31, 2019, the Bank held $11.7 billion of MBS (at amortized cost), which represented 316 percent of its total regulatory capital at that date. As of December 31, 2018, the Bank held $10.8 billion of MBS (at amortized cost), which represented 297 percent of its total regulatory capital at that date. The Bank intends to continue to purchase additional GSE MBS if securities with adequate returns are available and market conditions are satisfactory when the Bank has the regulatory capacity to increase its MBS portfolio. In light of the Finance Agency's recent LIBOR phase-out guidance, the Bank's consideration of fixed rate MBS purchases after December 31, 2019 will also take into account its ability to prudently mitigate interest rate risk through the use of consolidated obligations or derivatives that are indexed to an interest rate other than LIBOR.

During the years ended December 31, 2019 and 2018, the Bank acquired $1.0 billion and $2.0 billion (par values) of GSE commercial MBS ("CMBS"), all of which are backed by multifamily loans. All of the GSE CMBS purchases were hedged with fixed-for-floating interest rate swaps indexed to LIBOR. Because ASC 815 does not allow hedge accounting treatment for fair value hedges of investment securities designated as held-to-maturity, all of the hedged securities were classified as available-for-sale.

In addition to MBS, the Bank is also permitted under applicable policies and regulations to purchase certain other types of highly rated, long-term, non-MBS investments subject to certain limitations. These investments include but are not limited to the non-MBS debt obligations of other GSEs.

During the year ended December 31, 2019, the Bank purchased $93 million (par value) of GSE debentures, all of which were non-MBS debt obligations of Fannie Mae. All of these securities were classified as available-for-sale and hedged with fixed-for-floating interest rate swaps indexed to LIBOR. During the year ended December 31, 2018, the Bank did not purchase any non-MBS investments for its long-term investment portfolio. Through December 31, 2019, the Bank's investments in the non-MBS debt obligations of Fannie Mae, Freddie Mac and the Farm Credit System were each limited to an amount equal to 100 percent of the Bank's total regulatory capital at the time of purchase. For a discussion of changes to the Bank's authority to invest in the non-MBS debt obligations of GSEs, which became effective on January 1, 2020, see Item 1. Business.

In addition, during the year ended December 31, 2019, the Bank purchased for its long-term investment portfolio a $75 million (par value) state housing agency obligation (classified as held-to-maturity).

Subject to applicable regulatory limits and the constraints imposed by the Finance Agency's guidance regarding core mission achievement, the Bank may add additional non-MBS securities to its long-term investment portfolio if attractive opportunities to do so are available and market conditions are satisfactory. The same hedging considerations that apply to fixed rate MBS purchases after December 31, 2019 will also apply to fixed rate non-MBS investments that are considered for purchase.

During the years ended December 31, 2019 and 2018, proceeds from maturities and paydowns of held-to-maturity securities totaled approximately $334 million and $390 million, respectively. Proceeds from maturities and paydowns of available-for-sale securities totaled $463 million and $305 million during the years ended December 31, 2019 and 2018, respectively. During the year ended December 31, 2019, the Bank sold approximately $200 million (par value) of GSE debentures and $310 million (par value) of GSE CMBS, all of which had been classified as available-for-sale. The aggregate net gains recognized on these sales totaled $0.9 million. During the year ended December 31, 2018, the Bank sold approximately $99 million (par value) of GSE residential MBS (LIBOR-indexed floating rate collateralized mortgage obligations with embedded caps) classified as held-to-maturity securities. The aggregate gains recognized on these sales totaled $1.7 million. For each of these securities, the Bank had previously collected at least 85 percent of the principal outstanding at the time of acquisition. As such, the sales were considered maturities for purposes of security classification. The proceeds from these sales were reinvested in GSE CMBS.

As of December 31, 2019, the U.S. government and the issuers of the Bank's holdings of GSE debentures and GSE MBS were rated triple-A by Moody's and AA+ by S&P. At that same date, the Bank's holdings of other debentures, which were comprised of securities issued by the Private Export Funding Corporation ("PEFCO"), were rated triple-A by Moody's. The PEFCO debentures are not currently rated by S&P. Further, the Bank's holdings of state housing agency debentures were rated triple-A by Moody's and S&P. The credit ratings associated with the Bank's holdings of non-agency residential MBS ("RMBS") are presented in the table on page 46.

Under the accounting rules that were in effect through December 31, 2019, the Bank evaluated outstanding held-to-maturity and available-for-sale investment securities in an unrealized loss position as of the end of each calendar quarter for other-than-temporary impairment ("OTTI"). Under those rules, an investment security was impaired if the fair value of the investment was less than its amortized cost. At December 31, 2019, the gross unrealized losses on the Bank's held-to-maturity and available-for-sale investment securities were $5.7 million and $26.4 million, respectively. As of that date, $1.3 million (or 23 percent) of the unrealized losses associated with its held-to-maturity securities portfolio were related to the Bank's holdings of non-agency (i.e., private-label) RMBS. For a summary of the Bank's OTTI evaluation, see the audited financial statements included in this report (specifically, Notes 4 and 5 beginning on pages F-20 and F-22, respectively).

The deterioration in the U.S. housing markets that occurred primarily during the period from 2007 through 2011, as reflected during that period by declines in the values of residential real estate and higher levels of delinquencies, defaults and losses on residential mortgages, including the mortgages underlying the Bank's non-agency RMBS, generally increased the risk that the Bank may not ultimately recover the entire cost bases of some of its non-agency RMBS. Based on its analysis of the securities in this portfolio, the Bank believes that the unrealized losses as of December 31, 2019 were principally the result of liquidity risk related discounts in the non-agency RMBS market and do not accurately reflect the currently likely future credit performance of the securities.

All but one of the Bank's non-agency RMBS are rated by Moody's and/or S&P. The following table presents the credit ratings assigned to the Bank's non-agency RMBS holdings as of December 31, 2019. The credit ratings presented in the table represent the lowest rating assigned to the security by Moody's or S&P.

NON-AGENCY RMBS BY CREDIT RATING
(dollars in thousands)

Credit Rating	Number of Securities	Unpaid Principal Balance	Amortized Cost	Carrying Value	Estimated Fair Value	Unrealized Losses
Double-A	1	$ 1,149	$ 1,149	$ 1,149	$ 1,117	$ 32
Single-A	2	8,469	8,469	8,469	8,363	106
Triple-B	2	3,036	3,036	3,036	2,994	42
Single-B	4	12,091	11,943	10,575	11,459	517
Triple-C	12	44,826	38,210	30,938	41,399	627
Not Rated	1	78	78	78	73	5
Total	22	$ 69,649	$ 62,885	$ 54,245	$ 65,405	$ 1,329

At December 31, 2019, the Bank's portfolio of non-agency RMBS was comprised of 3 securities with an aggregate unpaid principal balance of $8 million that are backed by first lien fixed-rate loans and 19 securities with an aggregate unpaid principal balance of $62 million that are backed by first lien option adjustable-rate mortgage ("option ARM") loans. In comparison, as of December 31, 2018, the Bank's non-agency RMBS portfolio was comprised of 3 securities backed by fixed-rate loans that had an aggregate unpaid principal balance of $9 million and 19 securities backed by option ARM loans that had an aggregate unpaid principal balance of $75 million.

The following table provides a summary of the Bank's non-agency RMBS as of December 31, 2019 by classification by the originator at the time of issuance and collateral type; the Bank does not hold any RMBS that were labeled as subprime by the originator at the time of issuance.

NON-AGENCY RMBS BY UNDERLYING COLLATERAL TYPE
(dollars in millions)

							Credit Enhancement Statistics		
Classification	**Number of Securities**	**Unpaid Principal Balance**	**Amortized Cost**	**Estimated Fair Value**	**Unrealized Losses**	**Weighted Average Collateral Delinquency (1)(2)**	**Current Weighted Average (1)(3)**	**Original Weighted Average (1)**	**Minimum Current (4)**
Prime collateral(5)	19	$ 55	$ 51	$ 52	$ 1	13.52%	27.96%	39.88%	—%
Alt-A collateral(5)	3	15	12	13	—	11.68%	9.29%	30.89%	—%
Total non-agency RMBS	22	$ 70	$ 63	$ 65	$ 1	13.13%	24.07%	38.00%	—%
Fixed-rate collateral	3	$ 8	$ 6	$ 6	$ —	7.64%	0.15%	7.82%	—%
Option ARM collateral	19	62	57	59	1	13.80%	26.97%	41.65%	4.89%
Total non-agency RMBS	22	$ 70	$ 63	$ 65	$ 1	13.13%	24.07%	38.00%	—%

(1) Weighted average percentages are computed based upon unpaid principal balances.

(2) Collateral delinquency reflects the percentage of the underlying loan balances that are 60 or more days past due, including loans in foreclosure and real estate owned.

(3) Current credit enhancement percentages reflect the ability of subordinated classes of securities to absorb principal losses and interest shortfalls before the senior classes held by the Bank are impacted (i.e., the losses, expressed as a percentage of the outstanding principal balances, that could be incurred in the underlying loan pools before the securities held by the Bank would be impacted, assuming that all of those losses occurred on the measurement date). Depending upon the timing and amount of losses in the underlying loan pools, it is possible that the senior classes held by the Bank could bear losses in scenarios where the cumulative loan losses do not exceed the current credit enhancement percentage.

(4) Minimum credit enhancement reflects the security in each category with the lowest current credit enhancement.

(5) Reflects the label assigned to the securities by the originator at the time of issuance.

Because the ultimate receipt of contractual payments on the Bank's non-agency RMBS will depend upon the credit and prepayment performance of the underlying loans and the credit enhancements for the senior securities owned by the Bank, the Bank monitors these investments in an effort to determine whether the credit enhancement associated with each security is sufficient to protect against potential losses of principal and interest on the underlying mortgage loans. The credit enhancement for each of the Bank's non-agency RMBS is provided by a senior/subordinate structure, and none of the securities owned by the Bank are insured by third-party bond insurers. More specifically, each of the Bank's non-agency RMBS represents a single security class within a securitization that has multiple classes of securities. Each security class has a distinct claim on the cash flows from the underlying mortgage loans, with the subordinate securities having a junior claim relative to the more senior securities. The Bank's non-agency RMBS have a senior claim on the cash flows from the underlying mortgage loans.

To assess whether the entire amortized cost bases of its non-agency RMBS will be recovered, the Bank performed a cash flow analysis for each of its non-agency RMBS holdings as of the end of each calendar quarter in 2019 under a base case (or best estimate) scenario. The procedures used in these analyses, together with the results thereof, are summarized in Note 5 to the Bank's audited financial statements included in this report.

Since 2009, the Bank has recorded credit impairments totaling $13.1 million on 15 of its non-agency RMBS. The vast majority of these credit impairments were recorded in 2009, 2010 and 2011. Through December 31, 2019, the Bank has amortized $1.0 million of the time value associated with these credit losses. Through this same date, actual principal shortfalls on the 15 securities have totaled $2.1 million and the Bank has recognized recoveries (i.e., increases in cash flows expected to be collected) totaling $5.3 million. Based on the cash flow analyses performed as of December 31, 2019, the Bank currently expects to recover in future periods an additional $6.5 million of the previously recorded losses. These anticipated recoveries will either be accreted as interest income over the remaining lives of the applicable securities in the same manner as the recoveries that have been recorded through December 31, 2019 (if the anticipated recoveries were being accreted as of December 31, 2019 because they had been deemed to be significant on or prior to that date) or recognized as received (if the anticipated recoveries were not deemed to be significant on or before December 31, 2019). Additional increases in expected recoveries, if any, after December 31, 2019 will be recognized when received.

In addition to evaluating its non-agency RMBS under a best estimate scenario, the Bank also performed a cash flow analysis for each of these securities as of December 31, 2019 under a more stressful housing price scenario. This more stressful scenario was based on a housing price forecast that assumed home price changes for the 12-month period beginning October 1, 2019 were 5 percentage points lower than the base case scenario followed by home price changes that are 33 percent lower than those used in the base case scenario. As of December 31, 2019, none of the Bank's non-agency RMBS would have been deemed to be other-than-temporarily impaired under the more stressful housing price scenario.

While substantially all of the Bank's RMBS portfolio is comprised of collateralized mortgage obligations ("CMOs") with variable-rate coupons ($1.1 billion par value at December 31, 2019) that do not expose it to interest rate risk if interest rates rise moderately, these securities include caps that would limit increases in the variable-rate coupons if short-term interest rates rise above the caps. In addition, if interest rates rise, prepayments on the mortgage loans underlying the securities would likely decline, thus lengthening the time that the securities would remain outstanding with their coupon rates capped. As of December 31, 2019, one-month LIBOR was 1.76 percent and the effective interest rate caps on one-month LIBOR (the interest cap rate minus the stated spread on the coupon) embedded in the CMO floaters ranged from 5.95 percent to 10.73 percent. The largest concentration of embedded effective caps ($0.9 billion) was between 6.00 percent and 6.50 percent. As of December 31, 2019, one-month LIBOR rates were approximately 419 basis points below the lowest effective interest rate cap embedded in the CMO floaters. To hedge a portion of the potential cap risk embedded in these securities, the Bank held one $500 million interest rate cap with a strike rate of 6.5 percent and final maturity in August 2021. The notional balance of this cap declines by $250 million in August 2020 to $250 million. If three-month LIBOR rises above 6.50 percent, the Bank will be entitled to receive interest payments according to the terms and conditions of the interest rate cap agreement. These payments would be based upon the notional amounts of the agreement (at that time) and the difference between 6.50 percent and three-month LIBOR.

Mortgage Loans Held For Portfolio

As of December 31, 2019 and 2018, mortgage loans held for portfolio (net of allowance for credit losses) were $4.1 billion and $2.2 billion, respectively, representing approximately 5.4 percent and 3.0 percent, respectively, of the Bank’s total assets at each of those dates. Through the MPF program, the Bank currently invests in only conventional residential mortgage loans originated by its PFIs. During the period from 1998 to mid-2003, the Bank purchased conventional mortgage loans and government-guaranteed/insured mortgage loans (i.e., those insured or guaranteed by the Federal Housing Administration or the Department of Veterans Affairs). The Bank resumed acquiring conventional mortgage loans under this program in early 2016. During the years ended December 31, 2019 and 2018, the Bank acquired mortgage loans totaling $2.432 billion ($2.386 billion unpaid principal balance) and $1.409 billion ($1.386 billion unpaid principal balance), respectively. All of the mortgage loans acquired in 2019 and 2018 were originated by certain of the Bank's PFIs and the Bank acquired a 100 percent interest in such loans. Substantially all of the mortgage loans on the Bank's balance sheet at December 31, 2019 were acquired since 2016.

As more fully discussed in Item 1. Business, the Bank manages the liquidity, interest rate and prepayment risk of these loans, while the PFIs or their designees retain the servicing activities. The Bank and the PFIs share in the credit risk of the loans with the Bank assuming a limited first loss obligation defined as the FLA, and the PFIs assuming credit losses in excess of the FLA, up to the amount of the required CE Obligation specified in the master agreement (“Second Loss Credit Enhancement”).

Under the MPF program, the PFI’s credit enhancement protection may take the form of the CE Obligation, which represents the direct liability to pay credit losses incurred with respect to that master commitment, or may require the PFI to obtain and pay for an SMI policy insuring the Bank for a portion of the credit losses arising from the master commitment, and/or the PFI may contract for a contingent performance-based credit enhancement fee whereby such fees are reduced by losses up to a certain amount arising under the master commitment. The credit risk-sharing structures utilized by the Bank during the period from 2016 through 2019 did not include SMI. PFIs are paid a CE fee by the Bank as an incentive to minimize credit losses, to share in the risk of loss on MPF loans and to pay for SMI (if applicable). CE fees are paid monthly and are determined based on the remaining unpaid principal balance of the MPF loans. During the years ended December 31, 2019 and 2018, mortgage loan interest income was reduced by CE fees totaling $2.1 million and $1.3 million, respectively. The required CE Obligation may vary depending on the MPF product alternatives selected. The Bank also pays performance-based CE fees that are based on the actual performance of the pool of MPF loans under each individual master commitment. To the extent that losses incurred by the Bank as part of its first loss obligation in the current month exceed accrued performance-based CE fees, the remaining losses may be recovered from future performance-based CE fees payable to the PFI. During the years ended December 31, 2019 and 2018, performance-based CE fees that were foregone and not paid to the Bank’s PFIs totaled $6,000 and $8,000, respectively. The Bank's allowance for loan losses, which factors in the CE obligation, increased from $271,000 at December 31, 2017 to $493,000 at December 31, 2018 and $1,149,000 at December 31, 2019, reflecting the increase in the size of its mortgage loan portfolio.

If a PFI fails to comply with any of the requirements of the PFI agreement, MPF guides, applicable law or the terms of mortgage documents, it may be required to repurchase the MPF loans that are impacted by such failure. During the years ended

December 31, 2019 and 2018, the principal amount of mortgage loans held by the Bank that were repurchased by the Bank's PFIs totaled $3.9 million and $2.0 million, respectively.

Over time, the Bank expects to increase the balance of its mortgage loan portfolio to an amount that approximates 10 percent to 15 percent of its total assets.

Consolidated Obligations and Deposits

During the year ended December 31, 2019, the Bank's outstanding consolidated obligations (at par value) increased by $2.1 billion; consolidated obligation bonds increased by $3.6 billion and consolidated obligation discount notes decreased by $1.5 billion. The following table presents the composition of the Bank's outstanding bonds at December 31, 2019 and 2018.

COMPOSITION OF CONSOLIDATED OBLIGATION BONDS OUTSTANDING
(par value, dollars in millions)

	December 31, 2019		December 31, 2018	
	Balance	Percentage of Total	Balance	Percentage of Total
Variable-rate	$ 12,642	35.4%	$ 10,030	31.2%
Fixed-rate				
Callable	12,083	33.9	5,049	15.7
Non-callable	9,447	26.4	10,558	32.9
Step-up				
Callable	1,237	3.5	6,127	19.1
Non-callable	100	0.3	75	0.2
Callable step-down	175	0.5	275	0.9
Total par value	$ 35,684	100.0%	$ 32,114	100.0%

Variable-rate bonds have variable-rate coupons that generally reset based on either one-month or three-month LIBOR or SOFR; these bonds may contain caps that limit the increases in the variable-rate coupons. Fixed-rate bonds have coupons that are fixed over the life of the bond. Some fixed-rate bonds contain provisions that enable the Bank to call the bonds at its option on predetermined call dates. Step-up bonds pay interest at increasing fixed rates for specified intervals over the life of the bond and, if callable, contain provisions enabling the Bank to call the bonds at its option on predetermined dates. Callable step-down bonds pay interest at decreasing fixed rates for specified intervals over the life of the bond and contain provisions enabling the Bank to call the bonds at its option on predetermined dates.

The FHLBanks rely extensively on the underwriters of their securities, including investment banks, money center banks and large commercial banks, to source investors for consolidated obligations. Investors may be located in the United States or overseas. The features of consolidated obligations are structured to meet the requirements of investors. The various types of consolidated obligations included in the table above reflect the features of the Bank's outstanding bonds as of December 31, 2019 and 2018 and do not represent all of the various types and styles of consolidated obligation bonds that may be issued by the Bank or the other FHLBanks.

Consistent with its risk management philosophy, the Bank uses interest rate exchange agreements (i.e., interest rate swaps) to convert many of the fixed-rate consolidated obligation bonds that it issues to variable-rate instruments that periodically reset based on an index such as one-month or three-month LIBOR. Generally, the Bank receives a coupon on the interest rate swap that is identical to the coupon it pays on the consolidated obligation bond while paying a variable-rate coupon on the interest rate swap that resets based on either one-month or three-month LIBOR. Typically, the formula for the variable-rate coupon also includes a spread to the index; for instance, the Bank may pay a coupon on the interest rate swap equal to three-month LIBOR minus 15 basis points.

During the years ended December 31, 2019 and 2018, the Bank issued $39.3 billion and $19.4 billion, respectively, of consolidated obligation bonds. The proceeds from these issuances were generally used to replace maturing or called consolidated obligations and to support some of the growth in the Bank's balance sheet. During the year ended December 31, 2019, the Bank's consolidated obligation bond issuance (based on par value) consisted of approximately 53 percent swapped fixed-rate callable bonds, including step-up bonds, 38 percent variable-rate bonds and 9 percent fixed-rate non-callable bonds (most of which were swapped). During the year ended December 31, 2018, the Bank's consolidated obligation bond issuance (based on par value) consisted of approximately 51 percent variable-rate bonds; 30 percent swapped fixed-rate callable bonds, including step-up bonds, and 19 percent fixed-rate non-callable bonds (most of which were swapped). At December 31, 2019 and 2018, the Bank had $9.5 billion and $50 million, respectively, of outstanding variable-rate bonds indexed to SOFR.

At December 31, 2019 and 2018, discount notes comprised approximately 49 percent and 53 percent, respectively, of the Bank's total outstanding consolidated obligations. During 2019, the Bank issued approximately $182 billion of consolidated obligation discount notes (excluding those with overnight terms), the proceeds of which were used primarily to replace maturing or called consolidated obligation bonds and maturing consolidated obligation discount notes, as well as to fund a portion of the growth in the Bank's balance sheet.

Historically, the primary benchmark that the Bank has used to analyze the effectiveness of its debt issuance efforts and trends in its debt issuance costs has been the spread to LIBOR that the Bank pays on interest rate swaps used to convert its fixed-rate consolidated obligations to LIBOR. The costs of the Bank's consolidated obligations, when expressed relative to LIBOR, are impacted by many factors. These include factors that may influence all credit market spreads, such as investors' perceptions of general economic conditions, changes in investors' risk tolerances or maturity preferences, or, in the case of overseas investors, changes in preferences for holding dollar-denominated assets. They also include factors that primarily influence the yields of GSE debt, such as a marked change in the debt issuance patterns of GSEs stemming from a rapid change in the size of their balance sheets or changes in market interest rates or the availability of debt with similar perceived credit quality. Finally, the specific features of consolidated obligations and the associated interest rate swaps influence the spread to LIBOR that the Bank pays on its interest rate swaps. During the years ended December 31, 2019 and 2018, the weighted average LIBOR cost of swapped and variable-rate consolidated obligation bonds issued by the Bank was approximately LIBOR minus 16 basis points and LIBOR minus 22 basis points, respectively.

The cost of the Bank's consolidated obligation discount notes increased in 2018 and the first half of 2019 before declining in the second half of 2019 commensurate with the changes in short-term interest rates during those periods.

Demand and term deposits were $1.3 billion and $1.0 billion at December 31, 2019 and 2018, respectively. The Bank has a deposit auction program under which deposits with varying maturities and terms are offered for competitive bid at periodic auctions. The deposit auction program offers the Bank's members an alternative way to invest their excess liquidity at competitive rates of return, while providing an alternative source of funds for the Bank. The size of the Bank's deposit base varies as market factors change, including the attractiveness of the Bank's deposit pricing relative to the rates available to members on alternative money market investments, members' investment preferences with respect to the maturity of their investments, and member liquidity.

Capital Stock

The Bank's outstanding capital stock (excluding mandatorily redeemable capital stock) was $2.5 billion and $2.6 billion at December 31, 2019 and 2018, respectively, while the Bank's average outstanding capital stock (for financial reporting purposes) was $2.6 billion and $2.5 billion, respectively.

At December 31, 2019, the Bank's five largest shareholders held $620 million of capital stock, which represented 25.1 percent of the Bank's total outstanding capital stock (including mandatorily redeemable capital stock) as of that date. The following table presents the Bank's five largest shareholders as of December 31, 2019.

FIVE LARGEST SHAREHOLDERS AS OF DECEMBER 31, 2019
(par value, dollars in thousands)

Name	Par Value of Capital Stock	Percent of Total Par Value of Capital Stock
Comerica Bank	$ 162,800	6.6%
American General Life Insurance Company	143,646	5.8
Texas Capital Bank, N.A.	133,159	5.4
Hancock Whitney Bank	90,388	3.7
NexBank, SSB	89,750	3.6
	$ 619,743	25.1%

As of December 31, 2019, all of the stock held by the five institutions shown in the table above was classified as capital in the statement of condition.

As described in Item 1. Business, members are required to maintain an investment in Class B stock equal to the sum of a membership investment requirement and an activity-based investment requirement. Currently, the membership investment requirement is 0.04 percent of each member's total assets as of the previous calendar year end, subject to a minimum of $1,000 and a maximum of $7,000,000. The activity-based investment requirement is currently 4.10 percent of outstanding advances, except for advances that were funded in late 2015 under the special reduced stock advances offering discussed below. The Bank's Board of Directors reviews these requirements at least annually and has the authority to adjust them periodically within ranges established in the Capital Plan, as amended from time to time, to ensure that the Bank remains adequately capitalized. There were no changes to the investment requirements during the years ended December 31, 2019 or 2018.

The Bank has two sub-classes of Class B Stock. Class B-1 Stock is used to meet the membership investment requirement and Class B-2 Stock is used to meet the activity-based investment requirement. Daily, subject to the limitations in the Capital Plan, the Bank converts shares of one sub-class of Class B Stock to the other sub-class of Class B Stock under the following circumstances: (i) shares of Class B-2 Stock held by a shareholder in excess of its activity-based investment requirement are converted into Class B-1 Stock, if necessary, to meet that shareholder's membership investment requirement and (ii) shares of Class B-1 Stock held by a shareholder in excess of the amount required to meet its membership investment requirement are converted into Class B-2 Stock as needed in order to satisfy that shareholder's activity-based investment requirement. All excess stock is held as Class B-1 Stock at all times.

The Bank's Board of Directors may declare dividends at the same rate for all shares of Class B Stock, or at different rates for Class B-1 Stock and Class B-2 Stock, provided that in no event can the dividend rate on Class B-2 Stock be lower than the dividend rate on Class B-1 Stock. Dividend payments may be made in the form of cash, additional shares of either, or both, sub-classes of Class B Stock, or a combination thereof as determined by the Bank's Board of Directors. For additional information, see Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

The permissible range for the advances-based component of the activity-based investment requirement is currently a range of 2.0 percent to 5.0 percent of members' advances outstanding. The Bank's Board of Directors may establish one or more separate advances investment requirement percentages (each an "advance type specific percentage") within this range to be applied to a specific category of advances in lieu of the generally applicable advances-related investment requirement percentage in effect at the time. Such category of advances may be defined as a particular advances product offering, advances with particular maturities or other features, advances that represent an increase in member borrowing, or such other criteria as the Bank's Board of Directors may determine. Any advance type specific percentage may be established for an indefinite period of time, or for a specific time period, at the discretion of the Bank's Board of Directors. Any changes to either the membership or activity-based investment requirements require at least 30 days advance notice to the Bank's members.

On September 21, 2015, the Bank announced a Board-authorized reduction in the activity-based stock investment requirement from 4.1 percent to 2 percent for certain advances that were funded during the period from October 21, 2015 through December 31, 2015. The standard activity-based stock investment requirement of 4.1 percent continued to apply to all other advances that were funded during the period from October 21, 2015 through December 31, 2015. All other minimum investment requirements also continued to apply during that period. At December 31, 2019, the remaining balance of advances funded under this special reduced stock advances offering totaled approximately $873 million.

On February 28, 2020, the Bank announced a Board-authorized reduction in the activity-based stock investment requirement from 4.1 percent to 2 percent for up to $5 billion of advances that are funded during the period from April 1, 2020 through December 31, 2020. To be eligible for the reduced activity-based investment requirement, the advances must have a maturity of one year or greater. The standard activity-based stock investment requirement of 4.1 percent will continue to apply to all other advances that are funded during this period.

Quarterly, the Bank generally repurchases a portion of members' excess capital stock. Excess stock is defined as the amount of stock held by a member (or former member) in excess of that institution's minimum investment requirement. The portion of members' excess capital stock subject to repurchase is known as surplus stock. For the repurchases that occurred during 2019 and 2018, surplus stock was defined as the amount of stock held by a member in excess of 125 percent of the member's minimum investment requirement. For those repurchases, a shareholder's surplus stock was not repurchased if: (1) the amount of that shareholder's surplus stock was $2,500,000 or less, (2) the shareholder elected to opt out of the repurchase, or (3) the shareholder was on restricted collateral status (subject to certain exceptions). From time to time, the Bank may modify the definition of surplus stock or the timing and/or frequency of surplus stock repurchases.

Concurrent with the quarterly repurchases of surplus stock that occurred in 2019 and 2018, the Bank also repurchased all excess stock held by non-member shareholders as of the repurchase dates. This excess stock, all of which was classified as mandatorily redeemable capital stock at those dates, totaled $2.3 million and $5.5 million, respectively.

At December 31, 2019, excess stock held by the Bank's members and former members totaled $627 million, which represented 0.8 percent of the Bank's total assets as of that date.

The following table sets forth the repurchases of excess stock that have occurred under the quarterly repurchase program since January 1, 2018.

EXCESS STOCK REPURCHASED UNDER QUARTERLY REPURCHASE PROGRAM
(dollars in thousands)

Date of Repurchase by the Bank	Shares Repurchased	Amount of Surplus Stock Repurchased from Member Shareholders	Amount of Excess Stock Repurchased from Non-Member Shareholders
March 27, 2018	2,390,220	$ 233,659	$ 5,363
June 26, 2018	993,071	99,285	22
September 24, 2018	2,237,809	223,761	20
December 26, 2018	2,076,547	207,559	96
March 26, 2019	2,040,937	202,498	1,596
June 25, 2019	1,093,092	108,621	688
September 25, 2019	2,593,830	259,377	6
December 27, 2019	1,692,435	169,237	6

Accounting principles generally accepted in the United States of America ("U.S. GAAP") require issuers to classify as liabilities certain financial instruments that embody obligations for the issuer (hereinafter referred to as "mandatorily redeemable financial instruments"). Pursuant to these requirements, the Bank reclassifies shares of capital stock from the capital section to the liability section of its balance sheet at the point in time when either a written redemption or withdrawal notice is received from a member or a membership withdrawal or termination is otherwise initiated, because the shares of capital stock then meet the definition of a mandatorily redeemable financial instrument. Shares of capital stock meeting this definition are reclassified to liabilities at fair value. Following reclassification of the stock, any dividends paid or accrued on such shares are recorded as interest expense in the statements of income. As the repurchases presented in the table above are made at the sole discretion of the Bank, the repurchase, in and of itself, does not cause the shares underlying these repurchases to meet the definition of mandatorily redeemable financial instruments.

Stock dividends paid on capital stock that is classified as mandatorily redeemable capital stock are reported as either an issuance of capital stock or as an increase in the mandatorily redeemable capital stock liability depending upon the event that caused the stock on which the dividend is being paid to be classified as a liability. Stock dividends paid on stock subject to a written redemption notice are reported as an issuance of capital stock as such dividends are not covered by the original redemption notice. Stock dividends paid on stock that is subject to a withdrawal notice (or its equivalent) are reported as an increase in the mandatorily redeemable capital stock liability. During the years ended December 31, 2019 and 2018, the Bank did not receive any stock redemption notices.

Mandatorily redeemable capital stock outstanding at December 31, 2019 and 2018 was $7.1 million and $7.0 million, respectively. For the years ended December 31, 2019 and 2018, average mandatorily redeemable capital stock was $7.3 million and $4.1 million, respectively. Although mandatorily redeemable capital stock is excluded from capital (equity) for financial reporting purposes, this stock is considered capital for regulatory purposes (see the section below entitled "Risk-Based Capital Rules and Other Capital Requirements" for further information).

The following table presents capital stock outstanding, by type of institution, as of December 31, 2019 and 2018.

CAPITAL STOCK OUTSTANDING BY INSTITUTION TYPE
(dollars in millions)

	December 31, 2019		December 31, 2018	
	Amount	Percent	Amount	Percent
Commercial banks	$ 1,584	64%	$ 1,661	65%
Insurance companies	364	15	333	13
Credit unions	281	11	309	12
Savings institutions	236	10	251	10
Community Development Financial Institutions	1	—	1	—
Total capital stock classified as capital	2,466	100	2,555	100
Mandatorily redeemable capital stock	7	—	7	—
Total regulatory capital stock	$ 2,473	100%	$ 2,562	100%

Derivatives and Hedging Activities

The Bank functions as a financial intermediary by channeling funds provided by investors in its consolidated obligations to member institutions. During the course of a business day, all member institutions may obtain advances through a variety of product types that include features as diverse as variable and fixed coupons, overnight to 40-year maturities, and bullet (principal due at maturity) or amortizing redemption schedules. The Bank funds advances primarily through the issuance of consolidated obligation bonds and discount notes. The terms and amounts of these consolidated obligation bonds and discount notes and the timing of their issuance is determined by the Bank and is subject to investor demand as well as FHLBank System debt issuance policies.

The intermediation of the timing, structure, and amount of Bank members' credit needs with the investment requirements of the Bank's creditors is made possible by the extensive use of interest rate exchange agreements. The Bank's general practice has been to contemporaneously execute interest rate exchange agreements when acquiring longer maturity assets and/or issuing longer maturity liabilities in order to convert the instruments' cash flows to a variable rate that is indexed to LIBOR. By doing so, the Bank reduces its interest rate risk exposure and preserves the value of, and earns more stable returns on, its members' capital investment.

This use of derivatives is integral to the Bank's financial management strategy, and the impact of these interest rate exchange agreements permeates the Bank's financial statements. Management has put in place a risk management framework that outlines the permitted uses of interest rate derivatives and that requires frequent reporting of their values and impact on the Bank's financial statements. All interest rate derivatives employed by the Bank hedge identifiable risks and none are used for speculative purposes. As of December 31, 2019, all of the Bank's derivative instruments that were designated in ASC 815 hedging relationships were either hedging fair value risk attributable to changes in LIBOR, the designated benchmark interest rate, or hedging the variability of cash flows associated with forecasted transactions.

ASC 815 requires that all derivative instruments be recorded in the statements of condition at their fair values. Changes in the fair values of the Bank's derivatives, other than those designated in cash flow hedging relationships, are recorded each period in current earnings. ASC 815 also sets forth conditions that must exist in order for balance sheet items to qualify for fair value hedge accounting. If an asset or liability qualifies for fair value hedge accounting, changes in the fair value of the hedged item that are attributable to the hedged risk are also recorded in earnings. As a result, the net effect is that only the "ineffective" portion of a qualifying fair value hedge has an impact on current earnings. Changes in the fair values of the Bank's derivatives designated in cash flow hedging relationships are recorded each period in other comprehensive income.

Under ASC 815, periodic earnings variability for fair value hedges occurs in the form of the net difference between changes in the fair values of the derivative (the hedging instrument) and the hedged item (the asset or liability), if any, for accounting purposes. For the Bank, two types of hedging relationships are primarily responsible for creating earnings volatility.

The first type involves transactions in which the Bank enters into interest rate swaps with coupon cash flows identical or nearly identical to the cash flows of the hedged item (e.g., an advance, investment security or consolidated obligation). In some cases involving hedges of this type, an assumption of "no ineffectiveness" can be made and the changes in the fair values of the derivative and the hedged item are considered identical and offsetting (hereinafter referred to as the shortcut method). However, if the derivative or the hedged item do not have certain characteristics defined in ASC 815, the assumption of "no ineffectiveness" cannot be made, and the derivative and the hedged item must be marked to fair value independently (hereinafter referred to as the long-haul method). Under the long-haul method, the two components of the hedging relationship are marked to fair value using different discount rates, and the resulting changes in fair value are generally slightly different from one another. Even though these differences are generally relatively small when expressed as prices, their impact can become more significant when multiplied by the principal amount of the transaction and then evaluated in the context of the Bank's net income. Further, during periods in which short-term interest rates are volatile, the Bank may experience increased earnings variability related to differences in the timing between changes in short-term rates and interest rate resets on the floating-rate leg of its interest rate swaps. The floating-rate legs of most of the Bank's fixed-for-floating interest rate swaps reset every three months and are then fixed until the next reset date. When short-term rates change significantly between the reset date and the valuation date, discounting the cash flows of the floating-rate leg at current market rates until the swap's next reset date can cause near-term volatility in the Bank's earnings. Nonetheless, the impact of these types of ineffectiveness-related adjustments on earnings is transitory as the net earnings impact will be zero over the life of the hedging relationship if the derivative and hedged item are held to maturity or their call dates, which is generally the case for the Bank.

The second type involves transactions in which the Bank enters into interest rate exchange agreements to hedge identifiable portfolio risks that either do not qualify for fair value hedge accounting under ASC 815 or are not designated in an ASC 815 fair value hedging relationship (hereinafter referred to as an "economic hedge"). For instance, from time to time, the Bank uses fixed-for-floating interest rate swaps to hedge its fair value risk exposure associated with some of its longer-term discount notes. The changes in fair value of the interest rate swaps flow through current earnings without an offsetting change in the fair value of the hedged items (i.e., the discount notes), which increases the volatility of the Bank's earnings. Excluding net interest settlements, the impact of the changes in fair value of these stand-alone interest rate swaps on earnings over the life of the transactions will be zero if these instruments are held until their maturity. The Bank generally holds its discount note swaps to maturity. In addition, from time to time, the Bank uses interest rate basis swaps to reduce its exposure to changes in spreads between one-month and three-month LIBOR.

Because the use of interest rate derivatives enables the Bank to better manage its economic risks, and thus run its business more effectively and efficiently, the Bank will continue to use them during the normal course of its balance sheet management. The Bank views the accounting consequences of using interest rate derivatives as being an important, but secondary, consideration.

As a result of using interest rate exchange agreements extensively to fulfill its role as a financial intermediary, the Bank has a large notional amount of interest rate exchange agreements relative to its size. As of December 31, 2019, 2018 and 2017, the Bank's notional balance of interest rate exchange agreements was $54.9 billion, $49.1 billion and $38.2 billion, respectively, while its total assets were $75.4 billion, $72.8 billion and $68.5 billion, respectively. The notional amount of interest rate exchange agreements does not reflect the Bank's credit risk exposure which, as discussed below, is much less than the notional amount.

Table of Contents

The following table provides the notional balances of the Bank's derivative instruments, by balance sheet category and accounting designation, as of December 31, 2019, 2018 and 2017.

COMPOSITION OF DERIVATIVES BY BALANCE SHEET CATEGORY AND ACCOUNTING DESIGNATION
(in millions)

	Fair Value Hedges				
	Shortcut Method	Long-Haul Method	Cash Flow Hedges	Economic Hedges	Total
December 31, 2019					
Advances	$ 9,104	$ 998	$ —	$ 255	$ 10,357
Investments	—	16,115	—	4,203	20,318
Mortgage loans held for portfolio	—	—	—	517	517
Consolidated obligation bonds	—	19,861	—	—	19,861
Consolidated obligation discount notes	—	—	1,043	1,000	2,043
Intermediary positions	—	—	—	922	922
Other	—	—	—	925	925
Total notional balance	$ 9,104	$ 36,974	$ 1,043	$ 7,822	$ 54,943
December 31, 2018					
Advances	$ 6,565	$ 606	$ —	$ 2	$ 7,173
Investments	—	15,982	—	2,716	18,698
Mortgage loans held for portfolio	—	—	—	348	348
Consolidated obligation bonds	—	19,824	—	—	19,824
Consolidated obligation discount notes	—	—	865	—	865
Intermediary positions	—	—	—	1,769	1,769
Other	—	—	—	425	425
Total notional balance	$ 6,565	$ 36,412	$ 865	$ 5,260	$ 49,102
December 31, 2017					
Advances	$ 4,338	$ 720	$ —	$ 8	$ 5,066
Investments	—	14,282	—	1,203	15,485
Mortgage loans held for portfolio	—	—	—	20	20
Consolidated obligation bonds	—	14,374	—	—	14,374
Consolidated obligation discount notes	—	—	505	—	505
Intermediary positions	—	—	—	2,419	2,419
Other	—	—	—	324	324
Total notional balance	$ 4,338	$ 29,376	$ 505	$ 3,974	$ 38,193

The following table provides the notional balances of the Bank's derivative instruments, by hedging strategy, as of December 31, 2019 and 2018.

HEDGING STRATEGIES
(in millions)

Hedged Item / Hedging Instrument	Hedging Objective	Hedge Accounting Designation	Notional Amount at December 31, 2019	Notional Amount at December 31, 2018
Advances				
Pay fixed, receive floating interest rate swap (without options)	Converts the advance's fixed rate to a variable-rate index.	Fair Value	$ 4,354	$ 3,891
		Economic	—	2
Pay fixed, receive floating interest rate swap (with options)	Converts the advance's fixed rate to a variable-rate index and offsets option risk in the advance.	Fair Value	5,394	3,276
		Economic	255	—
Pay floating then fixed, receive floating interest rate swap (with options)	Converts the advance's fixed rate (after the initial variable rate lockout period) to a variable rate index and offsets option risk in the advance.	Fair Value	350	—
Pay fixed, receive floating interest rate swap combined with purchased swaption	Converts the advance's fixed rate to a variable-rate index and offsets an optional commitment embedded in the advance that allows the member to increase the amount of the advance.	Fair Value	4	4
Investments				
Pay fixed, receive floating interest rate swap	Converts the investment security's fixed rate to a variable-rate index.	Fair Value	16,115	15,982
		Economic	3,703	1,716
Interest rate caps	Offsets the interest rate caps embedded in a portfolio of variable-rate investment securities.	Economic	500	1,000
Mortgage Loans				
Pay fixed, receive floating interest rate swap, or receive fixed, pay floating interest rate swap	To hedge risks to the Bank's earnings associated with the mortgage loan portfolio.	Economic	340	151
Pay or receive fixed interest rate swaption	Provides the option to enter into an interest rate swap to offset interest rate risk associated with the mortgage loan portfolio.	Economic	145	185
Consolidated Obligation Bonds				
Receive fixed, pay floating interest rate swap (without options)	Converts the bond's fixed rate to a variable-rate index.	Fair Value	7,043	8,044
Receive fixed, pay floating interest rate swap (with options)	Converts the bond's fixed rate to a variable-rate index and offsets option risk in the bond.	Fair Value	12,818	11,780
Consolidated Obligation Discount Notes				
Receive floating, pay fixed interest rate swap	Reduces cash flow variability by converting the variable cash flows of rolling three-month discount notes to fixed cash flows.	Cash Flow	1,043	865
Receive fixed, pay floating interest rate swap	Converts the discount note's fixed rate to a variable rate index.	Economic	1,000	—
Intermediary Positions				
Pay fixed, receive floating interest rate swap, and receive fixed, pay floating interest rate swap	To provide interest rate swaps to members and to offset these interest rate swaps by executing interest rate swaps with the Bank's derivative counterparties.	Economic	842	1,228
Interest rate caps and floors	To provide interest rate caps (floors) to members and to offset these interest rate caps (floors) by executing interest rate caps (floors) with the Bank's derivative counterparties.	Economic	80	541
Other				
Pay floating, receive fixed or pay fixed, receive floating interest rate swaps	To hedge risks to the Bank's earnings that are not directly linked to specific assets, liabilities or forecasted transactions	Economic	925	425
Total derivatives used to hedge risk			54,911	49,090
Mortgage delivery commitments			32	12
Total notional amount of derivatives			$ 54,943	$ 49,102

Certain derivative transactions that the Bank enters into are required to be cleared through a third-party central clearinghouse. As of December 31, 2019, the Bank had cleared trades outstanding with notional amounts totaling $34 billion. Cleared trades are subject to initial and variation margin requirements established by the clearinghouse and its clearing members. Collateral (or variation margin on daily settled derivative contracts) is typically delivered/paid (or returned/received) daily and, unlike bilateral derivatives, is not subject to any maximum unsecured credit exposure thresholds. The fair values of all interest rate derivatives (including accrued interest receivables and payables) with each clearing member of each clearinghouse are offset for purposes of measuring credit exposure and determining initial and variation margin requirements. With cleared transactions, the Bank is exposed to credit risk in the event that the clearinghouse or the clearing member fails to meet its obligations to the Bank. The Bank has determined that the exercise by a non-defaulting party of the setoff rights incorporated in its cleared derivative transactions should be upheld in the event of a default, including a bankruptcy, insolvency or similar proceeding involving the clearinghouse or any of its clearing members or both.

The Bank has transacted some of its interest rate exchange agreements bilaterally with large financial institutions (with which it has in place master agreements). In doing so, the Bank has generally exchanged a defined market risk for the risk that the counterparty will not be able to fulfill its obligations in the future. The Bank manages this credit risk by spreading its transactions among as many highly rated counterparties as is practicable, by entering into master agreements with each of its non-member bilateral counterparties that include maximum unsecured credit exposure amounts ranging from $50,000 to $500,000, and by monitoring its exposure to each counterparty on a daily basis. In addition, all of the Bank’s master agreements with its bilateral counterparties include netting arrangements whereby the fair values of all interest rate derivatives (including accrued interest receivables and payables) with each counterparty are offset for purposes of measuring credit exposure. As of December 31, 2019, the notional balance of outstanding interest rate exchange agreements transacted with non-member bilateral counterparties totaled $21 billion.

Under the Bank’s master agreements with its non-member bilateral counterparties, the unsecured credit exposure thresholds must be met before collateral is required to be delivered by one party to the other party. Once the counterparties agree to the valuations of the interest rate exchange agreements, and if it is determined that the unsecured credit exposure exceeds the threshold, then, upon a request made by the unsecured counterparty, the party that has the unsecured obligation to the counterparty bearing the risk of the unsecured credit exposure generally must deliver sufficient collateral (or return a sufficient amount of previously remitted collateral) to reduce the unsecured credit exposure to zero (or, in the case of pledged securities, to an amount equal to the discount applied to the securities under the terms of the master agreement). Collateral is delivered (or returned) daily when these thresholds are met. The master agreements with the Bank's non-member bilateral counterparties require the delivery of collateral consisting of cash or very liquid, highly rated securities (generally consisting of U.S. government-guaranteed or agency debt securities) if credit risk exposures rise above the thresholds.

The notional amount of interest rate exchange agreements does not reflect the Bank's credit risk exposure, which is much less than the notional amount. The Bank's net credit risk exposure is based on the current estimated cost, on a present value basis, of replacing at current market rates all interest rate exchange agreements with individual counterparties, if those counterparties were to default, after taking into account the value of any cash and/or securities collateral held or remitted by the Bank. For counterparties with which the Bank is in a net gain position, the Bank has credit exposure when the collateral it is holding (if any) has a value less than the amount of the gain. For counterparties with which the Bank is in a net loss position, the Bank has credit exposure when it has delivered collateral with a value greater than the amount of the loss position.

As of December 31, 2019, cash collateral totaling $157 million had been delivered by the Bank to its non-member bilateral derivative counterparties and the Bank held $3 million of cash collateral received from its non-member bilateral derivative counterparties under the terms of the collateral exchange agreements. At that date, the Bank had pledged $842 million (fair value) of securities to satisfy initial margin requirements associated with its cleared derivatives. In addition, as of December 31, 2019, the Bank had paid $615 million in variation margin to settle its cleared derivatives with one clearinghouse and the Bank had received $57 million in variation margin to settle its cleared derivatives with its other clearinghouse counterparty.

The following table provides information regarding the Bank's derivative counterparty credit exposure as of December 31, 2019.

DERIVATIVES COUNTERPARTY CREDIT EXPOSURE
(dollars in millions)

Credit Rating[1]	Number of Bilateral Counterparties	Notional Principal[2]	Net Derivatives Fair Value Before Collateral	Cash Collateral Pledged To (From) Counterparty	Other Collateral Pledged To Counterparty	Net Credit Exposure
Non-member counterparties						
Asset positions with credit exposure						
Double-A	2	$ 95.0	$ 0.6	$ (0.4)	$ —	$ 0.2
Single-A[3]	1	693.2	0.1	0.4	—	0.5
Cleared derivatives [4]	—	33,706.7	29.5	—	842.3	871.8
Liability positions with credit exposure						
Single-A	3	4,107.4	(18.3)	19.3	—	1.0
Triple-B	3	6,403.0	(98.7)	103.4	—	4.7
Total derivative positions with non-member counterparties to which the Bank had credit exposure	9	45,005.3	(86.8)	122.7	842.3	878.2
Asset positions without credit exposure	4	1,299.8	2.2	(3.0)	—	—
Liability positions without credit exposure	8	8,145.3	(36.5)	33.8	—	—
Total non-member counterparties	21	54,450.4	(121.1)	$ 153.5	$ 842.3	$ 878.2
Member institutions						
Interest rate exchange agreements [5]						
Asset positions	6	63.5	5.2			
Liability positions	2	397.5	(0.3)			
Mortgage delivery commitments	—	31.8	0.1			
Total member institutions	8	492.8	5.0			
Total	29	$ 54,943.2	$ (116.1)			

(1) Credit ratings shown in the table reflect the lowest rating from Moody's or S&P and are as of December 31, 2019.

(2) Includes amounts that had not settled as of December 31, 2019.

(3) The figures for the asset position with credit exposure to the counterparty rated single-A consisted of transactions with an entity that is affiliated with a member institution.

(4) Cleared derivatives with an aggregate notional principal balance of $9.4 billion were transacted with a clearinghouse rated double-A and cleared derivatives with an aggregate notional principal balance of $24.3 billion were transacted with a clearinghouse rated single-A.

(5) This product offering and the collateral provisions associated therewith are discussed in the paragraph below.

The Bank offers interest rate swaps, caps and floors to its members to assist them in meeting their risk management objectives. In derivative transactions with its members, the Bank acts as an intermediary by entering into an interest rate exchange agreement with the member and then entering into an offsetting interest rate exchange agreement with one of the Bank's non-member derivative counterparties discussed above. When entering into interest rate exchange agreements with its members, the Bank requires the member to post eligible collateral in an amount equal to the sum of the net market value of the member's derivative transactions with the Bank (if the value is positive to the Bank) plus a percentage of the notional amount of any interest rate swaps, with market values determined on at least a monthly basis. Eligible collateral for derivative transactions consists of collateral that is eligible to secure advances and other obligations under the member's Advances and Security Agreement with the Bank (for a description of eligible collateral, see Item 1. Business — Products and Services – Advances).

The Dodd-Frank Act changed the regulatory framework for derivative transactions that are not subject to mandatory clearing requirements (uncleared trades). While the Bank expects to be able in certain instances to continue to enter into uncleared trades on a bilateral basis, those transactions will be subject to new regulatory requirements, including initial margin requirements imposed by regulators. For additional discussion, see Item 1. Business - Legislative and Regulatory Developments.

Market Value of Equity

The ratio of the Bank's estimated market value of equity to its book value of equity was 100 percent at both December 31, 2019 and 2018. For additional discussion, see Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

Potential LIBOR Phase-Out

As discussed in "Item 1A — Risk Factors," LIBOR may cease to be available after December 31, 2021. Consequently, the Bank has begun preparing for this possibility and the associated transition to an alternative reference rate (e.g., SOFR). Among other things, a permanent discontinuation of LIBOR will necessitate fallback language in derivative contracts extending past 2021 that reference LIBOR, as well as changes in the Bank's risk management practices. In response to the potential cessation of LIBOR, the Bank is no longer offering LIBOR-indexed advances with maturities after December 31, 2021, nor is it issuing LIBOR-indexed consolidated obligations with maturities after that date. In response to the Finance Agency's supervisory letter discussed in the section entitled "Legislative and Regulatory Developments" on page 16, the Bank (after December 31, 2019) no longer purchases LIBOR-indexed investments which mature after December 31, 2021 (nor does it purchase fixed rate investments which mature after that date that are hedged with LIBOR-indexed derivatives). By June 30, 2020 (or, for certain financial instruments with embedded options, March 31, 2020), the Bank will no longer issue, make, purchase or otherwise enter into financial liabilities, other derivatives or other assets that reference LIBOR and which mature after December 31, 2021.

The following table presents the Bank's LIBOR-indexed financial instruments by contractual maturity at December 31, 2019. Some of the Bank's derivatives contain call options which, if exercised, could result in earlier terminations.

LIBOR-INDEXED FINANCIAL INSTRUMENTS

(par/notional value, in millions)

	2020	2021	Thereafter	Total
Instruments with receipts indexed to LIBOR				
Advances (par value)	$ 525	$ 150	$ —	$ 675
Investments (par value)				
Non-MBS	—	—	41	41
MBS	—	—	1,108	1,108
LIBOR-indexed derivatives notional amount (receive leg)				
Cleared	1,444	1,489	17,996	20,929
Uncleared	843	709	6,635	8,187
Total par/notional amount	$ 2,812	$ 2,348	$ 25,780	$ 30,940
Instruments with payments indexed to LIBOR				
Consolidated obligations (par value)	$ 3,110	$ —	$ —	$ 3,110
LIBOR-indexed derivatives notional amount (pay leg)				
Cleared	3,410	1,800	2,968	8,178
Uncleared	4,720	2,059	6,588	13,367
Total par/notional amount	$ 11,240	$ 3,859	$ 9,556	$ 24,655

At December 31, 2019, the Bank had outstanding standby bond purchase agreements totaling $484.9 million which expire in 2022, 2023 and 2024. Under the terms of these agreements, the Bank could be required to purchase and hold the subject bonds for a period of time. If this were to occur, the Bank would earn interest on the bonds at specified rates indexed to the greater of one-month LIBOR or the Federal Funds rate. For further discussion of these standby bond purchase agreements, see "Item 1. Financial Statements" (specifically, Note 17 on page F-52 of this report).

Results of Operations

Net Income

Net income for 2019, 2018 and 2017 was $227.3 million, $198.8 million and $150.3 million, respectively. The Bank's net income for 2019 represented a return on average capital stock ("ROCS") of 8.90 percent. In comparison, the Bank's ROCS was 7.86 percent in 2018 and 7.04 percent in 2017. To derive the Bank's ROCS, net income is divided by average capital stock outstanding excluding stock that is classified as mandatorily redeemable capital stock. The factors contributing to the changes in the Bank's net income from 2019 to 2018 are discussed below. The factors contributing to the changes in the Bank's net income from 2018 to 2017 are discussed in the 2018 10-K.

While the Bank is exempt from all federal, state and local income taxes, it is obligated to set aside 10 percent of its income before assessments (adjusted for interest expense on mandatorily redeemable capital stock) for its AHP. The AHP provides grants that members can use to support affordable housing projects in their communities. Generally, the Bank's AHP assessment is derived by adding interest expense on mandatorily redeemable capital stock to income before assessments; the result of this calculation is then multiplied by 10 percent. For the years ended December 31, 2019 and 2018, the Bank's AHP assessments totaled $25.3 million and $22.1 million, respectively. In each of these years, the effective assessment rate closely approximated 10 percent. Because interest expense on mandatorily redeemable capital stock is not deductible for purposes of computing the Bank's AHP assessment, the effective assessment rate could exceed 10 percent in future periods.

Income Before Assessments

During 2019 and 2018, the Bank's income before assessments was $252.5 million and $220.9 million, respectively. The $31.6 million increase in income before assessments for 2019 as compared to 2018 was attributable to a $54.3 million increase in other income offset by a $17.3 million decrease in net interest income after provision for mortgage loan losses and a $5.4 million increase in other expenses. The components of income before assessments (net interest income after provision for loan losses, other income and other expense) are discussed in more detail in the following sections.

Net Interest Income After Provision for Mortgage Loan Losses

In 2019 and 2018, the Bank's net interest income after provision for mortgage loan losses was $293.2 million and $310.5 million, respectively. The decrease in net interest income after provision for mortgage loan losses from 2018 to 2019 was due primarily to the accounting change discussed below, the impact of which reduced net interest income by $17.9 million during the year ended December 31, 2019, offset in part by an increase in the average balances of the Bank's interest-earning assets and an increase in the impact of the Bank's non-interest bearing funds. The Bank's average balance of interest-earning assets increased from $67.8 billion in 2018 to $71.1 billion in 2019.

The Bank's net interest margin decreased from 45 basis points in 2018 to 41 basis points in 2019. Net interest margin, or net interest income as a percentage of average earning assets, is a function of net interest spread and the rates of return on assets funded by the investment of the Bank's capital. Net interest spread is the difference between the yield on interest-earning assets and the cost of interest-bearing liabilities.

The Bank's net interest spread was 28 basis points in 2019 as compared to 34 basis points in 2018. The decline in the Bank's net interest spread was due in part to the adoption of Accounting Standards Update ("ASU") 2017-12, *"Targeted Improvements to Accounting for Hedging Activities"* ("ASU 2017-12") on January 1, 2019. As discussed in Note 2 to the Bank's financial statements beginning on page F-16 of this report, ASU 2017-12 requires that, for fair value hedges, the entire change in the fair value of the hedging instrument included in the assessment of hedge effectiveness along with the changes in the fair value of the hedged item attributable to the hedged risk be presented in the same income statement line that is used to present the earnings effect of the hedged item. For the year ended December 31, 2019, the amounts reported in net interest income, which would have been reported in other income (loss) in the absence of the new guidance, increased interest income on advances and interest expense on consolidated obligations by $417,000 and $134,000, respectively, and reduced interest income on available-for-sale securities by $18,192,000. The remaining decrease in the net interest spread for 2019 as compared to 2018 was due in large part to an increase in the cost of the Bank's debt.

Due to an increase in average short-term interest rates in 2019 relative to 2018, the contribution of the Bank's invested capital to the net interest margin (the impact of non-interest bearing funds) increased to 13 basis points in 2019 as compared to 11 basis points in 2018.

Table of Contents

The following table presents average balance sheet amounts together with the total dollar amounts of interest income and expense and the weighted average interest rates of major earning asset categories and the funding sources for those earning assets for 2019, 2018 and 2017.

YIELD AND SPREAD ANALYSIS

(dollars in millions)

	For the year ended December 31,								
	2019			2018			2017		
	Average Balance	Interest Income/ Expense	Average Rate[a]	Average Balance	Interest Income/ Expense	Average Rate[a]	Average Balance	Interest Income/ Expense	Average Rate[a]
Assets									
Interest-bearing deposits [b]	$ 1,628	$ 37	2.27%	$ 1,036	$ 22	2.18%	$ 220	$ 2	0.97%
Securities purchased under agreements to resell	3,680	87	2.37%	3,383	68	2.01%	639	8	1.17%
Federal funds sold [c]	2,618	58	2.23%	4,968	89	1.79%	7,923	83	1.04%
Investments									
Trading	4,984	101	2.02%	874	19	2.23%	114	2	2.03%
Available-for-sale [d]	16,363	465	2.84%	14,841	418	2.82%	14,057	239	1.70%
Held-to-maturity [d]	1,330	38	2.83%	1,754	45	2.56%	2,240	37	1.62%
Advances [e]	37,348	909	2.43%	39,560	832	2.10%	35,109	423	1.21%
Mortgage loans held for portfolio	3,102	111	3.58%	1,420	54	3.77%	406	15	3.70%
Total earning assets	71,053	1,806	2.54%	67,836	1,547	2.28%	60,708	809	1.33%
Cash and due from banks	54			40			38		
Other assets	273			194			215		
Derivatives netting adjustment [b]	(177)			(220)			(266)		
Fair value adjustment on available-for-sale securities [d]	130			237			128		
Adjustment for net non-credit portion of other-than-temporary impairments on held-to-maturity securities [d]	(10)			(12)			(15)		
Total assets	$ 71,323	1,806	2.53%	$ 68,075	1,547	2.27%	$ 60,808	809	1.33%
Liabilities and Capital									
Interest-bearing deposits [b] [f]	$ 983	20	2.05%	$ 862	15	1.75%	$ 1,070	9	0.89%
Consolidated obligations									
Bonds	30,800	711	2.31%	32,682	660	2.02%	30,127	328	1.09%
Discount notes	34,961	781	2.23%	30,278	561	1.85%	26,132	234	0.89%
Mandatorily redeemable capital stock and other borrowings	12	—	2.52%	9	—	1.94%	22	—	0.96%
Total interest-bearing liabilities	66,756	1,512	2.26%	63,831	1,236	1.94%	57,351	571	1.00%
Other liabilities	927			654			558		
Derivatives netting adjustment [b]	(177)			(220)			(266)		
Total liabilities	67,506	1,512	2.24%	64,265	1,236	1.92%	57,643	571	0.99%
Total capital	3,817			3,810			3,165		
Total liabilities and capital	$ 71,323		2.12%	$ 68,075		1.82%	$ 60,808		0.94%
Net interest income		$ 294			$ 311			$ 238	
Net interest margin			0.41%			0.45%			0.39%
Net interest spread			0.28%			0.34%			0.33%
Impact of non-interest bearing funds			0.13%			0.11%			0.06%

(a) Amounts used to calculate average rates are based on whole dollars. Accordingly, recalculations based upon the disclosed amounts (millions) may not produce the same results.

(b) The Bank offsets the fair value amounts recognized for the right to reclaim cash collateral or the obligation to return cash collateral against the fair value amounts recognized for derivative instruments transacted under a master netting agreement or other similar arrangement. The average balances of interest-bearing deposit assets for the years ended December 31, 2019, 2018 and 2017 in the table above include $167 million, $202 million and $220 million, respectively, which are classified as derivative assets/liabilities on the statements of condition. In addition, the average balances of interest-bearing deposit liabilities for the years ended December 31, 2019, 2018 and 2017 in the table above include $11 million, $18 million and $46 million, respectively, which are classified as derivative assets/liabilities on the statements of condition.

(c) Includes overnight federal funds sold to other FHLBanks.

(d) Average balances for available-for-sale and held-to-maturity securities are calculated based upon amortized cost.

(e) Interest income and average rates include net prepayment fees on advances.

(f) Average balances of deposits for the years ended December 31, 2019, 2018 and 2017 include time deposits of $102 million, $110 million and $267 million, respectively. The remaining balances are substantially comprised of interest-bearing demand deposits. During the years ended December 31, 2019, 2018 and 2017, interest was paid on time deposits at average rates of 2.34 percent, 1.88 percent and 0.88 percent, respectively.

Rate and Volume Analysis

Changes in both volume (i.e., average balances) and interest rates influence changes in net interest income and net interest margin. The following table summarizes changes in interest income and interest expense between 2019 and 2018 and between 2018 and 2017. Changes in interest income and interest expense that cannot be attributed to either volume or rate have been allocated to the volume and rate categories based upon the proportion of the absolute value of the volume and rate changes.

RATE AND VOLUME ANALYSIS
(in millions)

	2019 vs. 2018 Increase (Decrease) Due To			2018 vs. 2017 Increase (Decrease) Due To		
	Volume	Rate	Total	Volume	Rate	Total
Interest income						
Interest-bearing deposits	$ 14	$ 1	$ 15	$ 15	$ 5	$ 20
Securities purchased under agreements to resell	6	13	19	51	9	60
Federal funds sold	(57)	26	(31)	(39)	45	6
Investments						
Trading	83	(1)	82	17	—	17
Available-for-sale	43	4	47	14	165	179
Held-to-maturity	(12)	5	(7)	(10)	18	8
Advances	(48)	125	77	59	350	409
Mortgage loans held for portfolio	60	(3)	57	39	—	39
Total interest income	89	170	259	146	592	738
Interest expense						
Interest-bearing deposits	2	3	5	(2)	8	6
Consolidated obligations						
Bonds	(40)	91	51	30	302	332
Discount notes	94	126	220	42	285	327
Mandatorily redeemable capital stock and other borrowings	—	—	—	—	—	—
Total interest expense	56	220	276	70	595	665
Changes in net interest income	$ 33	$ (50)	$ (17)	$ 76	$ (3)	$ 73

Other Income (Loss)

The following table presents the various components of other income (loss) for the years ended December 31, 2019, 2018 and 2017.

OTHER INCOME (LOSS)
(in thousands)

	2019	2018	2017
Net interest income (expense) associated with:			
Economic hedge derivatives related to consolidated obligation bonds	$ (3)	$ 170	$ —
Economic hedge derivatives related to consolidated obligation discount notes	(249)	—	(503)
Interest rate basis swaps	—	—	385
Member/offsetting derivatives	207	339	405
Economic hedge derivatives related to advances	522	47	(2)
Economic hedge derivatives related to trading securities	(163)	(366)	—
Economic hedge derivatives related to available-for-sale securities	(150)	(4)	(15)
Economic hedge derivatives related to mortgage loans held for portfolio	(1,196)	(133)	(37)
Other stand-alone economic hedge derivatives	(2,382)	(1,442)	1,302
Total net interest income (expense) associated with economic hedge derivatives	(3,414)	(1,389)	1,535
Gains (losses) related to economic hedge derivatives			
Interest rate swaps			
Advances	(523)	(17)	(10)
Available-for-sale securities	(16)	50	(1,264)
Trading securities	(1,488)	(330)	—
Mortgage loans held for portfolio	4,822	173	143
Consolidated obligation bonds	(1)	(171)	26
Consolidated obligation discount notes	(61)	—	317
Interest rate basis swaps	—	—	186
Other stand-alone economic hedge derivatives	25,553	(2,326)	968
Interest rate swaptions related to mortgage loans held for portfolio	(2,728)	(239)	—
Mortgage delivery commitments	2,097	1,912	2,329
Interest rate caps related to held-to-maturity securities	(6)	1	(255)
Member/offsetting derivatives	214	150	3,364
Total fair value gains (losses) related to economic hedge derivatives	27,863	(797)	5,804
Price alignment amount on daily settled derivative contracts	238	(9,892)	765
Gains (losses) related to fair value hedge ineffectiveness			
Advances and associated hedges	—	(12)	235
Available-for-sale securities and associated hedges	—	6,482	(5,758)
Consolidated obligation bonds and associated hedges	—	(4,648)	2,087
Total fair value hedge ineffectiveness	—	1,822	(3,436)
Total net gains (losses) on derivatives and hedging activities	24,687	(10,256)	4,668
Net gains (losses) on trading securities	12,860	(1,149)	1,822
Net gains (losses) on other assets carried at fair value	1,964	(746)	—
Realized gains on sales of held-to-maturity securities	—	1,671	3,983
Net realized gains on sales of available-for-sale securities	852	—	1,399
Service fees	2,590	2,252	2,262
Letter of credit fees	12,437	9,268	7,701
Other, net	930	921	648
Total other	31,633	12,217	17,815
Total other income	$ 56,320	$ 1,961	$ 22,483

Fair Value Hedge Ineffectiveness

The Bank uses interest rate swaps to hedge the risk of changes in the fair value of some of its advances and consolidated obligation bonds and, currently, all of its available-for-sale securities. These hedging relationships are designated as fair value hedges. To the extent these relationships qualify for hedge accounting, changes in the fair values of both the derivative (the interest rate swap) and the hedged item (limited to changes attributable to the hedged risk) are recorded in earnings. Prior to January 1, 2019, these amounts were recorded in other income (loss) as net gains (losses) on derivatives and hedging activities. Effective January 1, 2019, these amounts are recorded in net interest income in the same income statement line that is used to present the earnings effect of the hedged item. For those relationships that qualified for hedge accounting, the differences between the change in fair value of the hedged items and the change in fair value of the associated interest rate swaps (representing hedge ineffectiveness) were net gains (losses) of $(24.7) million and $1.8 million in 2019 and 2018, respectively. To the extent that the Bank's fair value hedging relationships do not qualify for hedge accounting, or cease to qualify because they are determined to be ineffective, only the change in fair value of the derivative is recorded in earnings as net net gains (losses) on derivatives and hedging activities (in this case, there is no offsetting change in fair value of the hedged item). The net gains (losses) on derivatives associated with specific advances, available-for-sale securities and consolidated obligation bonds that did not qualify for hedge accounting, or ceased to qualify because they were determined to be ineffective, totaled $(0.5) million and $(0.1) million in 2019 and 2018, respectively.

The higher yielding, longer duration fixed-rate GSE CMBS and GSE debentures held in the Bank’s available-for-sale securities portfolio (all of which have been hedged with fixed-for-floating interest rate swaps in long-haul hedging relationships) expose the Bank to periodic earnings variability in the form of fair value hedge ineffectiveness. The hedge ineffectiveness gains and losses associated with these particular relationships are attributable in large part to the use of different discount curves to value the interest rate swaps (the overnight index swap or "OIS" curve) and the GSE CMBS/GSE debentures (LIBOR plus a constant spread). Notwithstanding the hedge ineffectiveness gains and losses, these hedging relationships have been, and are expected to continue to be, highly effective in achieving offsetting changes in fair values attributable to the hedged risk. While the ineffectiveness-related gains and losses associated with these hedging relationships can be significant when evaluated in the context of the Bank’s net income, they are relatively small when expressed as a percentage of the values of the positions. Because the Bank expects to hold these interest rate swaps to maturity, the unrealized ineffectiveness-related gains (or losses) associated with its holdings of GSE CMBS and GSE debentures are expected to be transitory, meaning that they will reverse in future periods in the form of ineffectiveness-related losses (or gains).

Economic Hedge Derivatives

Notwithstanding the transitory nature of the ineffectiveness-related gains and losses associated with the Bank's available-for-sale securities portfolio (discussed above), the Bank has entered into several derivative transactions in an effort to mitigate a portion of the periodic earnings variability that can result from those fair value hedging relationships. At December 31, 2019 and 2018, the notional balance of these derivatives totaled $425 million. For the years ended December 31, 2019 and 2018, the gains (losses) associated with these stand-alone economic hedge derivatives were $25.6 million and $(2.3) million, respectively.

The Bank has invested in residential mortgage loans. A portion of the interest rate and prepayment risk associated with the Bank's mortgage loan portfolio is managed through the use of interest rate swaps and swaptions. The net change in the fair values of these interest rate swaps and swaptions was $2.1 million and $(0.1) million for the years ended December 31, 2019 and 2018, respectively. In addition, the Bank enters into delivery commitments associated with the purchase of the mortgage loans. The fair value changes associated with mortgage delivery commitments (representing net unrealized gains from the commitment date to the settlement date) were $2.1 million and $1.9 million for the years ended December 31, 2019 and 2018, respectively.

As discussed previously in the section entitled “Financial Condition — Derivatives and Hedging Activities," the Bank offers interest rate swaps, caps and floors to its members to assist them in meeting their risk management objectives. In derivative transactions with its members, the Bank acts as an intermediary by entering into an interest rate exchange agreement with the member and then entering into an offsetting interest rate exchange agreement with one of the Bank’s non-member derivative counterparties. The net change in the fair values of derivatives transacted with members and the offsetting derivatives was $0.2 million for both the years ended December 31, 2019 and 2018.

Price Alignment Amount

Effective January 3, 2017, one of the Bank's two clearinghouse counterparties made certain amendments to its rulebook that changed the legal characterization of variation margin payments on cleared derivatives to settlements on the contracts. Effective January 16, 2018, the Bank's other clearinghouse counterparty made similar amendments to its rulebook. Prior to the dates upon which these amendments became effective, the variation margin payments were in each case characterized as collateral pledged to secure outstanding credit exposure on the derivative contracts. The Bank receives or pays a price alignment amount on the cumulative variation margin payments associated with these contracts. The price alignment amount approximates the amount of interest the Bank would have received or paid had the variation margin payments continued to be characterized as collateral. Prior to January 1, 2019, the price alignment amount was recorded in other income (loss) as gains (losses) on derivatives and hedging activities. Effective January 1, 2019, the price alignment amount associated with derivatives in qualifying fair value hedging relationships is recorded in net interest income in the same income statement line that is used to present the earnings effect of the hedged item. The allocated price alignment amount increased net interest income by $6.8 million for the year ended December 31, 2019.

Other

During the year ended December 31, 2019, the Bank sold available-for-sale securities with an amortized cost of $510.3 million. Proceeds from the sales totaled $511.2 million, resulting in realized gains of $0.9 million. During the year ended December 31, 2018 , the Bank sold approximately $99 million of GSE RMBS classified as held-to-maturity securities. The aggregate gains recognized on these sales totaled $1.7 million. For each of the held-to-maturity securities, the Bank had previously collected at least 85 percent of the principal outstanding at the time of acquisition. As such, the sales were considered maturities for purposes of security classification. The Bank did not sell any other securities classified as held-to-maturity or available-for-sale during the years ended December 31, 2019 or 2018.

During the years ended December 31, 2019 and 2018, the Bank held from time to time U.S. Treasury Bills and U.S. Treasury Notes, all of which were classified as trading securities. Due to fluctuations in interest rates, the aggregate gains (losses) on these securities were $12.9 million and $(1.1) million for the years ended December 31, 2019 and 2018, respectively. The Bank occasionally hedges the risk of changes in the fair value of some of its U.S. Treasury Notes. For the years ended December 31, 2019 and 2018, the gains (losses) associated with these stand-alone derivatives were $(1.5) million and $(0.3) million, respectively.

The Bank has a small balance of marketable equity securities consisting solely of mutual fund investments associated with its non-qualified deferred compensation plans. These securities are carried at fair value and included in other assets on the statements of condition. The fair value gains (losses) on these securities totaled $2.0 million and $(0.7) million for the years ended December 31, 2019 and 2018, respectively. The gains or losses on the securities are offset by a corresponding increase or decrease in amounts owed to participants in the deferred compensation plans, the expense for which is recorded in compensation and benefits expense (in the case of employees) or other operating expenses (in the case of directors).

For the years ended December 31, 2019 and 2018, letter of credit fees totaled $12.4 million and $9.3 million, respectively. The increase in letter of credit fees from 2018 to 2019 was due to an increase in the amount of letters of credit outstanding. At December 31, 2019 and 2018, outstanding letters of credit totaled $21.8 billion and $18.5 billion, respectively.

Other Expense

Total other expense, which includes the Bank’s compensation and benefits, other operating expenses, discretionary grants and donations, derivative clearing fees and its proportionate share of the costs of operating the Finance Agency and the Office of Finance, totaled $97.0 million and $91.6 million in 2019 and 2018, respectively.

Compensation and benefits totaled $50.0 million for 2019, compared to $48.4 million for 2018. The $1.6 million increase in compensation and benefits for the year ended December 31, 2019, as compared to the year ended December 31, 2018, was due largely to an increase in the amounts due to participants in the Bank's deferred compensation plans due to a net increase in the value of the investments associated with those plans in 2019, as compared to a net decrease in the value of the investments in 2018. The offsetting gain or loss in the market value of the investments is included in other income (loss). The Bank's average headcount was 200 employees in both 2019 and 2018. At December 31, 2019, the Bank employed 203 people, an increase of 6 employees from December 31, 2018 when it employed 197 people.

Other operating expenses for the years ended December 31, 2019 and 2018 were $36.1 million and $32.0 million, respectively. The $4.1 million increase in other operating expenses from 2018 to 2019 resulted primarily from higher transaction services fees associated with the Bank's mortgage loan program (due to higher mortgage loan balances), software costs and safekeeping costs. The transaction services fees are paid to the FHLBank of Chicago as compensation for administering the MPF Program.

Discretionary grants and donations were $0.5 million and $2.0 million for the years ended December 31, 2019 and 2018, respectively. Discretionary grants and donations for the year ended December 31, 2018 were substantially comprised of grants and donations that were made to support recovery efforts in the areas impacted by Hurricane Harvey, as well as Economic Development Program (EDP) Plus grants, neither of which reoccurred in 2019. Beginning in January 2019, the Bank no longer offers EDP Plus grants.

Derivative clearing fees for the years ended December 31, 2019 and 2018 were $1.3 million and $1.2 million, respectively.

The Bank, together with the other FHLBanks, is assessed for the costs of operating the Office of Finance and a portion of the costs of operating the Finance Agency. The Bank’s allocated share of the Office of Finance's expenses totaled $4.3 million and

$4.0 million in 2019 and 2018, respectively. In these years, the Bank's allocated share of the Finance Agency's expenses totaled $4.8 million and $3.9 million, respectively.

Liquidity and Capital Resources

In order to meet members' credit needs and the Bank's financial obligations, the Bank maintains a portfolio of money market instruments typically consisting of overnight federal funds, overnight reverse repurchase agreements and, beginning in mid-2018, overnight interest-bearing deposits, U.S. Treasury Bills and U.S. Treasury Notes. From time to time, the Bank may also invest in short-term commercial paper and GSE discount notes. Beyond those amounts that are required to meet members' credit needs and its own obligations, the Bank typically holds additional balances of short-term investments that fluctuate as the Bank invests the proceeds of debt issued to replace maturing and called liabilities, as the balance of deposits changes, as the returns provided by short-term investments vary relative to the costs of the Bank's discount notes, and as the level of liquidity needed to satisfy Finance Agency requirements changes. At December 31, 2019, the Bank's short-term liquidity portfolio was comprised of $4.5 billion of overnight federal funds sold, $4.4 billion of U.S. Treasury Notes, $4.3 billion of overnight reverse repurchase agreements, $1.7 billion of overnight interest-bearing deposits and $0.9 billion of U.S. Treasury Bills.

The Bank's primary source of funds is the proceeds it receives from the issuance of consolidated obligation bonds and discount notes in the capital markets. Historically, the FHLBanks have issued debt throughout the business day in the form of discount notes and bonds with a wide variety of maturities and structures. Generally, the Bank has access to the capital markets as needed during the business day to acquire funds to meet its needs.

In addition to the liquidity provided from the proceeds of the issuance of consolidated obligations, the Bank also maintains access to wholesale funding sources such as federal funds purchased and securities sold under agreements to repurchase (e.g., borrowings secured by its investments in MBS and/or agency debentures). Furthermore, the Bank has access to borrowings (typically short-term) from the other FHLBanks.

The 11 FHLBanks and the Office of Finance are parties to the Federal Home Loan Banks P&I Funding and Contingency Plan Agreement, as amended and restated effective January 1, 2017 (the "Contingency Agreement"). The Contingency Agreement and related procedures are designed to facilitate the timely funding of principal and interest payments on FHLBank System consolidated obligations in the event that a FHLBank is not able to meet its funding obligations in a timely manner. The Contingency Agreement and related procedures provide for the issuance of overnight consolidated obligations ("Plan COs") directly to one or more FHLBanks that provide funds to avoid a shortfall in the timely payment of principal and interest on any consolidated obligations for which another FHLBank is the primary obligor. The direct placement by a FHLBank of consolidated obligations with another FHLBank is permitted only in those instances when direct placement of consolidated obligations is necessary to ensure that sufficient funds are available to timely pay all principal and interest on FHLBank System consolidated obligations due on a particular day. Through the date of this report, no Plan COs have ever been issued pursuant to the terms of the Contingency Agreement.

On occasion, and as an alternative to issuing new debt, the Bank may assume the outstanding consolidated obligations for which other FHLBanks are the original primary obligors. This occurs in cases where the original primary obligor may have participated in a large consolidated obligation issue to an extent that exceeded its immediate funding needs in order to facilitate better market execution for the issue. The original primary obligor might then warehouse the funds until they were needed or make the funds available to other FHLBanks. Transfers may also occur when the original primary obligor's funding needs change, and that FHLBank offers to transfer debt that is no longer needed to other FHLBanks. Transferred debt is typically fixed-rate, fixed-term, non-callable debt, and may be in the form of discount notes or bonds. The Bank did not assume any consolidated obligations from other FHLBanks during the years ended December 31, 2019 or 2018.

Through March 30, 2019, the Bank was required, pursuant to guidance issued by the Finance Agency, to meet two daily liquidity standards, each of which assumed that the Bank was unable to access the market for consolidated obligations during a prescribed period. The first standard required the Bank to maintain sufficient funds to meet its obligations for 15 days under a scenario in which it was assumed that members did not renew any maturing, prepaid or called advances. The second standard required the Bank to maintain sufficient funds to meet its obligations for 5 days under a scenario in which it was assumed that members renewed all maturing and called advances, with certain exceptions for very large, highly rated members. The Bank was in compliance with both of these liquidity requirements at all times during the year ended December 31, 2018 and the period from January 1, 2019 through March 30, 2019.

Beginning on March 31, 2019, the two liquidity standards discussed in the preceding paragraph were replaced by a single, more stringent requirement. On August 23, 2018, the Finance Agency issued an Advisory Bulletin and accompanying supervisory letter that, together, set forth the Finance Agency's expectations with respect to the maintenance of sufficient liquidity to enable the FHLBanks to provide advances and fund letters of credit during a sustained capital markets disruption. More specifically, the Advisory Bulletin (hereinafter referred to as the "Liquidity AB") sets forth the Finance Agency's expectations with respect to base case liquidity and funding gaps, among other things. The Liquidity AB sets forth ranges for the prescribed base case liquidity and funding gap measures and the supervisory letter identified the initial thresholds within those ranges that the Finance Agency believed were appropriate in light of then existing market conditions.

With respect to base case liquidity, the Bank is required to maintain a positive cash balance during a prescribed period of time ranging from 10 to 30 calendar days assuming no access to the market for consolidated obligations or other unsecured funding sources and the renewal of all advances that are scheduled to mature during the measurement period. Initially, the Finance Agency indicated that it would consider a FHLBank to have adequate reserves of liquid assets if, from March 31, 2019 through December 30, 2019, it maintained 10 calendar days or more of positive daily cash balances and if, on and after December 31, 2019, it maintained 20 calendar days or more of positive daily cash balances. The supervisory letter sets forth the cash flow assumptions to be used by the FHLBanks which include, among other things, a reserve for potential draws on standby letters of credit and the inclusion of uncommitted/unencumbered U.S. Treasury securities with a remaining maturity no greater than 10 years which are classified as trading or available-for-sale securities as a cash inflow one business day after measurement. Effective March 31, 2019, the Liquidity AB rescinded the 5-day and 15-day liquidity standards discussed above. The Bank was in compliance with the 10 calendar day requirement at all times during the period from March 31, 2019 through December 30, 2019 and it was in compliance with the 20 calendar day requirement on December 31, 2019.

Funding gaps measure the difference between a FHLBank's assets and liabilities that are scheduled to mature during a specified period, expressed as a percentage of the FHLBank's total assets. Depending on conditions in the financial markets, the Finance Agency believes (as stated in the Liquidity AB) that the FHLBanks should operate so as not to exceed a funding gap ratio between negative 10 percent and negative 20 percent for a three-month time horizon and between negative 25 percent and negative 35 percent for a one-year time horizon. These limits are designed to reduce the liquidity risks associated with a mismatch in a FHLBank's asset and liability maturities, including an undue reliance on short-term debt funding, which may increase a FHLBank's debt rollover risk. Initially, the Finance Agency indicated that it would consider a FHLBank to have adequate liquidity to address funding gap risks if, on and after December 31, 2018, the FHLBank maintained a funding gap ratio of negative 15 percent or better for the three-month time horizon and negative 30 percent or better for the one-year time horizon. For purposes of calculating the funding gap ratios, the FHLBanks may include estimates of expected cash inflows, including anticipated prepayments, for mortgage loans and mortgage-backed securities. In addition, uncommitted/unencumbered U.S. Treasury securities with a remaining maturity no greater than 10 years which are classified as trading securities are treated as maturing assets in the three-month time horizon regardless of maturity. The Bank was in compliance with these limits during the year ended December 31, 2019.

As a result of the recent deterioration in financial market conditions due to the COVID-19 outbreak, the Finance Agency temporarily revised its guidance with respect to base case liquidity and funding gaps. On March 3, 2020, the Finance Agency indicated that the FHLBanks should maintain no less than 10 calendar days of positive daily cash balances through April 30, 2020 and that the FHLBanks should then return to 20 calendar days or more of positive daily cash balances by September 30, 2020. On March 12, 2020, the Finance Agency increased (through July 30, 2020) the funding gap ratios for the three-month and one-year time horizons to negative 25 percent or better and negative 40 percent or better, respectively. By September 30, 2020, the funding gap ratios for the three-month and one-year time horizons should not exceed negative 20 percent and negative 35 percent, respectively. By December 31, 2019, the funding gap ratios should not exceed the limits that were in place prior to the COVID-19 outbreak.

The Bank's access to the capital markets has never been interrupted to an extent that the Bank's ability to meet its obligations was compromised and the Bank does not currently believe that its ability to issue consolidated obligations will be impeded to that extent in the future. If, however, the Bank were unable to issue consolidated obligations for an extended period of time, the Bank would eventually exhaust the availability of purchased federal funds (including borrowings from other FHLBanks) and repurchase agreements as sources of funds. It is also possible that an event (such as a natural disaster or a pandemic like COVID-19) that might impede the Bank's ability to raise funds by issuing consolidated obligations would also limit the Bank's ability to access the markets for federal funds purchased and/or repurchase agreements.

Under those circumstances, to the extent that the balance of principal and interest that came due on the Bank's debt obligations and the funds needed to pay its operating expenses exceeded the cash inflows from its interest-earning assets and proceeds from maturing assets, and if access to the market for consolidated obligations was not again available, the Bank would seek to access funding under the Contingency Agreement to repay any principal and interest due on its consolidated obligations. However, if the Bank were unable to raise funds by issuing consolidated obligations, it is likely that the other FHLBanks would have similar difficulties issuing debt. If funds were not available under the Contingency Agreement, the Bank's ability to conduct its operations would be compromised even earlier than if this funding source was available.

The following table summarizes the Bank's contractual cash obligations and off-balance-sheet lending-related financial commitments by due date or remaining maturity as of December 31, 2019.

CONTRACTUAL OBLIGATIONS
(in millions)

	Payments due by Period				
	< 1 Year	**1-3 Years**	**3-5 Years**	**> 5 Years**	**Total**
Long-term debt	$ 16,900.6	$ 10,118.6	$ 5,724.1	$ 2,941.0	$ 35,684.3
Mandatorily redeemable capital stock	0.2	0.4	6.5	—	7.1
Operating leases	0.5	0.9	0.7	1.4	3.5
Purchase obligations					
Advances	18.7	0.7	—	—	19.4
Mortgage delivery commitments	31.8	—	—	—	31.8
Pension and post-retirement	5.5	0.2	0.1	—	5.8
Total contractual obligations	$ 16,957.3	$ 10,120.8	$ 5,731.4	$ 2,942.4	$ 35,751.9

The table above excludes derivatives and obligations (other than consolidated obligation bonds) with contractual payments having an original maturity of one year or less. The distribution of long-term debt is based upon contractual maturities. The actual repayments of long-term debt could be impacted by factors affecting redemptions such as call options.

The above table presents the Bank's mandatorily redeemable capital stock by year of earliest mandatory redemption, which is the earliest time at which the Bank is required to repurchase the shareholder's capital stock. The earliest mandatory redemption date is based on the assumption that the advances and/or other extensions of credit associated with the activity-based stock will have matured or otherwise concluded by the time the notice of redemption or withdrawal expires. The Bank expects to repurchase activity-based stock as the associated advances and/or other extensions of credit are reduced, which may be before or after the expiration of the five-year redemption/withdrawal notice period.

In addition to the capital stock repurchase and redemption related events noted above, shareholders may, at any time, request the Bank to repurchase excess capital stock. Excess stock is defined as the amount of stock held by a member (or former member) in excess of that institution's minimum investment requirement (i.e., the amount of stock held in excess of its activity-based investment requirement and, in the case of a member, its membership investment requirement). Although the Bank is not obligated to repurchase excess stock prior to the expiration of a five-year redemption or withdrawal notification period, it will typically endeavor to honor such requests within a reasonable period of time (generally not exceeding 30 days) so long as the Bank will continue to meet its regulatory capital requirements following the repurchase. At December 31, 2019, excess stock held by the Bank's members and former members totaled $627.0 million, of which $2.1 million was classified as mandatorily redeemable.

Further, the Bank is contingently liable on letters of credit and standby bond purchase agreements totaling $21.8 billion and $484.9 million, respectively. Letters of credit expire as follows: $19.9 billion in 2020, $1.6 billion in 2021-2022, $0.2 billion in 2023-2024, with the remainder expiring in 2026. The standby bond purchase agreements expire as follows: $432.1 million in 2022-2023 and $52.8 million in 2024.

Risk-Based Capital Rules and Other Capital Requirements

The Bank is required to maintain at all times permanent capital in an amount at least equal to its risk-based capital requirement, which is the sum of its credit risk capital requirement, its market risk capital requirement, and its operations risk capital requirement, as further described below. Permanent capital is defined under the Finance Agency's rules as retained earnings and amounts paid in for Class B Stock (which, for the Bank, includes both Class B-1 Stock and Class B-2 Stock), regardless of its classification as equity or liabilities for financial reporting purposes, as further described above in the section entitled "Financial Condition – Capital Stock." For reasons of safety and soundness, the Finance Agency may require the Bank, or any other FHLBank, to maintain a greater amount of permanent capital than is required by the risk-based capital requirements as defined.

The Bank's credit risk capital requirement is determined by adding together the credit risk capital charges for advances, investments, mortgage loans, derivatives, other assets and off-balance-sheet commitment positions (e.g., outstanding letters of credit and commitments to fund advances). Among other things, these charges are computed based upon the credit risk percentages assigned to each item as required by Finance Agency rules, taking into account the time to maturity and credit ratings of certain of the items. These percentages are applied to the book value of assets or, in the case of off-balance-sheet commitments, to their balance sheet equivalents.

Prior to January 1, 2020, the Bank’s market risk capital requirement was determined by estimating the potential loss in market value of equity under a wide variety of market conditions and adding the amount, if any, by which the Bank’s market value of total capital was less than 85 percent of its book value of total capital. The potential loss component of the market risk capital requirement employed a “stress test” approach, using a 99-percent confidence level. Simulations of over 300 historical market interest rate scenarios dating back to January 1992 (using changes in interest rates and volatilities over each six-month period since that date) were generated and, under each scenario, the hypothetical impact on the Bank’s then current market value of equity was determined. The hypothetical impact associated with each historical scenario was calculated by simulating the effect of each set of rate and volatility conditions upon the Bank’s then current risk position, each of which reflected actual assets, liabilities, derivatives and off-balance-sheet commitment positions as of the measurement date. From the complete set of resulting simulated scenarios, the scenario resulting in the third worst estimated deterioration in market value of equity was identified as that scenario associated with a probability of occurrence of not more than one percent (i.e., the 99-percent confidence level). The hypothetical deterioration in market value of equity derived under the methodology described above typically represented the market risk component of the Bank’s regulatory risk-based capital requirement which, in conjunction with the credit risk and operations risk components, determined the Bank’s overall risk-based capital requirement.

The Bank’s operations risk capital requirement is equal to 30 percent of the sum of its credit risk capital requirement and its market risk capital requirement. At December 31, 2019, the Bank’s credit risk, market risk and operations risk capital requirements were $464 million, $214 million and $204 million, respectively. These requirements were $491 million, $401 million and $267 million, respectively, at December 31, 2018.

Effective January 1, 2020, the calculation of the Bank's risk-based capital requirement was modified pursuant to the Finance Agency's final rule on FHLBank capital requirements which was issued on February 20, 2019 (the "Final Capital Requirements Rule"), as supplemented by the guidance provided in Advisory Bulletin 2018-01, "Scenario Determination for Market Risk Models Used for Risk-Based Capital" ("AB 2018-01"). AB 2018-01, which modifies the Bank's market risk capital requirement, was issued on February 7, 2018 and became effective concurrent with the effective date of the Final Capital Requirements Rule. For additional discussion regarding the Final Capital Requirements Rule, see Item 1. Business - Legislative and Regulatory Developments. While the new requirements are expected to increase its risk-based capital requirement, the Bank does not expect that it will need to make any changes in its capital management practices in order to satisfy the modified risk-based capital requirement.

In addition to the risk-based capital requirement, the Bank is subject to two other capital requirements. First, the Bank must, at all times, maintain a minimum total capital-to-assets ratio of 4.0 percent. For this purpose, total capital is defined by Finance Agency rules and regulations as the Bank’s permanent capital and the amount of any general allowance for losses (i.e., those reserves that are not held against specific assets). Second, the Bank is required to maintain at all times a minimum leverage capital-to-assets ratio in an amount at least equal to 5.0 percent of its total assets. In applying this requirement to the Bank, leverage capital includes the Bank’s permanent capital multiplied by a factor of 1.5 plus the amount of any general allowance for losses. The Bank did not have any general reserves at December 31, 2019 or December 31, 2018. Under the regulatory definitions, total capital and permanent capital exclude accumulated other comprehensive income (loss). The Bank is required to submit monthly capital compliance reports to the Finance Agency. At all times during the years ended December 31, 2019 and 2018, the Bank was in compliance with all of its regulatory capital requirements. For a summary of the Bank’s compliance with the Finance Agency’s capital requirements as of December 31, 2019 and 2018, see the audited financial statements included in this report (specifically, Note 14 beginning on page F-41).

Beginning in February 2020, the Bank must also maintain a minimum capital stock-to-assets ratio of 2.0 percent (for additional discussion, see Item 1. Business - Legislative and Regulatory Developments).

A final regulation adopted by the Finance Agency in 2009 (the "Capital Classification Regulation") establishes criteria for four capital classifications for the FHLBanks: adequately capitalized, undercapitalized, significantly undercapitalized and critically undercapitalized. An adequately capitalized FHLBank meets all existing risk-based and minimum capital requirements. An undercapitalized FHLBank does not meet one or more of its risk-based or minimum capital requirements, but nevertheless has total capital equal to or greater than 75 percent of all capital requirements. A significantly undercapitalized FHLBank does not have total capital equal to or greater than 75 percent of all capital requirements, but the FHLBank does have total capital greater than 2 percent of its total assets. A critically undercapitalized FHLBank has total capital that is less than or equal to 2 percent of its total assets.

The Director of the Finance Agency determines each FHLBank’s capital classification no less often than once a quarter; the Director may make a determination more often than quarterly. The Director may reclassify a FHLBank one category below the otherwise applicable capital classification (e.g., from adequately capitalized to undercapitalized) if the Director determines that

(i) the FHLBank is engaging in conduct that could result in the rapid depletion of permanent or total capital, (ii) the value of collateral pledged to the FHLBank has decreased significantly, (iii) the value of property subject to mortgages owned by the FHLBank has decreased significantly, (iv) after notice to the FHLBank and opportunity for an informal hearing before the Director, the FHLBank is in an unsafe and unsound condition, or (v) the FHLBank is engaging in an unsafe and unsound practice because the FHLBank's asset quality, management, earnings or liquidity were found to be less than satisfactory during the most recent examination, and any deficiency has not been corrected. Before classifying or reclassifying a FHLBank, the Director must notify the FHLBank in writing and give the FHLBank an opportunity to submit information relative to the proposed classification or reclassification. Since the adoption of the Capital Classification Regulation, the Bank has been classified as adequately capitalized for each quarterly period for which the Director has made a final determination.

In addition to restrictions on capital distributions by a FHLBank that does not meet all of its risk-based and minimum capital requirements, a FHLBank that is classified as undercapitalized, significantly undercapitalized or critically undercapitalized is required to take certain actions, such as submitting a capital restoration plan to the Director of the Finance Agency for approval. Additionally, with respect to a FHLBank that is less than adequately capitalized, the Director of the Finance Agency may take other actions that he or she determines will help ensure the safe and sound operation of the FHLBank and its compliance with its risk-based and minimum capital requirements in a reasonable period of time.

The Director may appoint the Finance Agency as conservator or receiver for any FHLBank that is classified as critically undercapitalized. The Director may also appoint the Finance Agency as conservator or receiver of any FHLBank that is classified as undercapitalized or significantly undercapitalized if the FHLBank fails to submit a capital restoration plan acceptable to the Director within the time frames established by the Capital Classification Regulation or materially fails to implement any capital restoration plan that has been approved by the Director. At least once in each 30-day period following classification of a FHLBank as critically undercapitalized, the Director must determine whether during the prior 60 days the FHLBank had assets less than its obligations to its creditors and others or if the FHLBank was not paying its debts on a regular basis as such debts became due. If either of these conditions apply, then the Director must appoint the Finance Agency as receiver for the FHLBank.

A FHLBank for which the Director appoints the Finance Agency as conservator or receiver may bring an action in the United States District Court for the judicial district in which the FHLBank is located or in the United States District Court for the District of Columbia for an order requiring the Finance Agency to remove itself as conservator or receiver. A FHLBank that is not critically undercapitalized may also seek judicial review of any final capital classification decision or of any final decision to take supervisory action made by the Director under the Capital Classification Regulation.

Critical Accounting Policies and Estimates

The preparation of financial statements in accordance with U.S. GAAP requires management to make a number of judgments, estimates and assumptions that affect the reported amounts of assets, liabilities, income and expenses. To understand the Bank's financial position and results of operations, it is important to understand the Bank's most significant accounting policies and the extent to which management uses judgment and estimates in applying those policies. The Bank's critical accounting policies and estimates involve the following:

- Derivatives and Hedging Activities;
- Estimation of Fair Values; and
- Amortization of Premiums and Accretion of Discounts Associated with Mortgage-Related Assets.

The Bank considers these policies to be critical because they require management's most difficult, subjective and complex judgments about matters that are inherently uncertain. Management bases its judgments and estimates on current market conditions and industry practices, historical experience, changes in the business environment and other factors that it believes to be reasonable under the circumstances. Actual results could differ materially from these estimates under different assumptions and/or conditions. For additional discussion regarding the application of these and other accounting policies, see Note 1 to the Bank's audited financial statements included in this report.

Derivatives and Hedging Activities

The Bank enters into interest rate swap, swaption, cap and, on occasion, floor and forward rate agreements to manage its exposure to changes in interest rates. Through the use of these derivatives, the Bank may adjust the effective maturity, repricing index and/or frequency or option characteristics of financial instruments to achieve its risk management objectives. By regulation, the Bank may only use derivatives to mitigate identifiable risks. Accordingly, all of the Bank's derivatives are positioned to offset interest rate risk exposures inherent in its investment, funding and member lending activities.

ASC 815 requires that all derivatives be recorded on the statement of condition at their fair value. Changes in the fair value of all derivatives, excluding those designated as cash flow hedges (discussed below), are recorded each period in current earnings.

Under ASC 815, the Bank is required to recognize unrealized gains and losses on derivative positions whether or not the transaction qualifies for fair value hedge accounting, in which case offsetting losses or gains on the hedged assets or liabilities may also be recognized. Therefore, to the extent certain derivative instruments do not qualify for fair value hedge accounting under ASC 815, or changes in the fair values of derivatives are not exactly offset by changes in their hedged items, the accounting framework imposed by ASC 815 introduces the potential for a considerable mismatch between the timing of income and expense recognition for assets or liabilities being hedged and their associated hedging instruments. As a result, during periods of significant changes in market prices and interest rates, the Bank's earnings may exhibit considerable volatility.

The judgments and assumptions that are most critical to the application of this accounting policy are those affecting whether a hedging relationship qualifies for fair value hedge accounting under ASC 815 and, if so, whether an assumption of "no ineffectiveness" can be made. In addition, the estimation of fair values (discussed below) has a significant impact on the actual results being reported.

At the inception of each fair value hedge transaction, the Bank formally documents the hedge relationship and its risk management objective and strategy for undertaking the hedge, including identification of the hedging instrument, the hedged item, the nature of the risk being hedged, and how the hedging instrument's effectiveness in offsetting the exposure to changes in the hedged item's fair value attributable to the hedged risk will be assessed. In all cases involving a recognized asset, liability or firm commitment, the designated risk being hedged is the risk of changes in its fair value attributable to changes in the designated benchmark interest rate which, to date, has exclusively been LIBOR. Therefore, for this purpose, changes in the fair value of the hedged item (e.g., an advance, investment security or consolidated obligation) reflect only those changes in value that are attributable to changes in the designated benchmark interest rate (hereinafter referred to as "changes in the benchmark fair value").

For hedging relationships that are designated as fair value hedges and qualify for hedge accounting, the change in the benchmark fair value of the hedged item is recorded in earnings, thereby providing some offset to the change in fair value of the associated derivative. The difference in the change in fair value of the derivative and the change in the benchmark fair value of the hedged item represents "hedge ineffectiveness." If a fair value hedging relationship qualifies for the shortcut method of accounting, the Bank can assume that the change in the benchmark fair value of the hedged item is equal and offsetting to the change in the fair value of the derivative and, as a result, no ineffectiveness is recorded in earnings. However, ASC 815 limits the use of the shortcut method to hedging relationships of interest rate risk involving a recognized interest-bearing asset or liability and an interest rate swap, and then only if nine specific conditions are met.

If the fair value hedging relationship qualifies for hedge accounting but does not meet all nine conditions specified in ASC 815, the assumption of "no ineffectiveness" cannot be made and the long-haul method of accounting is used. Under the long-haul method, the change in the benchmark fair value of the hedged item is calculated independently from the change in fair value of the derivative. As a result, the net effect is that the hedge ineffectiveness has an impact on earnings.

In all cases where the Bank is applying fair value hedge accounting, it is hedging interest rate risk through the use of interest rate swaps, swaptions or caps. For those interest rate swaps, swaptions and caps that are in fair value hedging relationships that do not qualify for the shortcut method of accounting, the Bank uses regression analysis to assess hedge effectiveness. Effectiveness testing is performed at the inception of each hedging relationship to determine whether the hedge is expected to be highly effective in offsetting the identified risk, and at each month-end thereafter to ensure that the hedge relationship has been effective historically and to determine whether the hedge is expected to be highly effective in the future. Hedging relationships accounted for under the shortcut method are not tested for hedge effectiveness.

A fair value hedge relationship is considered effective only if certain specified criteria are met. If a hedge fails the effectiveness test at inception, the Bank does not apply hedge accounting. If the hedge fails the effectiveness test during the life of the transaction, the Bank discontinues hedge accounting prospectively. In that case, the Bank continues to carry the derivative on its statement of condition at fair value, recognizes the changes in fair value of that derivative in current earnings, ceases to adjust the hedged item for changes in its benchmark fair value and amortizes the cumulative basis adjustment on the formerly hedged item into earnings over its remaining term. Unless and until the derivative is redesignated in a qualifying fair value hedging relationship for accounting purposes, changes in its fair value are recorded in current earnings without an offsetting change in the benchmark fair value from a hedged item.

Changes in the fair value of derivative positions that do not qualify for hedge accounting under ASC 815 (economic hedges) are recorded in current earnings without an offsetting change in the benchmark fair value of the hedged item.

On and after January 1, 2019, all changes in the fair value of a derivative that is designated and qualifies as a cash flow hedge are recorded in AOCI until earnings are affected by the variability of the cash flows of the hedged transaction, at which time these amounts are reclassified from AOCI to earnings. Prior to January 1, 2019, changes in the fair value of a derivative that was designated and qualified as a cash flow hedge, to the extent that the hedge was effective, were recorded in AOCI until earnings were affected by the variability of the cash flows of the hedged transaction. Any ineffective portion of a cash flow hedge (which represented the amount by which the change in the fair value of the derivative differed from the change in fair value of a hypothetical derivative having terms that matched identically the critical terms of the hedged forecasted transaction) was recognized in other income (loss) as “net gains (losses) on derivatives and hedging activities.” As of December 31, 2019 and 2018, the Bank had only $1.043 billion and $865 million (notional), respectively, of derivatives that were designated as cash flow hedges.

As of December 31, 2019, the Bank’s derivatives portfolio included $9.1 billion (notional amount) that was accounted for using the shortcut method, $37.0 billion (notional amount) that was accounted for using the long-haul method, $1.0 billion (notional amount) that was designated in cash flow hedging relationships and $7.8 billion (notional amount) that did not qualify for hedge accounting. By comparison, at December 31, 2018, the Bank’s derivatives portfolio included $6.6 billion (notional amount) that was accounted for using the shortcut method, $36.4 billion (notional amount) that was accounted for using the long-haul method, $0.9 billion (notional amount) that was designated in cash flow hedging relationships and $5.3 billion (notional amount) that did not qualify for hedge accounting.

Estimation of Fair Values

The Bank’s derivatives, investments classified as available-for-sale and trading, and mutual fund investments included in other assets are presented in the statements of condition at fair value. Fair value is defined under U.S. GAAP as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. A fair value measurement assumes that the transaction to sell the asset or transfer the liability occurs in the principal market for the asset or liability or, in the absence of a principal market, the most advantageous market for the asset or liability. U.S. GAAP establishes a fair value hierarchy and requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. The fair value hierarchy prioritizes the inputs used to measure fair value into three broad levels:

Level 1 Inputs — Quoted prices (unadjusted) in active markets for identical assets or liabilities that the reporting entity can access at the measurement date. The fair values of the Bank’s mutual fund investments included in other assets were determined using Level 1 inputs.

Level 2 Inputs — Inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly. If the asset or liability has a specified (contractual) term, a Level 2 input must be observable for substantially the full term of the asset or liability. Level 2 inputs include the following: (1) quoted prices for similar assets or liabilities in active markets; (2) quoted prices for identical or similar assets or liabilities in markets that are not active or in which little information is released publicly; (3) inputs other than quoted prices that are observable for the asset or liability (e.g., interest rates and yield curves that are observable at commonly quoted intervals and implied volatilities); and (4) inputs that are derived principally from or corroborated by observable market data (e.g., implied spreads). Level 2 inputs were used to determine the estimated fair values of the Bank’s derivative contracts, U.S. Treasury obligations classified as trading securities and investment securities classified as available-for-sale.

Level 3 Inputs — Unobservable inputs for the asset or liability that are supported by little or no market activity. None of the Bank’s assets or liabilities that are recorded at fair value on a recurring basis were measured using significant Level 3 inputs.

The fair values of the Bank’s assets and liabilities that are carried at fair value are estimated based upon quoted market prices when available. However, some of these instruments lack an available trading market characterized by frequent transactions between a willing buyer and willing seller engaging in an exchange transaction (e.g., derivatives). In these cases, such values are generally estimated using a pricing model and inputs that are observable for the asset or liability, either directly or indirectly. For its derivatives, the Bank compares the fair values obtained from its pricing model to clearinghouse valuations (in the case of cleared derivatives) and non-binding dealer estimates (in the case of bilateral derivatives) and may also compare its fair values to those of similar instruments to ensure such fair values are reasonable. The assumptions and inputs used have a significant effect on the reported carrying values of assets and liabilities and the related income and expense. The use of different assumptions/inputs could result in materially different net income and reported carrying values.

In addition to those items that are carried at fair value, the Bank estimates fair values for its other financial instruments for disclosure purposes and, in applying ASC 815, it calculates the periodic changes in the fair values of hedged items (e.g., certain advances, available-for-sale securities and consolidated obligations) that are attributable solely to changes in LIBOR, the designated benchmark interest rate ("the benchmark fair values") and the periodic changes in the fair values of hypothetical derivatives associated with cash flow hedges. For most of these instruments (other than the Bank’s holdings of MBS and state housing agency debentures classified as held-to-maturity, as described below), such values are estimated using a pricing model that employs discounted cash flows or other similar pricing techniques. Significant inputs to the pricing model (e.g., yield curves and volatilities) are based on current observable market data. To the extent this model is used to calculate changes in the benchmark fair values of hedged items, the inputs have a significant effect on the reported carrying values of assets and liabilities and the related income and expense; the use of different inputs could result in materially different net income and reported carrying values.

Consistent with market practice, the Bank uses the OIS curve (rather than the LIBOR swap curve) to discount the cash flows on its interest rate exchange agreements for valuation purposes. Depending upon the spreads between LIBOR and OIS rates, the use of the OIS curve to value the Bank's interest rate exchange agreements and the LIBOR swap curve (plus or minus a constant spread) to derive the benchmark fair values of the Bank's hedged items can result in increased fair value hedge ineffectiveness on long-haul hedging relationships. In addition, while not likely, this valuation methodology has the potential to lead to the loss of hedge accounting for some of these hedging relationships. Either of these outcomes could result in increased earnings volatility, which could potentially be material.

To value its holdings of U.S. Treasury obligations classified as trading securities, all of its available-for-sale securities and its holdings of MBS and state housing agency debentures classified as held-to-maturity, the Bank obtains prices from three designated third-party pricing vendors when available. The pricing vendors use various proprietary models to price these securities. The inputs to those models are derived from various sources including, but not limited to: benchmark yields, reported trades, dealer estimates, issuer spreads, benchmark securities, bids, offers and other market-related data. Because many securities do not trade on a daily basis, the pricing vendors use available information as applicable such as benchmark curves, benchmarking of like securities, sector groupings and matrix pricing to determine the prices for individual securities. Each pricing vendor has an established challenge process in place for all security valuations, which facilitates resolution of potentially erroneous prices identified by the Bank. Recently, the Bank conducted reviews of the three pricing vendors to reconfirm its understanding of the vendors' pricing processes, methodologies and control procedures and was satisfied that those processes, methodologies and control procedures were adequate and appropriate.

A “median” price is first established for each security using a formula that is based upon the number of prices received. If three prices are received, the middle price is the median price; if two prices are received, the average of the two prices is the median price; and if one price is received, it is the median price (and also the final price) subject to some type of validation similar to the evaluation of outliers described below. All prices that are within a specified tolerance threshold of the median price are included in the “cluster” of prices that are averaged to compute a “default” price. All prices that are outside the threshold (“outliers”) are subject to further analysis (including, but not limited to, comparison to prices provided by an additional third-party valuation service, prices for similar securities, and/or non-binding dealer estimates) to determine if an outlier is a better estimate of fair value. If an outlier (or some other price identified in the analysis) is determined to be a better estimate of fair value, then the outlier (or the other price, as appropriate) is used as the final price rather than the default price. If, on the other hand, the analysis confirms that an outlier (or outliers) is (are) in fact not representative of fair value and the default price is the best estimate, then the default price is used as the final price. In all cases, the final price is used to determine the fair value of the security.

If all prices received for a security are outside the tolerance threshold level of the median price, then there is no default price, and the final price is determined by an evaluation of all outlier prices as described above.

The Bank’s pricing model is subject to an external validation every three years. In those years when an external validation is not performed, the pricing model is subject to a limited scope review. The Bank periodically reviews and refines, as appropriate, its assumptions and valuation methodologies to reflect market indications as closely as possible. The Bank believes it has the appropriate personnel, technology, and policies and procedures in place to enable it to value its financial instruments in a reasonable and consistent manner.

The Bank’s fair value measurement methodologies for its financial instruments that are measured at fair value on the statement of condition are more fully described in the audited financial statements accompanying this report (specifically, Note 16 beginning on page F-49).

Amortization of Premiums and Accretion of Discounts Associated with Mortgage-Related Assets

The Bank estimates prepayments for purposes of amortizing premiums and accreting discounts associated with its MBS holdings. Under U.S. GAAP, premiums and discounts are required to be recognized in income at a constant effective yield over the life of the instrument. Because actual prepayments often deviate from the estimates, the Bank periodically recalculates the effective yield to reflect actual prepayments to date and anticipated future prepayments. Anticipated future prepayments are estimated using an externally developed mortgage prepayment model. This model considers past prepayment patterns; historical, current and projected interest rate environments; and historical changes in home prices, among other factors, to predict future cash flows.

Adjustments are recorded on a retrospective basis, meaning that the net investment in the instrument is adjusted to the amount that would have existed had the new effective yield been applied since the acquisition of the instrument. As interest rates (and thus prepayment speeds) change, these accounting requirements can be a source of income volatility. Declines in interest rates generally accelerate prepayments, which accelerate the amortization of premiums and reduce current earnings. Typically, declining interest rates also accelerate the accretion of discounts, thereby increasing current earnings. Conversely, in a rising interest rate environment, prepayments will generally decline, thus lengthening the effective maturity of the instruments and shifting some of the premium amortization and discount accretion to future periods.

As of December 31, 2019, the unamortized premiums and discounts associated with investment securities for which prepayments are estimated totaled $96.2 million and $18.0 million, respectively. At that date, the carrying values of these investment securities totaled $9.3 billion and $1.9 billion, respectively.

The Bank uses the contractual method to amortize premiums and accrete discounts on mortgage loans. The contractual method recognizes the income effects of premiums and discounts in a manner that is reflective of the actual behavior of the mortgage loans during the period in which the behavior occurs while also reflecting the contractual terms of the assets without regard to changes in estimated prepayments based upon assumptions about future borrower behavior.

Recently Issued Accounting Guidance

For a discussion of recently issued accounting guidance, see the audited financial statements accompanying this report (specifically, Note 2 beginning on page F-16).

Statistical Financial Information

Investment Portfolio

The following table sets forth the Bank's investments at December 31, 2019, 2018 and 2017:

Investments
(in thousands)

	Carrying Value at December 31,		
	2019	**2018**	**2017**
Trading securities			
U.S. Treasury Notes	$ 4,532,126	$ 1,818,178	$ 102,148
U.S. Treasury Bills	928,010	—	—
Mutual fund investments related to employee benefit plans	—	—	12,082
Total trading securities	5,460,136	1,818,178	114,230
Available-for-sale securities			
U.S. government-guaranteed debentures	453,196	452,996	479,038
GSE debentures	5,584,381	5,686,833	6,002,672
Other debentures	45,559	170,828	174,895
GSE commercial MBS	10,683,364	9,514,498	7,745,793
Total available-for-sale securities	16,766,500	15,825,155	14,402,398
Held-to-maturity securities			
U.S. government-guaranteed debentures	5,862	7,604	10,774
State housing agency obligations	109,478	135,000	160,000
Mortgage-backed securities			
U.S. government-guaranteed residential MBS	—	475	1,909
GSE residential MBS	1,036,585	1,253,573	1,655,625
Non-agency residential MBS	54,245	65,627	80,964
GSE commercial MBS	—	—	35,265
Total held-to-maturity mortgage-backed securities	1,090,830	1,319,675	1,773,763
Total held-to-maturity securities	1,206,170	1,462,279	1,944,537
Total securities	23,432,806	19,105,612	16,461,165
Interest-bearing deposits	1,670,249	2,500,317	299
Securities purchased under agreements to resell	4,310,000	6,215,000	6,700,000
Federal funds sold	4,505,000	1,731,000	7,780,000
Total investments	$ 33,918,055	$ 29,551,929	$ 30,941,464

The following table presents supplemental information regarding the maturities and yields of the Bank's investments (at carrying value) as of December 31, 2019. Maturities are based on the contractual maturities of the securities.

INVESTMENT MATURITIES AND YIELDS
(dollars in thousands)

	Due In One Year Or Less	Due After One Year Through Five Years	Due After Five Years Through Ten Years	Due After Ten Years	Total
Maturities					
Trading securities					
U.S. Treasury Notes	$ 3,005,628	$ 1,420,310	$ 106,188	$ —	$ 4,532,126
U.S. Treasury Bills	928,010	—	—	—	928,010
Total trading securities	3,933,638	1,420,310	106,188	—	5,460,136
Available-for-sale securities					
U.S. government-guaranteed debentures	20,555	341,516	91,125	—	453,196
GSE debentures	278,450	3,117,705	2,140,058	48,168	5,584,381
Other debentures	—	45,559	—	—	45,559
GSE commercial MBS	—	312,462	9,986,376	384,526	10,683,364
Total available-for-sale securities	299,005	3,817,242	12,217,559	432,694	16,766,500
Held-to-maturity securities					
U.S. government-guaranteed debentures	—	5,862	—	—	5,862
State housing agency obligations	—	—	—	109,478	109,478
Mortgage-backed securities					
GSE residential MBS	—	413	1,036	1,035,136	1,036,585
Non-agency residential MBS	—	—	—	54,245	54,245
Total held-to-maturity securities	—	6,275	1,036	1,198,859	1,206,170
Total securities	4,232,643	5,243,827	12,324,783	1,631,553	23,432,806
Interest-bearing deposits	1,670,249	—	—	—	1,670,249
Securities purchased under agreements to resell	4,310,000	—	—	—	4,310,000
Federal funds sold	4,505,000	—	—	—	4,505,000
Total investments	$ 14,717,892	$ 5,243,827	$ 12,324,783	$ 1,631,553	$ 33,918,055
Weighted average yields					
U.S. Treasury Notes	1.97%	1.77%	2.24%	—%	1.91%
U.S. Treasury Bills	1.59	—	—	—	1.59
Yield on trading securities	1.88	1.77	2.24	—	1.86
Available-for-sale securities					
U.S. government-guaranteed debentures	1.73	2.40	2.66	—	2.42
GSE debentures	2.47	2.05	2.48	3.04	2.24
Other debentures	—	2.55	—	—	2.55
GSE commercial MBS	—	2.84	2.90	3.12	2.91
Yield on available-for-sale securities	2.42	2.16	2.82	3.11	2.67
Held-to-maturity securities					
U.S. government-guaranteed debentures	—	0.63	—	—	0.63
State housing agency obligations	—	—	—	2.50	2.50
Mortgage-backed securities					
GSE residential MBS	—	3.51	2.20	2.22	2.22
Non-agency residential MBS	—	—	—	2.31	2.31
Yield on held-to-maturity securities	—	0.82	2.20	2.25	2.24
Yield on total securities	1.92%	2.05%	2.81%	2.48%	2.46%

Other available-for-sale debentures consisted of securities with a fair value of $45,559,000 at December 31, 2019 that were issued by the Private Export Funding Corporation. The U.S. government and GSEs were the only issuers whose securities exceeded 10 percent of the Bank's total capital at December 31, 2019.

Mortgage Loan Portfolio Analysis

The Bank's mortgage loans, nonaccrual mortgage loans, and mortgage loans 90 days or more past due and accruing interest for each of the five years in the period ended December 31, 2019 were as follows:

COMPOSITION OF LOANS
(in thousands)

	Year ended December 31,				
	2019	2018	2017	2016	2015
Real estate mortgages	$ 4,075,464	$ 2,185,503	$ 877,852	$ 123,961	$ 55,117
Nonaccrual real estate mortgages	$ 7,304	$ 1,410	$ 689	$ 276	$ 387
Real estate mortgages past due 90 days or more and still accruing interest[1]	$ 80	$ 156	$ 98	$ 130	$ 202
Interest contractually due during the year on nonaccrual loans	$ 340				
Interest actually received during the year on nonaccrual loans	$ 163				

(1) Only government guaranteed/insured loans continue to accrue interest after they become 90 days or more past due.

Allowance for Credit Losses

Activity in the allowance for credit losses for each of the five years in the period ended December 31, 2019 is presented below. All activity relates to domestic real estate mortgage loans.

ALLOWANCE FOR CREDIT LOSSES
(in thousands)

	2019	2018	2017	2016	2015
Balance, beginning of year	$ 493	$ 271	$ 141	$ 141	$ 143
Provision for credit losses	656	222	130	—	—
Chargeoffs	—	—	—	—	(2)
Balance, end of year	$ 1,149	$ 493	$ 271	$ 141	$ 141

Geographic Concentration of Mortgage Loans

The following table presents the geographic concentration of the Bank's mortgage loan portfolio as of December 31, 2019.

GEOGRAPHIC CONCENTRATION OF MORTGAGE LOANS

Southwest (AR, AZ, CO, KS, LA, MO, NM, OK, TX, and UT)	62.8%
West (AK, CA, GU, HI, ID, MT, NV, OR, WA, and WY)	13.9
Southeast (AL, DC, FL, GA, KY, MD, MS, NC, SC, TN, VA, and WV)	18.0
Midwest (IA, IL, IN, MI, MN, ND, NE, OH, SD, and WI)	3.1
Northeast (CT, DE, MA, ME, NH, NJ, NY, PA, PR, RI, VI, and VT)	2.2
	100.0%

Deposits

Time deposits in denominations of $100,000 or more totaled $95.1 million at December 31, 2019. These deposits mature as follows: $73.7 million in three months or less, $11.4 million in over three months through six months and $10.0 million in over six months through 12 months.

Short-term Borrowings

Borrowings with original maturities of one year or less are classified as short-term. Supplemental information regarding the Bank's discount notes and short-term consolidated obligation bonds for the years ended December 31, 2019, 2018 and 2017 is provided in the following table.

SHORT-TERM BORROWINGS
(dollars in millions)

	December 31,		
	2019	**2018**	**2017**
Consolidated obligation bonds			
Outstanding at year end	$ 5,219	$ 10,375	$ 12,480
Weighted average rate at year end	1.75%	2.28%	1.30%
Daily average outstanding for the year	$ 5,193	$ 12,418	$ 11,080
Weighted average rate for the year	2.23%	1.83%	0.88%
Highest outstanding at any month end	$ 9,315	$ 14,070	$ 13,480
Consolidated obligation discount notes			
Outstanding at year end	$ 34,328	$ 35,732	$ 32,511
Weighted average rate at year end	1.57%	2.30%	1.17%
Daily average outstanding for the year	$ 34,961	$ 30,278	$ 26,132
Weighted average rate for the year	2.23%	1.85%	0.89%
Highest outstanding at any month end	$ 42,175	$ 39,322	$ 35,440

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Overview

As a financial intermediary, the Bank is subject to interest rate risk. Changes in the level of interest rates, the slope of the interest rate yield curve, and/or the relationships (or spreads) between interest yields for different instruments have an impact on the Bank's estimated market value of equity and its net earnings. This risk arises from a variety of instruments that the Bank enters into on a regular basis in the normal course of its business.

The terms of member advances, investment securities and consolidated obligations may present interest rate risk and/or embedded option risk. As discussed in Management's Discussion and Analysis of Financial Condition and Results of Operations, the Bank makes extensive use of interest rate derivative instruments, primarily interest rate swaps, swaptions and caps, to manage the risk arising from these sources.

The Bank has investments in residential mortgage-related assets, primarily CMOs and MPF mortgage loans, both of which present prepayment risk. This risk arises from the mortgagors' option to prepay their mortgages, making the effective maturities of these mortgage-based assets relatively more sensitive to changes in interest rates and other factors that affect the mortgagors' decisions to repay their mortgages as compared to other long-term investment securities that do not have prepayment features. A decline in interest rates generally accelerates mortgage refinancing activity, thus increasing prepayments and thereby shortening the effective maturity of the mortgage-related assets. Conversely, rising rates generally slow prepayment activity and lengthen a mortgage-related asset's effective maturity.

The Bank has managed the potential prepayment risk embedded in mortgage assets by purchasing securities that maintain their original principal balance for a fixed number of years, by purchasing highly structured tranches of mortgage securities that substantially limit the effects of prepayment risk, by issuing a combination of callable and non-callable debt with varying maturities, and/or by using interest rate derivative instruments to offset prepayment risk specific both to particular securities and to the overall mortgage portfolio.

The Bank uses a variety of risk measurements to monitor its interest rate risk. The Bank has made a substantial investment in sophisticated financial modeling systems to measure and analyze interest rate risk. These systems enable the Bank to routinely and regularly measure interest rate risk metrics, including the sensitivity of its market value of equity and income under a variety of interest rate scenarios. Management regularly monitors the information derived from these models and provides the Bank's Board of Directors with risk measurement reports. The Bank uses these periodic assessments, in combination with its evaluation of the factors influencing the results, when developing its funding and hedging strategies.

The Bank's Enterprise Market Risk Management Policy provides a risk management framework for the financial management of the Bank consistent with the strategic principles outlined in its Strategic Business Plan. The Bank develops its funding and hedging strategies to manage its interest rate risk within the risk limits established in its Enterprise Market Risk Management Policy.

Business Objectives

The Bank serves as a financial intermediary between the capital markets and its members. In its most basic form, this intermediation process involves raising funds by issuing consolidated obligations in the capital markets and lending the proceeds to member institutions at slightly higher rates. The interest spread between the cost of the Bank's liabilities and the yield on its assets, combined with the earnings on its invested capital, are the Bank's primary sources of earnings. The Bank's primary asset liability management goal is to manage its assets and liabilities in such a way that its current and projected net interest spread is consistent across a wide range of interest rate environments, although the Bank may occasionally take actions that are not necessarily consistent with this objective for short periods of time in response to unusual market conditions.

The objective of maintaining a stable interest spread is complicated under normal conditions by the fact that the intermediation process outlined above cannot be executed for all of the Bank's assets and liabilities on an individual basis. In the course of a typical business day, the Bank continuously offers a wide range of fixed and floating rate advances with maturities ranging from overnight to 40 years that members can borrow in amounts that meet their specific funding needs at any given point in time. At the same time, the Bank issues consolidated obligations to investors who have their own set of investment objectives and preferences for the terms and maturities of securities that they are willing to purchase.

Because it is not possible to consistently issue debt simultaneously with the issuance of an advance to a member in the same amount and with the same terms as the advance, or to predict what types of advances members might want or what types of consolidated obligations investors might be willing to buy on any particular day, the Bank must have a ready supply of funds on hand at all times to meet member advance demand.

In order to have a ready supply of funds, the Bank typically issues debt as opportunities arise in the market, and makes the proceeds of those debt issuances (some of which bear fixed interest rates and have relatively long maturities) available for members to borrow in the form of advances. Holding fixed-rate liabilities in anticipation of member borrowing subjects the Bank to interest rate risk, and there is no assurance in any event that members will borrow from the Bank in quantities or maturities that will match these warehoused liabilities. Therefore, in order to intermediate the mismatches between advances with certain terms and features, and consolidated obligations with a different set of terms and features, the Bank typically converts both longer maturity assets and longer maturity liabilities to a LIBOR floating rate index, and attempts to manage the interest spread between the pools of floating-rate assets and liabilities.

This process of intermediating the timing, structure, and amount of Bank members' credit needs with the investment requirements of the Bank's creditors is made possible by the extensive use of interest rate exchange agreements. The Bank's general practice has been, as often as practical, to contemporaneously execute interest rate exchange agreements when acquiring longer maturity fixed-rate assets and/or issuing longer maturity fixed-rate liabilities in order to convert the cash flows to LIBOR floating rates. Doing so reduces the Bank's interest rate risk exposure, which allows it to preserve the value of, and earn more stable returns on, members' capital investment.

However, in the normal course of business, the Bank also acquires (or has acquired) assets whose structural characteristics and/or size reduce the Bank's ability to enter into interest rate exchange agreements having mirror image terms. These assets include small fixed-rate, fixed-term advances; small fixed-schedule amortizing advances; and floating-rate mortgage-related securities with embedded caps. These assets require the Bank to employ risk management strategies in which the Bank hedges against aggregated risks. The Bank may use fixed-rate, callable or non-callable debt or interest rate exchange agreements, such as fixed-for-floating interest rate swaps, floating-rate basis swaps or interest rate caps, to manage these aggregated risks.

Interest Rate Risk Measurement

As discussed above, the Bank measures its market risk regularly and generally manages its market risk within its Enterprise Market Risk Management Policy limits on estimated market value of equity losses under 200 basis point interest rate shock scenarios. The Enterprise Market Risk Management Policy articulates the Bank's tolerance for the amount of overall interest rate risk the Bank will assume by limiting the maximum estimated loss in market value of equity that the Bank would incur under simulated 200 basis point changes in interest rates to 15 percent of the estimated base case market value. As reflected in the table below, the Bank was in compliance with this limit at each month-end during the period from December 2018 through December 2019.

As part of its ongoing risk management process, the Bank calculates an estimated market value of equity for a base case interest rate scenario and for interest rate scenarios that reflect parallel interest rate shocks. The base case market value of equity is calculated by determining the estimated fair value of each instrument on the Bank's balance sheet, and subtracting the estimated aggregate fair value of the Bank's liabilities from the estimated aggregate fair value of the Bank's assets. For purposes of these calculations, mandatorily redeemable capital stock is treated as equity rather than as a liability. The fair values of the Bank's financial instruments (both assets and liabilities) are determined using either vendor prices or a pricing model. For those instruments for which a pricing model is used, the calculations are based upon parameters derived from market conditions existing at the time of measurement, and are generally determined by discounting estimated future cash flows at the replacement (or similar) rate for new instruments of the same type with the same or very similar characteristics. The market value of equity calculations include non-financial assets and liabilities, such as premises and equipment, other assets, payables for AHP, and other liabilities at their recorded carrying amounts.

For purposes of compliance with the Bank's Enterprise Market Risk Management Policy limit on estimated losses in market value, market value of equity losses are defined as the estimated net sensitivity of the value of the Bank's equity (the net value of its portfolio of assets, liabilities and interest rate derivatives) to 200 basis point parallel shifts in interest rates. In addition, the Bank routinely performs projections of its future earnings over a rolling horizon that includes the current year and the next four calendar years under a variety of interest rate and business environments.

The following table provides the Bank's estimated base case market value of equity and its estimated market value of equity under up and down 200 basis point interest rate shock scenarios (and, for comparative purposes, its estimated market value of equity under up and down 100 basis point interest rate shock scenarios) for each month-end during the period from December 2018 through December 2019. In addition, the table provides the percentage change in estimated market value of equity under each of these shock scenarios for the indicated periods.

MARKET VALUE OF EQUITY

(dollars in billions)

		Up 200 Basis Points [1]		Down 200 Basis Points[2]		Up 100 Basis Points[1]		Down 100 Basis Points[2]	
	Base Case Market Value of Equity	Estimated Market Value of Equity	Percentage Change from Base Case	Estimated Market Value of Equity	Percentage Change from Base Case	Estimated Market Value of Equity	Percentage Change from Base Case	Estimated Market Value of Equity	Percentage Change from Base Case
December 2018	$ 3.781	$ 3.802	0.56 %	$ 3.562	(5.79)%	$ 3.810	0.77%	$ 3.684	(2.57)%
January 2019	3.854	3.885	0.80 %	3.612	(6.28)%	3.887	0.86%	3.744	(2.85)%
February 2019	3.952	3.932	(0.51)%	3.776	(4.45)%	3.958	0.15%	3.876	(1.92)%
March 2019	3.757	3.767	0.27 %	3.588	(4.50)%	3.783	0.69%	3.675	(2.18)%
April 2019	3.923	3.942	0.48 %	3.705	(5.56)%	3.950	0.69%	3.822	(2.57)%
May 2019	3.886	3.958	1.85 %	3.697	(4.86)%	3.958	1.85%	3.767	(3.06)%
June 2019	3.838	3.892	1.41 %	3.748	(2.34)%	3.905	1.75%	3.734	(2.71)%
July 2019	3.918	3.956	0.97 %	3.813	(2.68)%	3.975	1.45%	3.818	(2.55)%
August 2019	3.786	3.881	2.51 %	4.140	9.35 %	3.871	2.25%	3.689	(2.56)%
September 2019	3.695	3.727	0.87 %	3.949	6.87 %	3.757	1.68%	3.613	(2.22)%
October 2019	3.691	3.739	1.30 %	3.926	6.37 %	3.760	1.87%	3.601	(2.44)%
November 2019	3.808	3.797	(0.29)%	3.971	4.28 %	3.838	0.79%	3.746	(1.63)%
December 2019	3.817	3.814	(0.08)%	3.792	(0.65)%	3.857	1.05%	3.729	(2.31)%

(1) In the up 100 and 200 basis point scenarios, the estimated market value of equity is calculated under assumed instantaneous +100 and +200 basis point parallel shifts in interest rates.

(2) In the down 100 and 200 basis point scenarios, the estimated market value of equity is calculated under assumed instantaneous -100 and -200 basis point parallel shifts in interest rates, subject to a floor of 0.01 percent.

A related measure of interest rate risk is duration of equity. Duration is the weighted average maturity (typically measured in months or years) of an instrument's cash flows, weighted by the present value of those cash flows. As such, duration provides an estimate of an instrument's sensitivity to small changes in market interest rates. The duration of assets is generally expressed as a positive figure, while the duration of liabilities is generally expressed as a negative number. The change in value of a specific instrument for given changes in interest rates will generally vary in inverse proportion to the instrument's duration. As market interest rates decline, instruments with a positive duration are expected to increase in value, while instruments with a negative duration are expected to decrease in value. Conversely, as interest rates rise, instruments with a positive duration are expected to decline in value, while instruments with a negative duration are expected to increase in value.

The values of instruments having relatively longer (or higher) durations are more sensitive to a given interest rate movement than instruments having shorter durations; that is, risk increases as the absolute value of duration lengthens. For instance, the value of an instrument with a duration of three years will theoretically change by three percent for every one percentage point (100 basis point) change in interest rates, while the value of an instrument with a duration of five years will theoretically change by five percent for every one percentage point change in interest rates.

The duration of individual instruments may be easily combined to determine the duration of a portfolio of assets or liabilities by calculating a weighted average duration of the instruments in the portfolio. These combinations provide a single straightforward metric that describes the portfolio's sensitivity to interest rate movements. These additive properties can be applied to the assets and liabilities on the Bank's balance sheet. The difference between the combined durations of the Bank's assets and the combined durations of its liabilities is sometimes referred to as duration gap and provides a measure of the relative interest rate sensitivities of the Bank's assets and liabilities.

Duration gap is a useful measure of interest rate sensitivity but does not account for the effect of leverage, or the effect of the absolute duration of the Bank's assets and liabilities, on the sensitivity of its estimated market value of equity to changes in interest rates. The inclusion of these factors results in a measure of the sensitivity of the value of the Bank's equity to changes in market interest rates referred to as the duration of equity. Duration of equity is the market value weighted duration of assets minus the market value weighted duration of liabilities divided by the market value of equity.

The significance of an entity's duration of equity is that it can be used to describe the sensitivity of the entity's market value of equity to movements in interest rates. A duration of equity equal to zero would mean, within a narrow range of interest rate movements, that the Bank had neutralized the impact of changes in interest rates on the market value of its equity.

A positive duration of equity would mean, within a narrow range of interest rate movements, that for each one year of duration the estimated market value of the Bank's equity would be expected to decline by about 0.01 percent for every positive 0.01 percent change in the level of interest rates. A positive duration generally indicates that the value of the Bank's assets is more sensitive to changes in interest rates than the value of its liabilities (i.e., that the duration of its assets is greater than the duration of its liabilities).

Conversely, a negative duration of equity would mean, within a narrow range of interest rate movements, that for each one year of negative duration the estimated market value of the Bank's equity would be expected to increase by about 0.01 percent for every positive 0.01 percent change in the level of interest rates. A negative duration generally indicates that the value of the Bank's liabilities is more sensitive to changes in interest rates than the value of its assets (i.e., that the duration of its liabilities is greater than the duration of its assets).

The following table provides information regarding the Bank's base case duration of equity as well as its duration of equity in up and down 100 and 200 basis point interest rate shock scenarios for each month-end during the period from December 2018 through December 2019.

DURATION ANALYSIS
(expressed in years)

	Base Case Interest Rates				Duration of Equity			
	Asset Duration	Liability Duration	Duration Gap	Duration of Equity	Up 100[1]	Up 200[1]	Down 100[2]	Down 200[2]
December 2018	0.24	(0.36)	(0.12)	(1.81)	(0.11)	0.39	(3.14)	(3.33)
January 2019	0.24	(0.37)	(0.13)	(2.05)	(0.22)	0.18	(3.42)	(3.50)
February 2019	0.28	(0.36)	(0.08)	(1.14)	0.42	0.75	(2.47)	(2.55)
March 2019	0.26	(0.37)	(0.11)	(1.74)	0.09	0.54	(2.44)	(2.16)
April 2019	0.23	(0.36)	(0.13)	(1.98)	—	0.27	(2.98)	(3.07)
May 2019	0.20	(0.38)	(0.18)	(2.89)	(0.65)	0.24	(3.13)	(2.96)
June 2019	0.19	(0.35)	(0.16)	(2.59)	(0.50)	0.68	(2.74)	(2.88)
July 2019	0.19	(0.34)	(0.15)	(2.41)	(0.14)	0.72	(2.68)	(2.94)
August 2019	0.17	(0.32)	(0.15)	(2.49)	(1.57)	0.76	(2.97)	(5.43)
September 2019	0.19	(0.31)	(0.12)	(2.06)	(0.53)	1.47	(2.59)	(6.10)
October 2019	0.19	(0.31)	(0.12)	(2.28)	(0.70)	1.13	(2.71)	(6.42)
November 2019	0.26	(0.34)	(0.08)	(1.23)	0.11	1.42	(2.41)	(4.75)
December 2019	0.23	(0.35)	(0.12)	(2.06)	0.20	1.43	(2.57)	(3.75)

(1) In the up 100 and 200 basis point scenarios, the duration of equity is calculated under assumed instantaneous +100 and +200 basis point parallel shifts in interest rates.

(2) In the down 100 and 200 basis point scenarios, the duration of equity is calculated under assumed instantaneous -100 and -200 basis point parallel shifts in interest rates.

Duration of equity measures the impact of a parallel shift in interest rates on an entity's market value of equity but may not be a good metric for measuring changes in value related to non-parallel rate shifts. An alternative measure for that purpose uses key rate durations, which measure portfolio sensitivity to changes in interest rates at particular points on a yield curve. Key rate duration is a specialized form of duration. It is calculated by estimating the change in value due to changing the market rate for one specific maturity point on the yield curve while holding all other variables constant. The sum of the key rate durations across an applicable yield curve is approximately equal to the overall portfolio duration.

The duration of equity measure represents the expected percentage change in the Bank's market value of equity for a one percentage point (100 basis point) parallel change in interest rates. The key rate duration measure represents the expected percentage change in the Bank's market value of equity for a one percentage point (100 basis point) parallel change in interest rates for a given maturity point on the yield curve, holding all other rates constant. The Bank's key rate duration limit is 5 years, measured as the difference between the maximum and minimum key rate durations calculated for 11 defined individual maturity points on the yield curve. The Bank calculates these metrics monthly and was in compliance with these policy limits at each month-end during the year ended December 31, 2019.

Interest Rate Risk Components

The Bank manages the interest rate risk of a significant percentage of its assets and liabilities on a transactional basis. Using interest rate exchange agreements, the Bank pays (in the case of an asset) or receives (in the case of a liability) a coupon that is identical or nearly identical to the balance sheet item, and receives or pays in return, respectively, a floating rate typically indexed to LIBOR. The combination of the interest rate exchange agreement with the balance sheet item has the effect of reducing the duration of the asset or liability to the term to maturity of the LIBOR index, which is typically either one month or three months. After converting its longer maturity assets and liabilities to LIBOR, the Bank can then focus on managing the spread between the assets and liabilities while remaining relatively insensitive to overall movements in market interest rates.

Because individual assets and liabilities with longer maturities are typically converted to floating rates at the time they are acquired or issued, mismatches can develop between the reset dates for aggregate balances of floating-rate assets and floating-rate liabilities. The mismatch between the average time to repricing of the assets and the liabilities converted to floating rates in this manner can, however, cause the Bank's duration of equity to fluctuate from month to month. While the realization of these reset timing differences is generally not material to the Bank's results of operations under normal market conditions in which one-month and three-month LIBOR rates change in relatively modest increments, these reset timing differences can have a more significant impact during periods in which short-term LIBOR rates are volatile. As a result, the Bank analyzes these reset timing differences and periodically enters into hedging transactions, such as basis swaps or forward rate agreements, to reduce the risk they pose to the Bank's periodic earnings.

In the normal course of business, the Bank also acquires assets whose structural characteristics and/or size limit the Bank's ability to enter into interest rate exchange agreements having mirror image cash flows. These assets include fixed-rate, fixed-schedule, amortizing advances and mortgage-related assets. The Bank manages the interest rate risk of these assets by issuing non-callable liabilities, and by entering into interest rate exchange agreements that are not designated against specific assets or liabilities for accounting purposes (stand-alone or economic derivatives). These hedging transactions serve to preserve the value of the asset and minimize the impact of changes in interest rates on the spread between the asset and liability due to maturity mismatches.

In the normal course of business, the Bank may issue fixed-rate advances in relatively small sizes (e.g., $1.0 — $5.0 million) that are too small to efficiently hedge on an individual basis. These advances may require repayment of the entire principal at maturity or may have fixed amortization schedules that require repayment of portions of the original principal each month or at other specified intervals over their term. This activity tends to extend the Bank's duration of equity over time. To monitor and hedge this risk, the Bank periodically evaluates the amount of its unhedged advances and may issue a corresponding amount of fixed-rate debt with similar maturities or enter into interest rate swaps to offset the interest rate risk created by the pool of fixed-rate assets.

As of December 31, 2019, the Bank also held approximately $1.1 billion (par value) of variable-rate CMOs that reset monthly in accordance with one-month LIBOR, but that contain terms that will cap their interest rates at levels predominantly between 6.0 percent and 6.5 percent. To offset a portion of the potential risk that the coupons on these securities might reach their caps at some point in the future, the Bank held as of December 31, 2019 a $500 million (notional balance) stand-alone interest rate cap with a strike rate of 6.5 percent. The notional balance of this cap declines to $250 million in August 2020. The interest rate cap matures in 2021. The Bank periodically evaluates the residual risk of the caps embedded in the CMOs and determines whether to purchase additional caps.

At times when the majority of the Bank's variable-rate debt is indexed to three-month LIBOR, the Bank's portfolio of variable-rate CMOs and other assets indexed to one-month LIBOR can present risk to periodic changes in the spread between one-month and three-month LIBOR. When this risk is elevated, the Bank will typically use basis swaps to convert three-month repricing debt to one-month repricing frequency. As of December 31, 2019, the Bank did not have any interest rate basis swaps outstanding.

In practice, management analyzes a variety of factors in order to assess the suitability of the Bank's interest rate exposure within the established risk limits. These factors include current and projected market conditions, including possible changes in the level, shape, and volatility of the term structure of interest rates, possible changes to the composition of the Bank's balance sheet, and possible changes in the delivery channels for the Bank's assets, liabilities, and hedging instruments. Many of these same variables are also included in the Bank's income modeling processes. While management considered the Bank's interest rate risk profile to be appropriate given market conditions during 2019, the Bank may adjust its exposure to market interest rates based on the results of its analyses of the impact of these conditions on future earnings.

As noted above, the Bank typically manages interest rate risk on a transaction by transaction basis as much as possible. To the extent that the Bank finds it necessary or appropriate to modify its interest rate risk position, it would normally do so through one or more cash or interest rate derivative transactions, or a combination of both. For instance, if the Bank wished to shorten its duration of equity, it would typically do so by issuing additional fixed-rate debt with maturities that correspond to the maturities of specific assets or pools of assets that have not previously been hedged. This same result might also be implemented by executing one or more interest rate swaps to convert specific assets from a fixed rate to a variable rate of interest. A similar approach would be taken if the Bank determined it was appropriate to extend rather than shorten its duration.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The Bank's annual audited financial statements for the years ended December 31, 2019, 2018 and 2017, together with the notes thereto and the report of PricewaterhouseCoopers LLP thereon, are included in this Annual Report on pages F-1 through F-58.

The following is a summary of the Bank's unaudited quarterly operating results for the years ended December 31, 2019 and 2018.

SELECTED QUARTERLY FINANCIAL DATA
(unaudited, in thousands)

	Year ended December 31, 2019				
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Total
Interest income[1]	$ 464,090	$ 464,780	$ 464,846	$ 411,989	$ 1,805,705
Net interest income after provision for mortgage loan losses[1]	71,978	62,474	67,912	90,811	293,175
Other income (loss)					
Net gains on trading securities	3,227	4,852	2,266	2,515	12,860
Net gains (losses) on derivatives and hedging activities[1]	8,766	12,790	8,328	(5,197)	24,687
Net gains on other assets carried at fair value	913	353	34	664	1,964
Net realized gains on sales of available-for-sale securities	440	140	—	272	852
Letter of credit fees	2,780	2,984	3,244	3,429	12,437
Service fees and other, net	851	1,025	1,028	616	3,520
Other expense	24,065	24,525	23,803	24,572	96,965
AHP assessments	6,494	6,015	5,905	6,858	25,272
Net income	58,396	54,078	53,104	61,680	227,258

	Year ended December 31, 2018				
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Total
Interest income	$ 293,643	$ 362,516	$ 430,950	$ 459,659	$ 1,546,768
Net interest income after provision for mortgage loan losses	68,093	76,005	80,937	85,431	310,466
Other income (loss)					
Net gains (losses) on trading securities	(2,348)	(542)	(1,583)	3,324	(1,149)
Net gains (losses) on derivatives and hedging activities	1,823	(2,347)	(5,573)	(4,159)	(10,256)
Net gains (losses) on other assets carried at fair value	13	202	312	(1,273)	(746)
Realized gains on sales of held-to-maturity securities	—	—	1,065	606	1,671
Letter of credit fees	2,146	2,265	2,440	2,417	9,268
Service fees and other, net	640	847	836	850	3,173
Other expense	23,991	22,169	22,798	22,597	91,555
AHP assessments	4,640	5,427	5,565	6,465	22,097
Net income	41,736	48,834	50,071	58,134	198,775

(1) The Bank adopted ASU 2017-12, *"Targeted Improvements to Accounting for Hedging Activities"* ("ASU 2017-12") on January 1, 2019. In accordance with ASU 2017-12, changes in the fair value of a derivative in a qualifying fair value hedge along with changes in the fair value of the hedged asset or liability attributable to the hedged risk (the net amount of which is referred to as fair value hedge ineffectiveness) are recorded in net interest income. Prior to the adoption of ASU 2017-12, the Bank recorded fair value hedge ineffectiveness in other income (loss). Because prior year amounts have not been reclassified to conform to the new presentation requirements, interest income, net interest income after provision for mortgage loan losses and net gains (losses) on derivatives and hedging activities for 2019 are not comparable to 2018. For additional discussion, see Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations - Results of Operations beginning on page 60 of this report.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

The Bank's management, under the supervision and with the participation of its Chief Executive Officer and Chief Financial Officer, conducted an evaluation of the effectiveness of the Bank's disclosure controls and procedures (as such term is defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act")) as of the end of the period covered by this report. Based upon that evaluation, the Bank's Chief Executive Officer and Chief Financial Officer concluded that, as of the end of the period covered by this report, the Bank's disclosure controls and procedures were effective in: (1) recording, processing, summarizing and reporting information required to be disclosed by the Bank in the reports that it files or submits under the Exchange Act within the time periods specified in the SEC's rules and forms and (2) ensuring that information required to be disclosed by the Bank in the reports that it files or submits under the Exchange Act is accumulated and communicated to the Bank's management, including its Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosures.

Management's Report on Internal Control over Financial Reporting

Management's Report on Internal Control over Financial Reporting as of December 31, 2019 is included herein on page F-2. The Bank's independent registered public accounting firm, PricewaterhouseCoopers LLP, has also issued a report regarding the effectiveness of the Bank's internal control over financial reporting as of December 31, 2019, which is included herein on page F-3.

Changes in Internal Control over Financial Reporting

There were no changes in the Bank's internal control over financial reporting (as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) during the fiscal quarter ended December 31, 2019 that have materially affected, or are reasonably likely to materially affect, the Bank's internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

Not applicable.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Directors

Pursuant to the HER Act, each FHLBank is governed by a board of directors of 13 persons or so many persons as the Director of the Finance Agency may determine. The HER Act divides directors of FHLBanks into two categories. The first category is comprised of "member" directors who are elected by the member institutions of each state in the FHLBank's district to represent that state. The second category is comprised of "independent" directors who are nominated by a FHLBank's board of directors, after consultation with its affordable housing Advisory Council, and elected by the FHLBank's members at-large.

Pursuant to the HER Act and an implementing Finance Agency regulation, member directors must constitute a majority of the members of the board of directors of each FHLBank and independent directors must constitute at least 40 percent of the members of each board of directors. At least two of the independent directors must be public interest directors with more than four years' experience representing consumer or community interests in banking services, credit needs, housing, or consumer financial protections. Annually, the Board of Directors of the Bank is required to determine how many of its independent directorships should be designated as public interest directorships, provided that the Bank at all times has at least two public interest directorships. By order of the Finance Agency on June 17, 2019, the Director of the Finance Agency designated that, for 2020, the Bank would have nine member directors and eight independent directors. With respect to the director elections that the Bank conducted during calendar year 2019, for terms beginning January 1, 2020, the order designated that one member director would be elected in Texas and three independent directors would be elected.

The term of office of each directorship is four years. Director terms commence on January 1 (except in instances where a vacancy is filled, as further discussed below) and end on December 31. Directors (both member and independent) cannot serve more than three consecutive full terms for which they have been elected by the Bank's members.

Member Directors

Each year the Finance Agency designates the number of member directorships for each state in the Bank’s district. The Finance Agency allocates the member directorships among the states in the Bank’s district as follows: (1) one member directorship is allocated to each state; (2) if the total number of member directorships allocated pursuant to clause (1) is less than eight, the Finance Agency allocates additional member directorships among the states using the method of equal proportions (which is the same equal proportions method used to apportion seats in the U.S. House of Representatives among states) until the total allocated for the Bank equals eight; (3) if the number of member directorships allocated to any state pursuant to clauses (1) and (2) is less than the number that was allocated to that state on December 31, 1960, the Finance Agency allocates such additional member directorships to that state until the total allocated to that state equals the number allocated to that state on December 31, 1960; and (4) after consultation with the Bank, the Finance Agency may approve additional discretionary member directorships. For 2020, the Finance Agency designated the Bank’s member directorships as follows: Arkansas – 1; Louisiana – 2 (the grandfather provision in clause (3) of the preceding sentence guarantees Louisiana two of the member directorships in the Bank’s district); Mississippi – 1; New Mexico – 1; and Texas – 4.

To be eligible to serve as a member director, a candidate must be: (1) a citizen of the United States and (2) an officer or director of a member institution that is located in the represented state and that meets all of the minimum capital requirements established by its federal or state regulator. For purposes of election of directors, a member is deemed to be located in the state in which a member’s principal place of business is located as of December 31 of the calendar year immediately preceding the election year (“Record Date”). In most cases, a member’s principal place of business is the state in which such member maintains its home office as established in conformity with the laws under which it is organized and from which the member conducts business operations; provided, however, a member may request in writing to the FHLBank in the district where such member maintains its home office that a state other than the state in which it maintains its home office be designated as its principal place of business. Within 90 calendar days of receipt of such written request, the board of directors of the FHLBank in the district where the member maintains its home office shall designate a state other than the state where the member maintains its home office as the member’s principal place of business, provided all of the following criteria are satisfied: (a) at least 80 percent of such member’s accounting books, records, and ledgers are maintained, located or held in such designated state; (b) a majority of meetings of such member’s board of directors and constituent committees are conducted in such designated state; and (c) a majority of such member’s five highest paid officers have their place of employment located in such designated state.

For an insurance company or CDFI member that cannot satisfy the requirements in the previous paragraph, the principal place of business is the location from which the member conducts the predominant portion of its business activities. A member will be deemed to conduct the predominant portion of its business activities in a particular state if any two of the following factors are present: (i) the member's largest office based on number of employees is located in the state; (ii) a plurality of the institution's employees are located in the state; or (iii) the places of employment for a plurality of the member's senior executives are located in the state. If an entity cannot identify a location from which it conducts the predominant portion of its business activities based on the factors enumerated in the previous sentence, the entity's state of domicile or incorporation shall be designated as its principal place of business.

Candidates for member directorships are nominated by members located in the state to be represented by that particular directorship. Member directors may be elected without a vote by members if the number of nominees from a state is equal to or less than the number of directorships to be filled from that state. In that case, the Bank will notify the members in the affected voting state in writing (in lieu of providing a ballot) that the directorships are to be filled without an election due to a lack of nominees.

For each member directorship that is to be filled in an election, each member institution that is located in the state to be represented by the directorship is entitled to cast one vote for each share of capital stock that the member was required to hold as of the Record Date; provided, however, that the number of votes that any member may cast for any one directorship cannot exceed the average number of shares of capital stock that are required to be held as of the Record Date by all members located in the state to be represented. The effect of limiting the number of shares that a member may vote to the average number of shares required to be held by all members in the member’s state is generally to equalize voting rights among members. Members required to hold the largest number of shares above the average generally have proportionately less voting power, and members required to hold a number of shares closer to or below such average have proportionately greater voting power than would be the case if each member were entitled to cast one vote for each share of stock it was required to hold. A member may not split its votes among multiple nominees for a single directorship, nor, where there are multiple directorships to be filled for a voting state, may it cumulatively vote for a single nominee. Any ballots cast in violation of these restrictions are void.

No shareholder meetings are held for the election of directors; the election process is conducted electronically using a third-party vendor experienced in administering secure, online elections. For members that choose to opt out of the electronic balloting process or that are unable for whatever reason to cast their votes electronically, the process is conducted by mail. The Bank's Board of Directors does not solicit proxies, nor are member institutions permitted to solicit or use proxies to cast their votes in an election. Except as set forth in the next sentence, no director, officer, employee, attorney or agent of the Bank may (i) communicate in any manner that a director, officer, employee, attorney or agent of the Bank, directly or indirectly, supports or opposes the nomination or election of a particular individual for a member directorship or (ii) take any other action to influence the voting with respect to any particular individual. A Bank director, officer, employee, attorney or agent may, acting in his or her personal capacity, support the nomination or election of any individual for a member directorship, provided that no such individual may purport to represent the views of the Bank or its Board of Directors in doing so.

In the event of a vacancy in any member directorship, such vacancy is to be filled by an affirmative vote of a majority of the Bank's remaining directors, regardless of whether such remaining directors constitute a quorum of the Bank's Board of Directors. A member director so elected shall satisfy the requirements for eligibility that were applicable to his or her predecessor and will fill the unexpired term of office of the vacant directorship.

Independent Directors

Independent directors are nominated by the Bank's Board of Directors after consultation with its affordable housing Advisory Council. Any individual who seeks to be an independent director of the Board of Directors of the Bank may deliver to the Bank, on or before the deadline set by the Bank, an executed independent director application form prescribed by the Finance Agency. Before announcing any independent director nominee, the Bank must deliver to the Finance Agency a copy of the independent director application forms executed by the individuals proposed to be nominated for independent directorships by the Board of Directors of the Bank. If within two weeks of such delivery the Finance Agency provides comments to the Bank on any independent director nominee, the Board of Directors of the Bank must consider the Finance Agency's comments in determining whether to proceed with that nominee or to reopen the nomination process. If within the two-week period the Finance Agency offers no comment on a nominee, the Bank's Board of Directors may proceed to nominate such nominee.

The Bank conducts elections for independent directorships in conjunction with elections for member directorships. Independent directors are elected by a plurality of the Bank's members at-large; in other words, all eligible members in every state in the Bank's district vote on the nominees for independent directorships. If the Bank's Board of Directors nominates only one individual for each independent directorship, then, to be elected, each nominee must receive at least 20 percent of the number of votes eligible to be cast in the election. If any independent directorship is not filled through this initial election process, the Bank must conduct the election process again until a nominee receives at least 20 percent of the votes eligible to be cast in the election. If, however, the Bank's Board of Directors nominates more persons for the type of independent directorship to be filled (either a public interest directorship or other independent directorship) than there are directorships of that type to be filled in the election, then the Bank will declare elected the nominee receiving the highest number of votes, without regard to whether the nominee received at least 20 percent of the number of votes eligible to be cast in the election. The same determinations and limitations that apply to the number of votes that any member may cast for a member directorship apply equally to the election of independent directors.

No shareholder meetings are held for the election of independent directors; the election process is conducted in the same manner as the election process for member directorships. The Bank's Board of Directors does not solicit proxies, nor are member institutions permitted to solicit or use proxies to cast their votes in an election. A Bank director, officer, employee, attorney or agent and the Bank's Board of Directors and affordable housing Advisory Council (including members of the Advisory Council) may support the candidacy of any individual nominated by the Board of Directors for election to an independent directorship, but may not otherwise (i) communicate in any manner that a director, officer, employee, attorney or agent of the Bank, directly or indirectly, supports or opposes the nomination or election of a particular individual for an independent directorship or (ii) take any other action to influence the voting with respect to any particular individual.

As determined by the Bank, at least two of the independent directors must be public interest directors with more than four years' experience representing consumer or community interests in banking services, credit needs, housing, or consumer financial protections. The remainder of the independent directors must have demonstrated knowledge of or experience in one or more of the following areas: auditing and accounting; derivatives; financial management; organizational management; project development; risk management practices; or the law. The independent director's knowledge of or experience in the above areas should be commensurate with that needed to oversee a financial institution with a size and complexity that is comparable to that of the Bank.

In the event of a vacancy in any independent directorship occurring other than by failure of a sole nominee for an independent directorship to receive votes equal to at least 20 percent of all eligible votes, such vacancy is to be filled by an affirmative vote of a majority of the Bank's remaining directors, regardless of whether the remaining directors constitute a quorum of the Bank's Board of Directors. An independent director so elected shall satisfy the requirements for eligibility that were applicable to his or her predecessor and will fill the unexpired term of office of the vacant directorship. If the Board of Directors of the Bank is electing an independent director to fill the unexpired term of office of a vacant directorship, the Bank must deliver to the Finance Agency for its review a copy of the independent director application form of each individual being considered by the Bank's Board of Directors.

To be eligible to serve as an independent director, a person must be: (1) a citizen of the United States and (2) a resident in the Bank's district. Additionally, an independent director is prohibited from serving as an officer of any FHLBank or as an officer, employee or director of any member of the Bank, or of any recipient of advances from the Bank, except that an independent director may serve as an officer, employee or director of a holding company that controls one or more members of, or recipients of advances from, the Bank if the assets of all such members or recipients of advances constitute less than 35 percent of the assets of the holding company, on a consolidated basis. For these purposes, any officer position, employee position or directorship of the director's spouse is attributed to the director. An independent director must disclose to the Bank all officer, employee or director positions described above that the director or the director's spouse holds.

Patricia P. Brister, an independent director from Mandeville, Louisiana, passed away on February 3, 2020. Ms. Brister had served as a director of the Bank since 2008 (and as a public interest director since 2017). She had recently been re-elected to serve a four-year term that commenced on January 1, 2020. Including a previous term from 2002 to 2004, Ms. Brister had served as a director of the Bank for 15 years. Effective March 6, 2020, the Bank's Board of Directors elected Felipe A. Rael to fill the independent directorship vacated by Ms. Brister.

The Board of Directors has designated Dianne W. Bolen and Felipe A. Rael as the Bank's public interest directors.

2020 Directors

The following table sets forth certain information regarding each of the Bank's directors (ages are as of March 25, 2020):

Name	Age	Director Since	Expiration of Term as Director	Board Committees
Joseph F. Quinlan, Jr., Chairman (Member)	72	2008	2020	(a)(b)(c)(d)(e)(f)(g)
Robert M. Rigby, Vice Chairman (Member)	73	2010	2023	(a)(b)(c)(d)(e)(f)(g)
Cheryl D. Alston (Independent)	53	2017	2020	(a)(d)
Dianne W. Bolen (Independent)	71	2012	2022	(e)(f)(g)
Tim H. Carter (Member)	65	2013	2020	(b)(d)
Mary E. Ceverha (Independent)	75	2004	2022	(a)(b)(c)(g)
Albert C. Christman (Member)	68	2014	2021	(a)(d)(g)
James D. Goudge (Member)	66	2014	2021	(a)(e)
W. Wesley Hoskins (Member)	68	2013	2020	(d)(e)
Michael C. Hutsell (Member)	69	2014	2021	(b)(f)
G. Granger MacDonald (Independent)	65	2017	2021	(c)(e)(f)
A. Fred Miller, Jr. (Member)	70	2015	2022	(a)(c)(f)
Sally I. Nelson (Independent)	66	2014	2021	(b)(c)(d)
Felipe A. Rael (Independent)	42	2020	2023	(a)(f)
John P. Salazar (Independent)	77	2010	2023	(d)(e)(g)
Margo S. Scholin (Independent)	69	2007	2023	(b)(d)(g)
Ron G. Wiser (Member)	63	2010	2022	(a)(b)(g)

(a) Member of Risk Management Committee

(b) Member of Audit Committee

(c) Member of Compensation and Human Resources Committee

(d) Member of Strategic Planning, Operations and Technology Committee

(e) Member of Government and External Affairs Committee

(f) Member of Affordable Housing and Economic Development Committee

(g) Member of Executive and Governance Committee

Joseph F. Quinlan, Jr. is Chairman of the Board of Directors of the Bank and has served in that capacity since January 1, 2015. Mr. Quinlan serves as Chairman of First National Bankers Bank (a member of the Bank) and as Chairman of its privately held holding company, First National Bankers Bankshares, Inc. (Baton Rouge, Louisiana), and has served in such capacities since 1984. In addition, from 1984 through 2017, Mr. Quinlan served as President and Chief Executive Officer and in 2018 he served as Chief Executive Officer of First National Bankers Bankshares, Inc. From 2000 through March 2011, Mr. Quinlan also served as Chairman of the Mississippi National Bankers Bank, a former member of the Bank, and from 2003 through March 2011 he served as Chairman of the First National Bankers Bank, Alabama. Further, Mr. Quinlan served as a director of the Arkansas Bankers Bank, a former member of the Bank, from December 2008 through March 2011 and as its Chairman from February 2009 through March 2011. Mississippi National Bankers Bank, First National Bankers Bank, Alabama, and Arkansas Bankers Bank were merged into First National Bankers Bank on March 31, 2011. In addition, Mr. Quinlan serves as Chairman of FNBB Services Corp. LLC, FNBB Capital Markets LLC, FNBB Insurance Agency LLC and FNBB Holdings LLC and has served in those capacities since 1998, 2003, 2010 and 2016, respectively. He currently serves on the Council of Federal Home Loan Banks and is a member of the Chair and Vice Chair Committee of the Council of Federal Home Loan Banks. Mr. Quinlan also serves as Chairman of the Executive and Governance Committee of the Bank’s Board of Directors.

Robert M. Rigby is Vice Chairman of the Board of Directors of the Bank and has served in that capacity since January 1, 2015. Mr. Rigby serves as Regional President, Executive Vice President for Legend Bank (a member of the Bank) and has served in that capacity since December 1, 2017. Located in Fort Worth, Texas, he has responsibility for Tarrant County and surrounding areas. Since June 2018, Mr. Rigby has also served as an advisory director for Legend Bank. From August 2008 through November 30, 2017, he served as an advisory director and Market President for Liberty Bank in North Richland Hills, Texas (a member of the Bank). From 1998 to August 2008, Mr. Rigby served as a director, President and Chief Executive Officer of Liberty Bank. Prior to joining Liberty Bank, Mr. Rigby served as a director and Executive Vice President of First National Bank of Weatherford from 1980 to 1998. He previously served as an advisory director for the Texas Tech University School of Banking and is a former vice chairman of the North Richland Hills Economic Development Advisory Committee. He previously served on the BankPac Committee of the American Bankers Association ("ABA") and he is a past chairman of the Texas Bankers Association. Further, Mr. Rigby previously served on the Weatherford College Board of Trustees, the board of directors of the Birdville ISD Education Foundation and as an advisory director for the North Texas Special Needs Assistance Partners. He is also a past chairman of the Northeast Tarrant Chamber of Commerce. Mr. Rigby currently serves on the Council of Federal Home Loan Banks and is a member of the Chair and Vice Chair Committee of the Council of Federal Home Loan Banks. He also serves as Vice Chairman of the Executive and Governance Committee of the Bank’s Board of Directors.

Cheryl D. Alston serves as Executive Director and Chief Investment Officer of the Employees' Retirement Fund of the City of Dallas ("ERF"), a $3.6 billion pension plan for the city's civilian employees. Ms. Alston has served in that capacity since October 2004 and is responsible for strategy development, finance, operations and investments. Prior to joining ERF, Ms. Alston served as Vice President (from October 2002 to April 2004) and Assistant Vice President (from February 1998 to October 2002) of the Retirement & Investment Services Division of Cigna Corporation. From 1988 to 1998, she served in various financial and management roles for Chase Global Securities. In 2011, Ms. Alston was appointed by President Barack Obama to the Pension Benefit Guaranty Corporation ("PBGC") Advisory Committee. In 2013, she was reappointed to serve a second term on the PBGC Advisory Committee, which term ended in 2016. Ms. Alston currently serves on the board of directors of CHRISTUS Health, a faith-based international health care system. In addition, she serves on the boards of directors of Blue Cross Blue Shield of Kansas City, TIDES, and the Texas Women's Foundation and is a member of both the Dallas Assembly and the International Women's Forum Dallas. On February 26, 2018, Ms. Alston was elected to serve on the board of directors of Globe Life Inc. (formerly known as Torchmark Corporation), a publicly traded financial services holding company specializing in life and supplemental health insurance. Globe Life Inc.'s primary subsidiaries are American Income Life Insurance Company, Liberty National Life Insurance Company, Globe Life And Accident Insurance Company, United American Insurance Company, and Family Heritage Life Insurance Company of America.

Dianne W. Bolen served as Executive Director of the Mississippi Home Corporation in Jackson, Mississippi from 1997 until her retirement on December 31, 2014. The Mississippi Home Corporation is a state housing finance agency that provides rental and homeownership programs to persons of low to moderate income. Ms. Bolen joined the Mississippi Home Corporation in 1990. From 1990 to 1992, she served as Finance Director and from 1992 to 1997, she served as Deputy Executive Director. Ms. Bolen also served as Assistant Secretary Treasurer from 1990 until June 2014. From April 2015 to April 2017, she served as a consultant to the Mississippi Home Corporation. Ms. Bolen previously served on the board of directors of the National Council of State Housing Agencies ("NCSHA") and, until December 31, 2014, she co-chaired the NCSHA's Municipal Disclosure Task Force. Prior to her retirement, Ms. Bolen also served as a member of the National Mortgage Bankers Association and the Affordable Housing Tax Credit Coalition. She currently serves as Chairman of the Affordable Housing and Economic Development Committee of the Bank’s Board of Directors. Ms. Bolen previously served on the Bank's affordable housing Advisory Council from 1998 through 1999 and from 2007 through 2009.

Based in Fort Worth, Texas, Tim H. Carter serves as a director and Development Officer for Southside Bank (a member of the Bank headquartered in Tyler, Texas) and has served in that capacity since September 30, 2017 when he stepped down from his role as President, North Texas Region for Southside Bank, a position he had held since December 17, 2014. On December 17, 2014, Mr. Carter's then current employer, Fort Worth-based OmniAmerican Bank (then a member of the Bank) was merged with and into Southside Bank, a wholly-owned subsidiary of Southside Bancshares, Inc., Southside Bank's publicly traded holding company. Upon the closing of the merger, Mr. Carter became an officer of Southside Bank. From June 2007 until December 17, 2014, Mr. Carter served as a director, President and Chief Executive Officer of OmniAmerican Bank and its publicly traded holding company, OmniAmerican Bancorp, Inc. Immediately prior to the OmniAmerican Bank/Southside Bank merger, OmniAmerican Bancorp, Inc. was acquired by Southside Bancshares, Inc. He also serves as an advisory director for Southside Bank and has served in that capacity since December 17, 2014. Mr. Carter currently serves as chairman of the board of directors of Texas Wesleyan University. He also serves on the boards of directors of Safe City Commission and Lena Pope. Mr. Carter is a past board member of the TCU Business School International Board of Visitors, the Van Cliburn Foundation, the Fort Worth Club (for which he served as president), the Hill School (for which he served as chairman), and North Texas LEAD (for which he also served as chairman). Mr. Carter is a past president and chief executive officer of the United Way of Metropolitan Tarrant County and a former president of the Harris Methodist Health Foundation. He currently serves as Vice Chairman of the Strategic Planning, Operations and Technology Committee of the Bank’s Board of Directors.

Mary E. Ceverha, a civic volunteer who resides in Dallas, Texas, has served as a director of the Bank since 2004. Ms. Ceverha is a former director (from 2001 to 2019) and past president (from 2001 to 2003) of Trinity Commons Foundation, Inc. Founded by Ms. Ceverha in 2001, this not-for-profit organization coordinated fundraising and other activities relating to the construction of the Trinity River Project, a public works redevelopment project in Dallas, Texas. Having completed the objectives for which it was established, Trinity Commons Foundation, Inc. wrapped up its affairs in 2019. Previously, Ms. Ceverha served on the steering committee of the President’s Research Council for the University of Texas Southwestern Medical Center, which raises funds for medical research, and as a member of the Greater Dallas Planning Council. Ms. Ceverha is also a former board member and president of Friends of Fair Park, a non-profit citizens group dedicated to the preservation of Fair Park, a national historic landmark in Dallas, Texas, and she is a former Commissioner of the Dallas Housing Authority. From 1995 to 2004, she served on the Texas State Board of Health. Ms. Ceverha currently serves as Chairman of the Compensation and Human Resources Committee of the Bank’s Board of Directors. She previously served as Vice Chairman of the Bank’s Board of Directors from December 2005 to December 2014 and as Acting Vice Chairman of the Bank's Board of Directors from January 2005 to December 2005.

Albert C. Christman serves as Chairman and Chief Executive Officer of Guaranty Bank & Trust Company of Delhi (a member of the Bank located in Delhi, Louisiana) and as Chairman and Chief Executive Officer of its privately held holding company, Delhi Bancshares, Inc. He has served as Chairman of Guaranty Bank & Trust Company of Delhi since November 2016 and as Chief Executive Officer since 1986. From 1986 to November 2016, Mr. Christman also served as a director and President of Guaranty Bank & Trust Company of Delhi. He has served as Chairman of Delhi Bancshares, Inc. since January 2017 and as its Chief Executive Officer since 1986. From 1986 to January 2017, Mr. Christman also served as a director and President of Delhi Bancshares, Inc. Since 1987, Mr. Christman has also served on the boards of directors of First National Bankers Bank, a member of the Bank, and its privately held holding company, First National Bankers Bankshares, Inc. He is the founder of Delhi Charter School and Community Financial Insurance Center, LLC. Mr. Christman has served as Chairman of both organizations since their inception in 2001 and 2004, respectively. In addition, he serves as a director of Pecan Haven Addiction Center, LLC. Further, Mr. Christman serves as Chairman and Chief Executive Officer of Southern Fidelity Agency, Inc., a privately held insurance agency he founded in 1998. He is a past chairman of the Louisiana Bankers Association. Mr. Christman currently serves as Chairman of the Risk Management Committee of the Bank's Board of Directors.

James D. Goudge serves as Executive Vice President of Broadway National Bank in San Antonio, Texas and has served in that capacity since April 1, 2019. He joined Broadway National Bank, a member of the Bank, in 1989. Before stepping down in connection with a leadership succession plan, Mr. Goudge served as Chairman of Broadway National Bank from 2001 through March 31, 2019. From 2001 to 2016, he also served as Chief Executive Officer of Broadway National Bank. From 1998 to 2001, Mr. Goudge served as President and Chief Executive Officer. From 1989 to 1998, he served as Executive Vice President in charge of Broadway National Bank's Lending Division. From 2001 through March 31, 2019, Mr. Goudge also served as Chairman and Chief Executive Officer of Broadway Bancshares, Inc., Broadway National Bank's privately held holding company. Mr. Goudge previously served on the ABA's Membership Committee and its Government Relations Committee. He is also a past chairman of the Texas Bankers Association. Mr. Goudge currently serves as Vice Chairman of the Risk Management Committee of the Bank's Board of Directors.

W. Wesley Hoskins serves as Chairman, President and Chief Executive Officer of First Community Bank (a member of the Bank located in Corpus Christi, Texas). Mr. Hoskins has served as Chairman since 2001, as President and Chief Executive Officer since 1997 and as a director since 1993. Since 1999, he has also served as Chairman of Coastal Bend Bancshares, Inc., First Community Bank's privately held holding company. In addition, Mr. Hoskins has served as a director and President of WBH Inc., a privately held real estate holding company in Premont, Texas since August 1996 and as President of LTF

Holdings, Inc., a privately held real estate holding company in Corpus Christi, Texas since September 2010. He is a current member and past chairman of the Texas Bankers Association. Further, Mr. Hoskins presently serves as chairman of the ABA's BankPac Committee and as chairman of the Corpus Christi Chamber of Commerce. He currently serves as Vice Chairman of the Government and External Affairs Committee of the Bank's Board of Directors.

Michael C. Hutsell serves as a board member and President of First Security Bank in Searcy, Arkansas. Mr. Hutsell joined First Security Bank, a member of the Bank, in 1989 and has served as a board member and President since March 2006. From January 2002 to March 2006, he served as Executive Vice President and from October 1996 to January 2002, he served as Operations Officer. Mr. Hutsell currently serves on the board of directors of the Sunshine School (a private school for students with developmental disabilities in Searcy, Arkansas). Mr. Hutsell previously served on the boards of directors of Main Street Searcy and the City of Searcy Planning Commission and he is a past chairman of the Searcy Chamber of Commerce and the Searcy Kiwanis Club. Mr. Hutsell currently serves as Vice Chairman of the Bank’s Audit Committee.

G. Granger MacDonald serves as Chairman and Chief Executive Officer of MacDonald Property Management, LLC and MacDonald Companies, Inc., each of which is a privately held company based in Kerrville, Texas. He has served as Chairman and Chief Executive Officer of MacDonald Property Management LLC, a multifamily property management company, since its formation in January 2015 and as Chairman and Chief Executive Officer of MacDonald Companies, Inc. since January 2019 when MacDonald and Associates, Inc. and G.G. MacDonald, Inc. were merged to form MacDonald Companies, Inc. Mr. MacDonald served as Chairman and Chief Executive Officer of MacDonald and Associates, Inc., a developer of both affordable and market rate rental apartment projects, since its formation in 1998 and he served as Chairman and Chief Executive Officer of G.G. MacDonald, Inc., a multifamily construction company, since its formation in 1990. The services previously offered by MacDonald and Associates, Inc. and G.G. MacDonald, Inc. are now offered by MacDonald Companies, Inc. Since August 2019, he has served on the board of directors of Habitat for Humanity Kerr County. Mr. MacDonald is a past chairman of the board of the National Association of Home Builders, a past president of the Texas Association of Builders, and a past president and founding member of the Texas Affiliation of Affordable Housing Providers. He currently serves as Vice Chairman of the Compensation and Human Resources Committee of the Bank's Board of Directors.

A. Fred Miller, Jr. serves as Chairman of Bank of Anguilla in Anguilla, Mississippi. He joined Bank of Anguilla, a member of the Bank, in 1971 and has served as Chairman since January 2015. From 1986 to January 2015, Mr. Miller served as a director, President and Chief Executive Officer of Bank of Anguilla. From 2008 to January 2015, Mr. Miller also served as President and Chief Executive Officer of Pyramid Financial Corporation, Bank of Anguilla's privately held holding company. He has served as Chairman of Pyramid Financial Corporation since January 2014 and as a director since 2008. Since January 2016, Mr. Miller has also served on the board of directors of Hope Enterprise Corporation. Mr. Miller currently serves as Vice Chairman of the Affordable Housing and Economic Development Committee of the Bank's Board of Directors. He previously served as a director of the Bank from 1997 to 2004. In 2002 and 2003, Mr. Miller served as Vice Chairman of the Bank's Board of Directors and in 2004 he served as Chairman of the Bank's Board of Directors.

Sally I. Nelson serves as Chairperson and Chief Executive Officer of Nextwave Ventures, a privately held real estate company located in Huntsville, Texas, and has served in such capacities since March 2015. From January 2013 until January 2014, Ms. Nelson served as an advisor to the Huntsville Memorial Hospital board of directors and as the chairman of the Huntsville Memorial Hospital Foundation. From 2007 until January 2013, Ms. Nelson served as Chief Executive Officer of Huntsville Memorial Hospital. Prior to that, she served as a board member and officer of the Greater Houston Area Chapter of the American Red Cross from 2005 to 2008. From 1986 to 2004, Ms. Nelson served as Executive Vice President, Chief Financial Officer and Chief Operations Officer of Texas Children's Hospital in Houston, Texas. From 1999 to 2005, she served as chair of the Finance and Audit committees of the United Way of Houston. Ms. Nelson is a Certified Public Accountant.

Felipe A. Rael serves as Executive Director of the Greater Albuquerque Housing Partnership ("GAHP"), a non-profit affordable housing developer of multifamily rental and owner-occupied homes for first-time homebuyers. He has served as Executive Director of GAHP since December 2014. Prior to joining GAHP, Mr. Rael served as Director of Housing Development for the New Mexico Mortgage Finance Authority from February 2009 to December 2014. From 2001 to 2008, Mr. Rael served in various positions in the mortgage finance industry. Until his election to the Bank's Board of Directors, Mr. Rael had served as a member of the Bank's affordable housing Advisory Council since January 2016 and as the Advisory Council's vice chair since January 2019.

John P. Salazar is an attorney and director with the law firm of Rodey, Dickason, Sloan, Akin & Robb, P.A. in Albuquerque, New Mexico, where he specializes in real estate-related matters, including land use and development law. He has been with Rodey, Dickason, Sloan, Akin & Robb, P.A. since 1968 and has represented single-family residential and multifamily housing developers and builders. Mr. Salazar currently serves as a member of the Advisory Council of the Inter-American Foundation and he is a past chairman of the foundation's board of directors. He is a member of the Albuquerque Economic Forum, the Greater Albuquerque Chamber of Commerce, the Albuquerque Hispano Chamber of Commerce and the Albuquerque Chapter of the National Association of Office and Industrial Parks. Mr. Salazar previously served on the board of directors of the

Greater Belen Economic Development Corporation, the board of trustees of the Albuquerque Community Foundation and the board of directors of the KIMO Foundation. Further, he is a past board chairman of the Albuquerque Hispano Chamber of Commerce, the Greater Albuquerque Chamber of Commerce, and the University of New Mexico Alumni Association. Mr. Salazar currently serves as Chairman of the Government and External Affairs Committee of the Bank's Board of Directors.

Margo S. Scholin is a retired partner of the law firm of Baker Botts L.L.P. in Houston, Texas. As a member of the law firm's Corporate Section, she specialized in corporate and securities law, including securities law reporting, corporate transactions and governance, corporate finance and the issuance of debt and equity securities. Ms. Scholin joined Baker Botts L.L.P. in 1983 and was a partner from 1991 until her retirement in December 2010. From 1997 to 2004, she served as chair of the Regulatory Committee of the Texas State Board of Health. Ms. Scholin is a past chairman of the board of directors of the Houston Area Women's Center, a non-profit agency serving victims of domestic violence and sexual abuse and has served on numerous other non-profit boards. She currently serves as Chairman of the Strategic Planning, Operations and Technology Committee of the Bank's Board of Directors.

Ron G. Wiser serves as a director, President and Chief Executive Officer of Bank of the Southwest (a member of the Bank) and as a director and Secretary/Treasurer of its privately held holding company, New Mexico National Financial, Inc. (Roswell, New Mexico). He has served as President of Bank of the Southwest since 1996 and as its Chief Executive Officer since December 2003. Mr. Wiser also served as Chief Executive Officer of Bank of the Southwest from 1996 to November 2000. He has served as Secretary/Treasurer of New Mexico National Financial, Inc. and as a director of both companies since 1996. Mr. Wiser is a current board member and past president of the New Mexico Bankers Association and he previously served on the Community Bankers Council of the ABA. Mr. Wiser is a Certified Public Accountant and he currently serves as Chairman of the Bank's Audit Committee.

Audit Committee Financial Expert

The Bank's Board of Directors has determined that Mr. Wiser qualifies as an "audit committee financial expert" as defined by SEC rules. The Bank is required by SEC rules to disclose whether Mr. Wiser is "independent" and, in making that determination, is required to apply the independence standards of a national securities exchange or an inter-dealer quotation system. For this purpose, the Bank has elected to use the independence standards of the New York Stock Exchange. Under those standards, the Bank's Board of Directors has determined that presumptively its member directors, including Mr. Wiser, are not independent. However, Mr. Wiser is independent under applicable Finance Agency regulations and under Rule 10A-3 of the Exchange Act related to the independence of audit committee members. For more information regarding director independence, see Item 13. Certain Relationships and Related Transactions, and Director Independence.

Director Qualifications and Attributes

As more fully described above, the size of the Bank's Board of Directors, including the number of member directors and independent directors, is determined by the Finance Agency, subject to a minimum number of directors established by statute. Candidates for member directorships are nominated and elected by members located in the state to be represented by that particular directorship. The Bank's Board of Directors does not nominate member directors nor can it support or oppose the nomination or election of a particular individual for a member directorship. In the event of a vacancy in any member directorship, such vacancy is to be filled by an affirmative vote of a majority of the Bank's remaining directors, regardless of whether the remaining directors constitute a quorum of the Bank's Board of Directors.

Independent directors, on the other hand, are nominated by the Bank's Board of Directors (after consultation with its affordable housing Advisory Council) and are elected by a plurality of the Bank's members at-large. A vacancy in any independent directorship is similarly filled by an affirmative vote of a majority of the Bank's remaining directors, regardless of whether the remaining directors constitute a quorum of the Bank's Board of Directors.

In evaluating an independent director candidate (or a candidate to fill a vacancy in any member directorship), the Board of Directors considers factors that it has determined to be in the best interests of the Bank and its shareholders and which go beyond the statutory eligibility requirements, including the knowledge, experience, integrity and judgment of each candidate; the experience and competencies that the Board desires to have represented; each candidate's ability to devote sufficient time and effort to his or her duties as a director; geographic representation in the Bank's five-state district; prior tenure on the Board; the need to have at least two public interest directors from among the Bank's independent directors; and any core competencies or technical expertise necessary to staff committees of the Board of Directors. In addition, the Board of Directors assesses whether a candidate possesses the integrity, judgment, knowledge, experience, skills and expertise that are likely to enhance the Board's ability to manage and direct the affairs and business of the Bank including, when applicable, to enhance the ability of committees of the Board to fulfill their duties.

Each of the Bank's member directors and independent directors brings a unique background and strong set of skills to the Board, giving the Board as a whole competence and experience in a wide variety of areas, including corporate governance and board service, executive management, finance, accounting, human resources, legal, risk management, affordable housing, economic development and government relations. Set forth below are the attributes of each of the Bank’s independent directors that the Board of Directors considered important to his or her inclusion on the Board. The Board of Directors does not make any judgments with regard to its member directors who have been elected by the Bank’s members, although the skills and experience of those directors may bear on the Board of Directors’ decisions with regard to the competencies it seeks when nominating candidates for independent directorships or when filling vacancies in either member or independent directorships.

Ms. Alston was elected by the Bank’s members at-large to serve a four-year term that commenced on January 1, 2017. Ms. Alston brings to the Board extensive experience in the areas of investment management, finance and corporate governance. Since 2004, she has served as the Executive Director and Chief Investment Officer of the Employees' Retirement Fund of the City of Dallas, where she provides leadership for the fund's staff in implementing the programs necessary to achieve the mission, goals and objectives established by the fund's board of trustees. Altogether, Ms. Alston brings to the Board over 30 years of experience in the financial services industry. From 2011 to 2016, Ms. Alston served on the Advisory Committee for the PBGC. Currently, she serves on the boards of directors of CHRISTUS Health and Blue Cross Blue Shield of Kansas City.

Ms. Bolen was elected by the Bank’s members at-large to serve a four-year term that commenced on January 1, 2019. She has served on the Bank’s Board of Directors since November 5, 2012. Ms. Bolen brings to the Board extensive experience in the areas of affordable housing, community development, organizational management and finance. From 1997 until December 31, 2014, she served as the Executive Director of the Mississippi Home Corporation. From 1990 to 1992, she served as Finance Director and from 1992 to 1997, she served as Deputy Executive Director. From 1998 through 1999 and from 2007 through 2009, Ms. Bolen served as a member of the Bank’s affordable housing Advisory Council, which advises the Bank’s Board of Directors regarding opportunities for community revitalization through specialized community investment and affordable housing programs. Ms. Bolen previously served on the board of directors of the NCSHA and, until December 31, 2014, she co-chaired the NCSHA's Municipal Disclosure Task Force.

Ms. Ceverha was elected by the Bank’s members at-large to serve a four-year term that commenced on January 1, 2019. She has served on the Bank’s Board of Directors since January 1, 2004 and was Vice Chairman of the Bank’s Board of Directors from December 2005 to December 2014 and Acting Vice Chairman of the Bank's Board of Directors from January 2005 to December 2005. Ms. Ceverha brings to the Board extensive experience in housing, government relations, corporate governance and policy-making. She has held leadership roles in numerous local government agencies and not-for-profits, including serving as vice chairman of the Texas State Board of Health, as a commissioner of the Dallas Housing Authority, and as the founder and past president of an organization that was established for the purpose of coordinating fundraising and other activities relating to the construction of the Trinity River Project in Dallas, Texas. She also provides extensive knowledge of the Texas legislative process to the Board.

Mr. MacDonald was elected by the Bank’s members at-large to serve a four-year term that commenced on January 1, 2018. He has served on the Bank’s Board of Directors since June 27, 2017, when he was elected by the Bank's Board of Directors to fufill the unexpired term of an independent director. Mr. MacDonald brings to the Board extensive knowledge of affordable housing and government relations. He leads two companies that specialize in the construction and management of multifamily housing. Mr. MacDonald is a past chairman of the board of the National Association of Home Builders, a past president of the Texas Association of Builders, and a past president and founding member of the Texas Affiliation of Affordable Housing Providers. Since August 2019, he has served on the board of directors of Habitat for Humanity Kerr County.

Ms. Nelson was elected by the Bank’s members at-large to serve a four-year term that commenced on January 1, 2018. She has served on the Bank's Board of Directors since January 1, 2014. Ms. Nelson brings to the Board extensive experience in accounting, finance, organizational management, corporate governance and matters involving executive compensation. She currently serves as Chairperson and Chief Executive Officer of a privately held real estate company. From 2007 to January 2013, Ms. Nelson served as Chief Executive Officer of Huntsville Memorial Hospital. Prior to that, she served as Executive Vice President, Chief Financial Officer and Chief Operations Officer of Texas Children's Hospital in Houston, Texas for 18 years. In addition, she has served on numerous boards of directors. Ms. Nelson is a Certified Public Accountant.

Mr. Rael was elected by the Bank’s Board of Directors to fulfill the unexpired term of an independent director effective March 6, 2020. With over 18 years of experience in the mortgage finance industry, Mr. Rael brings to the Board extensive experience in the areas of affordable housing, community development, organizational management and mortgage finance. Since December 2014, he has served as Executive Director of the Greater Albuquerque Housing Partnership. From 2009 to 2014, he served as Director of Housing Development for the New Mexico Mortgage Finance Authority. From January 2016 until his election to the Bank's Board of Directors, Mr. Rael served as a member of the Bank’s affordable housing Advisory Council, which advises the Bank’s Board of Directors regarding opportunities for community revitalization through specialized community investment and affordable housing programs. Mr. Rael served as vice chair of the Bank's affordable housing Advisory Council from January 2019 until his election to the Bank's Board of Directors.

Mr. Salazar was elected by the Bank's members at-large to serve a four-year term that commenced on January 1, 2020. He has served on the Bank's Board of Directors since January 1, 2010. As an attorney with Rodey, Dickason, Sloan, Akin and Robb, P.A. for over 50 years, he brings extensive legal experience to the Board. Mr. Salazar specializes in real estate related matters, including land use and development law, and has represented single-family residential and multifamily housing developers and builders. Currently, he serves as a member of the Advisory Council of the Inter-American Foundation. Mr. Salazar is also a member of the Greater Albuquerque Chamber of Commerce and the Albuquerque Hispano Chamber of Commerce. He has previously served in leadership positions on the boards of these and other non-profit organizations that promote economic development, housing availability and/or housing finance.

Ms. Scholin was elected by the Bank's members at-large to serve a four-year term that commenced on January 1, 2020. She has served on the Bank's Board of Directors since April 10, 2007. As a lawyer with Baker Botts L.L.P. for over 25 years, she brings a wealth of legal experience to the Board. Prior to her retirement in December 2010, Ms. Scholin specialized in general corporate, corporate finance and securities law (including securities law reporting) and she has extensive knowledge of regulatory issues. In addition, Ms. Scholin brings to the Board expertise in corporate governance and compliance matters.

Executive Officers

Set forth below is certain information regarding the Bank's executive officers (ages are as of March 25, 2020). The executive officers serve at the discretion of, and are elected annually by, the Bank's Board of Directors.

Name	Age	Position Held	Officer Since
Sanjay Bhasin	51	President and Chief Executive Officer	2014
Brehan Chapman	43	Executive Vice President and Chief Administrative Officer	2009
Sandra Damholt	67	Senior Vice President and General Counsel	2010
Kelly Davis	52	Senior Vice President and Chief Risk Officer	2015
Tom Lewis	57	Executive Vice President and Chief Financial Officer	2003
Kalyan Madhavan	53	Executive Vice President and Chief Business Officer	2014
Gustavo Molina	47	Senior Vice President and Chief Banking Operations Officer	2009
Jibo Pan	47	Executive Vice President and Head of Capital Markets	2014
Jeff Yeager	46	Senior Vice President and Chief Information Officer	2015
Michael Zheng	50	Senior Vice President and Chief Credit Officer	2015

Sanjay Bhasin serves as President and Chief Executive Officer of the Bank and has served in that capacity since he joined the Bank in May 2014. Prior to his employment with the Bank, Mr. Bhasin served as Executive Vice President, Members and Markets for the Federal Home Loan Bank of Chicago (the "Chicago Bank") from 2011 until May 2014. He joined the Chicago Bank in 2004 as Vice President, Mortgage Finance and was promoted to Senior Vice President, Mortgage Finance in 2007 and to Executive Vice President, Financial Markets in 2008, a position he held until his appointment as Executive Vice President, Members and Markets. Prior to joining the Chicago Bank, Mr. Bhasin was responsible for managing the interest rate risk associated with Bank One, NA's mortgage pipeline holdings from 1999 to 2004. Mr. Bhasin currently serves on the Council of Federal Home Loan Banks and as a director of the FHLBanks Office of Finance.

Brehan Chapman serves as Executive Vice President and Chief Administrative Officer. In this capacity, Ms. Chapman has responsibility for the Bank's corporate communications, government and industry relations, human resources, property and facilities management, and compliance function. She joined the Bank in December 2004 as a Content Management Specialist. In November 2005, Ms. Chapman was promoted to Corporate Communications Manager, a position she held until her appointment as Vice President and Director of Corporate Communications and External Affairs in July 2009. In November 2013, her responsibilities were expanded to include human resources. In April 2014 and May 2014, Ms. Chapman's responsibilities were further expanded to include the Bank's compliance function and property and facilities management, respectively. Ms. Chapman also serves as the Bank's Corporate Secretary and has served in that capacity since February 2008. She was promoted to Senior Vice President in January 2012, to Chief Administrative Officer in February 2014 and to Executive Vice President in January 2016. Prior to joining the Bank, Ms. Chapman served as the Public Relations Manager for Waubonsee Community College from 2001 to 2004.

Sandra Damholt serves as Senior Vice President and General Counsel of the Bank. Ms. Damholt joined the Bank in October 2009 as Deputy General Counsel, and was promoted to Vice President and General Counsel in October 2010. She was promoted to Senior Vice President in January 2014. Prior to joining the Bank, Ms. Damholt served as Senior Vice President and General Counsel of Dovenmuehle Mortgage, Inc. from January 2008 through May 2009. From 2000 to 2007, Ms. Damholt served in several capacities for the Chicago Bank, including Deputy General Counsel and Director of Compliance and Ethics. Prior to that, Ms. Damholt served in various legal and management roles in the financial services industry, including 13 years with PNC Mortgage Corporation (formerly Sears Mortgage Corporation) and 3 years with the State of Oklahoma Department of Banking.

Kelly Davis serves as Senior Vice President and Chief Risk Officer of the Bank. In this capacity, Ms. Davis has responsibility for the Bank's market risk, operational risk and model risk management functions. In January 2017, her responsibilities were expanded to include income forecasting. She joined the Bank in August 2008 as a Senior Strategic Planning Analyst. In September 2013, Ms. Davis was promoted to Risk Reporting Manager, a position she held until her appointment as Director of Operational Risk Management and Enterprise Risk Management Reporting in July 2014. Ms. Davis was promoted to Chief Risk Officer in June 2015 and to Senior Vice President in July 2015. Prior to joining the Bank, she served in various consulting and management roles for Liberty Mutual Insurance Group from 2002 to 2008, as Assistant Treasurer of Georgia State University from 1999 to 2001, and in various audit positions from 1991 to 1999, including roles with KPMG LLP and the U.S. General Accounting Office, which is now known as the U.S. Government Accountability Office. Ms. Davis is a Certified Public Accountant.

Tom Lewis serves as Executive Vice President and Chief Financial Officer of the Bank. He joined the Bank in January 2003 as Vice President and Controller and was promoted to Senior Vice President in April 2004 and to Chief Accounting Officer in February 2005, a position he held until his appointment as Chief Financial Officer in June 2014. Mr. Lewis was promoted to Executive Vice President in January 2016. From May 2002 through December 2002, Mr. Lewis served as Senior Vice President and Chief Financial Officer for Trademark Property Company ("Trademark"), a privately held commercial real estate developer. Prior to joining Trademark, Mr. Lewis served as Senior Vice President, Chief Financial Officer and Controller for AMRESCO Capital Trust ("AMCT"), a publicly traded real estate investment trust, from February 2000 to May 2002. From AMCT's inception in 1998 until February 2000, he served as Vice President and Controller. Prior to that, Mr. Lewis served in a number of accounting and finance positions with AMRESCO, INC., a publicly traded financial services company, from 1995 to 1998 and Prentiss Properties Limited, Inc., a privately held commercial real estate company, from 1989 to 1995. From 1985 to 1989, he served as an auditor for Price Waterhouse LLP. Mr. Lewis is a Certified Public Accountant.

Kalyan Madhavan serves as Executive Vice President and Chief Business Officer of the Bank. He joined the Bank in August 2014 as Executive Vice President and Group Head, Members and Markets, a position he held until his appointment as Chief Business Officer in January 2020. While serving as Group Head, Members and Markets, Mr. Madhavan had overall responsibility for the Bank's treasury operations, member sales and community investment. With his appointment as Chief Business Officer, his areas of responsibility were expanded to include corporate strategy and oversight of the Bank's mortgage loan acquisition program. From April to November 2015, he also served as Interim Chief Information Officer. Prior to joining the Bank, Mr. Madhavan served as Senior Vice President and Co-Head, Members and Markets for the Chicago Bank, where he was responsible for asset acquisitions, funding, liquidity management, and marketing strategy. He joined the Chicago Bank in 2005 as a portfolio manager and was promoted to Assistant Vice President in 2006 and to Vice President in 2007. In 2008, he was appointed as Treasurer. In 2009, Mr. Madhavan was promoted to Senior Vice President and in 2011 his responsibilities were expanded to include member strategy and solutions. He served as Senior Vice President, Treasurer and Head of Member Strategy and Solutions from March 2012 until his appointment as Co-Head, Members and Markets in May 2014. Prior to joining the Chicago Bank, Mr. Madhavan served in various financial and operations management roles for 11 years in the credit card, airline and manufacturing industries.

Gustavo Molina serves as Senior Vice President and Chief Banking Operations Officer. In this capacity, Mr. Molina oversees the Bank's member services, collateral services, correspondent operations and safekeeping function. He joined the Bank in April 2002 as Credit Operations Manager and was promoted to Credit and Collateral Vault Operations Manager in 2004, to Customer Operations and Support Manager in 2007 and to Director of Banking Operations in 2009, a position he held until his appointment as Chief Banking Operations Officer in February 2014. Mr. Molina served as a Vice President of the Bank from 2009 to 2011. He was promoted to Senior Vice President in 2011. Prior to joining the Bank, Mr. Molina served as a Project Manager in the Operational Control and Risk Management Department of Fleet Bank Boston Financial (now Bank of America).

Jibo Pan serves as Executive Vice President and Head of Capital Markets of the Bank. As Head of Capital Markets, Mr. Pan has responsibility for the Bank's investment, funding and hedging activities. Mr. Pan joined the Bank in August 2014 as Senior Vice President and Head of Capital Markets and was promoted to Executive Vice President in January 2016. Prior to joining the Bank, Mr. Pan served as Senior Vice President for the Chicago Bank where he was responsible for overseeing that institution's hedging activities. He joined the Chicago Bank in 2002 as a Senior Quantitative Analyst and was promoted to Assistant Vice President in 2006 and to Vice President in 2007, a position he held until his appointment as Senior Vice President in 2008. In 2006 and 2007, Mr. Pan managed the Chicago Bank's option portfolio. From 1994 to 2000, Mr. Pan served in various engineering roles for Hewlett Packard/Agilent Technologies Medical Division in Qingdao, China.

Jeff Yeager serves as Senior Vice President and Chief Information Officer of the Bank and has served in that capacity since joining the Bank in November 2015. From 1999 to May 2015, Mr. Yeager served in various information technology positions for Horizon Lines, LLC ("Horizon LLC"), a wholly-owned subsidiary of Horizon Lines, Inc. ("Horizon"), a publicly traded provider of ocean transportation services. Among other roles, he served as Chief Information Officer from 2010 to 2015 and prior to that he served as Director of Technology from 2007 to 2010. Horizon was acquired by Matson, Inc. ("Matson") in May 2015. Mr. Yeager was employed by Matson until July 2015 at which time he joined The Pasha Group ("Pasha") as a consultant. Pasha had acquired a portion of Horizon's business prior to the Matson transaction. Mr. Yeager left Pasha to join the Bank. Prior to joining Horizon LLC, Mr. Yeager held various systems engineering positions with Electronic Data Systems from 1995 to 1999.

Michael Zheng serves as Senior Vice President and Chief Credit Officer of the Bank. In this capacity, Mr. Zheng has responsibility for the Bank's credit risk and enterprise risk modeling functions. He joined the Bank in July 2012 as Credit and Capital Risk Manager. In July 2014, Mr. Zheng was promoted to Director of Enterprise Risk Modeling and Analysis, a position he held until his appointment as Chief Credit Officer in January 2015. Mr. Zheng was promoted to Senior Vice President in July 2015. Prior to joining the Bank, Mr. Zheng served as Director of Enterprise Risk Analytics for USAA, a member-owned diversified financial services organization, from 2010 to 2012. Mr. Zheng joined USAA in 2008 as Director of Modeling Analytics and he served in that role until his appointment as Director of Enterprise Risk Analytics. Prior to that, Mr. Zheng held risk management/risk modeling positions at Washington Mutual Bank (2005 to 2008) and CitiGroup, Inc. (2001 to 2005) and various other roles at Mitsui & Co., Ltd. in China and Japan (1994 to 1999). Mr. Zheng is a Certified Financial Risk Manager.

Relationships

There are no family relationships among any of the Bank’s directors or executive officers. Except as described above, none of the Bank’s directors holds directorships in any company with a class of securities registered pursuant to Section 12 of the Exchange Act or subject to the requirements of Section 15(d) of such Act or any company registered as an investment company under the Investment Company Act of 1940. There are no arrangements or understandings between any director or executive officer and any other person pursuant to which that director or executive officer was selected.

Code of Ethics

The Board of Directors has adopted a code of ethics that applies to the Bank's President and Chief Executive Officer (its principal executive officer), the Bank's Executive Vice President and Chief Financial Officer (its principal financial and accounting officer) and specified management personnel within the Bank's Accounting Department (collectively, the Bank's "Financial Professionals").

Annually, the Bank's Financial Professionals are required to certify that they have read and complied with the Code of Ethics for Financial Professionals. A copy of the Code of Ethics for Financial Professionals is filed as an exhibit to this report and is also available on the Bank’s website at www.fhlb.com by clicking on “About Us,” then “Corporate Governance” and then “Code of Ethics for Financial Professionals.”

The Board of Directors has also adopted a Code of Conduct and Ethics for Employees that applies to all employees of the Bank, including the Financial Professionals, and a Code of Conduct and Ethics and Conflict of Interest Policy for Directors that applies to all directors of the Bank (each individually a “Code of Conduct and Ethics” and together the “Codes of Conduct and Ethics”). The Codes of Conduct and Ethics embody the Bank’s commitment to high standards of ethical and professional conduct. The Codes of Conduct and Ethics set forth policies on standards for conduct of the Bank’s business, the protection of the rights of the Bank and others, and compliance with laws and regulations applicable to the Bank and its employees and directors. All employees and directors are required to annually certify that they have read and complied with the applicable Code of Conduct and Ethics. A copy of the Code of Conduct and Ethics for Employees is available on the Bank’s website at www.fhlb.com by clicking on “About Us,” then “Corporate Governance” and then “Code of Conduct and Ethics for Employees.” A copy of the Code of Conduct and Ethics and Conflict of Interest Policy for Directors is available on the Bank’s website by clicking on “About Us,” then “Corporate Governance” and then “Code of Conduct and Ethics and Conflict of Interest Policy for Directors.” Information on the Bank's website does not constitute part of this report.

ITEM 11. EXECUTIVE COMPENSATION

COMPENSATION DISCUSSION AND ANALYSIS

The Compensation and Human Resources Committee of the Board of Directors (the “Committee”) has responsibility for, among other things, establishing, reviewing and monitoring compliance with our compensation philosophy. In support of that philosophy, the Committee is responsible for making recommendations regarding, and monitoring implementation of, compensation and benefit programs that are consistent with our short- and long-term business strategies and objectives. The Committee’s recommendations regarding our compensation philosophy and benefit programs are subject to the approval of our Board of Directors.

Compensation Philosophy and Objectives

The goal of our compensation program is to attract, retain, and motivate employees and executives with the requisite skills and experience to enable us to achieve our short- and long-term strategic business objectives. Historically, we have attempted to accomplish this goal as it relates to our executive officers through a mix of base salary, short- and long-term incentive awards and other benefit programs. While we believe that we offer a work environment in which employees can find attractive career challenges and opportunities, we also recognize that those employees have a choice regarding where they pursue their careers and that the compensation we offer may play a significant role in their decision to join or remain with us. As a result, we seek to deliver fair and competitive compensation for our employees, including the named executive officers identified in the Summary Compensation Table on page 108.

For 2019, our named executive officers were: Sanjay Bhasin, our President and Chief Executive Officer; Tom Lewis, our Executive Vice President and Chief Financial Officer; Kalyan Madhavan, our Executive Vice President and Chief Business Officer; Jibo Pan, our Executive Vice President and Head of Capital Markets; and Paul Joiner, our Executive Vice President and Chief Strategy Officer. After more than 36 years with us, Mr. Joiner retired at the end of 2019.

For our executive officers, we attempt to align and weight total direct and indirect compensation with the prevailing competitive market and provide total compensation opportunities that are consistent with each executive's responsibilities and individual performance and with our overall business results. For 2019, the Committee and Board of Directors defined the competitive market for our executives as: (1) the other Federal Home Loan Banks (each individually a "FHLBank" and collectively with us, the "FHLBanks" and, together with the Office of Finance, a joint office of the FHLBanks, the "FHLBank System"); (2) commercial banks with $20 billion or more in assets (including, to the extent data is available, the Federal Reserve Banks but excluding global investment banks); and (3) public proxy peers with assets between $10 billion and $20 billion. In addition to the other FHLBanks, we believe that the other institutions included in our peer group present a breadth and level of complexity of operations that are generally comparable to our own.

Generally, it is our overall intent to provide total direct compensation, comprised of base salary and targeted incentive opportunities, for our executive officers at or above the competitive market median for comparable positions.

Responsibility for Compensation Decisions

The Board of Directors makes all decisions regarding the compensation of our President and Chief Executive Officer. The President and Chief Executive Officer's performance is reviewed annually by the full Board. The Committee is responsible for making recommendations to the Board of Directors regarding the President and Chief Executive Officer's compensation. The Board of Directors is responsible for reviewing and approving and has discretion to modify any of the Committee's recommendations regarding the President and Chief Executive Officer's compensation.

The President and Chief Executive Officer annually reviews the performance and has responsibility for making recommendations to the Committee regarding the compensation of our other executive officers. The Committee is responsible for reviewing and approving or disapproving the recommendations that are made by the President and Chief Executive Officer. The performance reviews for all of our executive officers are generally conducted in the latter part of each year and salary adjustments, if any, are typically made on January 1 of the following year.

The President and Chief Executive Officer can recommend to the Committee additional base salary adjustments at any time during the year if warranted based on market data, job performance and/or other factors, such as a change in job responsibilities. In the absence of a promotion or a change in an officer's job responsibilities, base salary adjustments on any date other than January 1 are rare.

The Board of Directors is responsible for approving our short-term incentive compensation plan known as the Variable Pay Program or VPP. The VPP provides all regular, full-time employees, including our executive officers in years prior to 2017, with the opportunity to earn an annual incentive award. The Committee is responsible for recommending annually to the Board of Directors the approval of the VPP for the next year and the performance goals that will be applicable for that year under the Corporate plan (including the addendums for our Capital Markets and Member Sales Departments) and the plan for our Internal Audit Department. The VPP plan goals for our Internal Audit Department are approved by our Audit Committee before Internal Audit's VPP plan is considered by the Committee. Through 2016, all of our named executive officers participated in the Corporate plan and their participation in such plan was unaffected by the addendum thereto.

The Board of Directors also had responsibility for approving our long-term incentive compensation plans, which we referred to as our LTIPs. The LTIPs provided our executive officers (at the time their participation was approved by our Board of Directors) and a limited number of other employees who had from time to time been designated by our Board of Directors with the opportunity to earn long-term incentive awards over successive three-year performance periods that commenced annually. The Committee was responsible for recommending annually to the Board of Directors the approval of the LTIP for the next three-year plan cycle and the performance goals applicable to that plan's three-year performance period. On December 3, 2015, the Board of Directors, acting upon a recommendation from the Committee, approved what ultimately became our final LTIP (the 2016 LTIP), subject to the Finance Agency's review. On January 21, 2016, the Finance Agency informed us that it did not object to the 2016 LTIP. The 2016 LTIP covered the period from January 1, 2016 through December 31, 2018.

Further, the Board of Directors is responsible for approving our executive incentive plan known as the EIP, which applied initially for the 2017 plan year. As more fully described below in the section entitled "Elements of Executive Compensation," the EIP provides cash-based award opportunities to officers of the Bank who are voting members of our Executive Management Committee ("EMC"), which include, among other executive officers, each of our named executive officers. The EIP replaced the VPP for 2017 and succeeding years and it replaced the LTIPs beginning in 2019. The Committee is responsible for recommending annually to the Board of Directors the approval of the EIP for the next year and the performance goals that will be applicable for that year, which goals were (in the case of the 2017, 2018 and 2019 EIPs) and are expected to be (in 2020 and future years) substantially the same as the goals for the Corporate VPP.

Acting upon recommendations from the Committee, the Board of Directors is also responsible for approving any proposed revisions to our defined benefit and defined contribution plans, our deferred compensation plans, our Reduction in Workforce Policy and any other benefit plan as the Committee or Board of Directors deems appropriate.

The Finance Agency requires us to provide advance notice of pending actions to be taken by the Committee or our Board of Directors with respect to any aspect of the compensation of one or more of our named executive officers. As part of the notification process, we are required to provide the proposed compensation actions and any supporting materials, including studies of comparable compensation. Our proposed 2020 compensation actions with respect to Messrs. Bhasin, Lewis, Madhavan and Pan are pending review by the Finance Agency.

Use of Compensation Consultants and Surveys

Annually, we typically engage an independent compensation consultant to help ensure that our executive compensation program is both competitive and targeted at or above market-median compensation levels.

In August 2018 (for compensation to be paid in 2019), the Committee and Board of Directors engaged McLagan Partners ("McLagan") to conduct a competitive market pay study for all of our executive officers. The competitive market pay study involved an analysis of total direct compensation for benchmark jobs at a total of 142 institutions, including the other FHLBanks; the value of retirement plans and other benefits were not considered as part of the study. To account for differences in the size and scope of the benchmark jobs included in the study, low quartile data (25^{th} percentile), median data (50^{th} percentile) or high quartile data (75^{th} percentile) was judgmentally selected for each of those jobs to develop a market composite benchmark for each of the positions held by our named executive officers. In the case of the public proxy peers, the 25^{th} percentile was used for all of the comparable positions at those institutions. For purposes of our comparative analysis, total direct compensation within +/- 15 percent of the median market composite compensation was considered to be within the competitive market range.

Elements of Executive Compensation

We have historically relied upon a mix of base salary, short- and long-term incentive compensation, and benefits to attract, retain and motivate our executive officers. As a cooperative whose stock can only be held by member institutions, we are precluded from offering equity-based compensation to our employees, including our executive officers.

As further described below, we instituted a framework to transition away from long-term incentives beginning in 2017 and ending in 2019. Prior to these changes, which become fully effective in 2020, and excluding the incentives that could be earned in 2017, our executive officers derived 50 percent of their annual incentive opportunity from a short-term (one year) award and 50 percent of their annual incentive opportunity from a long-term (three year) award.

Our executives' 2017 short- and long-term incentive opportunities were derived from the 2017 EIP and 2015 LTIP and the combination of these opportunities were higher than in any year prior to or after 2017. In connection with the approval of the 2015 LTIP in December 2014, the Board of Directors increased the incentives that could be earned by our executives in 2017 and modified the formula (as described below) that would be used to compute awards under the 2015 LTIP and the 2017 VPP, which was subsequently replaced with the 2017 EIP, as discussed in the next paragraph. These changes applied only to the 2015 LTIP (and the total incentives that could be earned in 2017) and reflected the significant amount of effort that would be required to achieve the growth objectives for our advances, letters of credit and earnings that were set forth in the 2015 LTIP. Under the 2015 LTIP, our named executive officers were eligible to earn LTIP incentives of up to 150 percent of their average base salary during the period from January 1, 2015 through December 31, 2017 if the stretch objective was achieved for each of the 2015 LTIP's performance goals. The potential award payments could be 50 percent of salary (if the threshold objective was achieved for each of the performance goals) or 100 percent of salary (if the target objective was achieved for each of the performance goals).

In late 2016, the Finance Agency sought to have us eliminate our two-plan structure for our named executive officers in favor of one annual incentive compensation plan with a deferral component. In response to this request, we engaged McLagan to provide insight and analysis as we considered the framework for a new incentive compensation plan for our executive officers. On December 8, 2016, the Board of Directors, acting upon a recommendation from the Committee, approved our Omnibus Incentive Plan (the "2017 Executive Incentive Plan" or "2017 EIP"), subject to the review of the Finance Agency. On December 20, 2016, the Finance Agency informed us that it did not object to the 2017 EIP. The 2017 EIP was effective as of January 1, 2017. The 2017 EIP provided for an annual award, 50 percent of which could be fully earned in 2017. The other 50 percent of the annual award (the deferred portion) does not become earned and vested until December 31, 2020 and then only if certain conditions are met. As more fully described in the "Long-Term Incentive Compensation" section beginning on page 102, the 2017 EIP also included a transitional component (known as the Gap Year Award) that was designed to address a gap in our executive officers' annual incentive compensation opportunities in 2019 that would not otherwise have existed if we had continued to offer both the VPP and the LTIP to our executive officers. Further, the 2017 EIP included another transitional component for 2017 that was designed to operate in conjunction with the 2015 LTIP. Given the achievement levels for the 2017 EIP and 2015 LTIP, this component (known as the Make-Whole Award) ultimately had no effect on the executives' 2017 incentive compensation.

Under the 2017 EIP, our President and Chief Executive Officer and other named executive officers were eligible to earn incentives in 2017 of up to 60 percent and 43.75 percent, respectively, of their base salaries in 2017 in addition to the incentives that could be earned under the 2015 LTIP. Unlike previous LTIPs (and our 2016 LTIP discussed below), a weighting factor was not applied to the 2015 LTIP nor was a weighting factor applied to the incentives that could be earned in 2017 under the 2017 EIP. However, under no circumstances could a participating executive officer earn more than 1.5 times his or her 2017 base salary when the 2017 EIP and 2015 LTIP incentive awards were combined for 2017. Based on the results for the 2017 EIP and the 2015 LTIP, each of our named executive officers earned 1.5 times his 2017 salary.

On December 7, 2017, the Board of Directors, acting upon a recommendation from the Committee, approved our 2018 EIP, subject to the review of the Finance Agency. On January 4, 2018, the Finance Agency informed us that it did not object to the 2018 EIP. The 2018 EIP was effective as of January 1, 2018. Like the 2017 EIP, the 2018 EIP provided for an annual award, 50 percent of which could be fully earned in 2018 and 50 percent of which can be fully earned in 2021. The other 50 percent of our executives' 2018 incentive opportunity was derived from the 2016 LTIP.

The 2018 EIP, in combination with our 2016 LTIP, provided maximum incentive opportunities in 2018 of 95 percent of base salary for our President and Chief Executive Officer and 65 percent of base salary for our other named executive officers, which reflected increases from what would have been (inclusive of additional LTIP incentives) 75 percent of base salary and 58.75 percent of base salary, respectively, if not for the changes that were made by the Board of Directors in connection with the implementation of the new executive incentive plan structure. In 2018, the incentive factors for each goal with a target level of achievement were 75 percent and 50 percent of base salary for our President and Chief Executive Officer and other executives, respectively, which reflected increases from what would have been (inclusive of additional LTIP incentives) 58 percent and 45 percent of base salary, respectively, at an overall target level of achievement. The incentive factors for each 2018 goal with a threshold level of achievement were 50 percent and 30 percent of base salary for our President and Chief Executive Officer and other executives, respectively, which reflected increases from what would have been 36 percent and 26.25 percent of base salary, respectively, at an overall threshold level of achievement.

The maximum award percentages for our named executive officers are reviewed and approved annually by the Committee and Board of Directors. Excluding the incentive opportunities that were available to our named executive officers in 2017 (which, for that one year, were above the competitive market median for each of our named executive officers), our annual target award opportunities had historically been below the competitive market median for each of our named executive officers, which led the Committee and Board of Directors, in late 2016, to increase the executives' future incentive opportunities beginning in 2018. In establishing the higher award percentages, the Committee and Board of Directors took into consideration the incentive opportunities that are available to similarly situated executives at the other FHLBanks. Based on this information, the Committee and Board of Directors set the threshold and target award percentages at the comparable median of the other FHLBanks and the maximum award percentages slightly below the comparable median of the other FHLBanks.

On December 6, 2018, the Board of Directors, acting upon a recommendation from the Committee, approved our 2019 EIP, subject to the review of the Finance Agency. On December 20, 2018, the Finance Agency informed us that it did not object to the 2019 EIP. The 2019 EIP was effective as of January 1, 2019. Like the 2017 and 2018 EIPs (and as more fully described in the "Short-Term Incentive Compensation" section beginning on page 99 and the "Grants of Plan-Based Awards" section beginning on page 109), the 2019 EIP provided for an annual award, 50 percent of which could be fully earned in 2019 and 50 percent of which can be fully earned in 2022. The other 50 percent of our executives' 2019 incentive opportunity was derived from the 2017 EIP Gap Year Award. The threshold, target and maximum award percentages in the 2019 EIP were the same as those in the 2018 EIP.

In 2020 and years thereafter, it is anticipated that our executive officers' incentive opportunities will be derived solely from EIPs, with 50 percent derived from a current award and 50 percent derived from a deferred award from an earlier EIP. For example, our executive officers are expected to derive 50 percent of their 2020 incentive opportunity from a current award provided by a 2020 executive incentive plan similar to the 2017, 2018 and 2019 EIPs and the other 50 percent from the deferred award under the 2017 EIP.

The Committee regularly considers the nature of our compensation program, including the various compensation elements that comprise our overall compensation program for executive officers.

Base Salary

Base salary is one of the two key components of our compensation program (the other is the incentive opportunities that we offer to our executive officers). We use the base salary element to provide the foundation of a fair and competitive compensation opportunity for each of our executive officers. Base salaries are reviewed annually in the fourth quarter for all of our officers and at other times as circumstances warrant. For our executive officers, we target base salary compensation at or above the market median base salary practices of our defined competitive market for those officers, although we maintain flexibility to deviate from market-median practices for individual circumstances subject in all cases to review by the Finance Agency. In making base salary determinations, we also consider factors such as time in the position, prior related work experience, individual job performance, the position's scope of duties and responsibilities within our organizational structure and hierarchy, and how these factors compare to other similar positions within our defined competitive market.

In setting Mr. Bhasin's base salary for 2019, the Committee and Board of Directors took into consideration the results of a competitive market pay study which was conducted by McLagan in the latter part of 2018 (the "2018 Pay Study"). The results of the 2018 Pay Study showed that Mr. Bhasin's base salary and targeted incentive opportunities were within the competitive market range for his position, but near the lower bound of that range. Based on this information, his strong individual performance and our outstanding business results in 2018, the Committee and Board of Directors gave Mr. Bhasin an above standard merit increase of 3.6 percent. The Committee and Board of Directors had given Mr. Bhasin above standard merit increases of 10.4 percent for 2017 and 13.8 percent for 2018 based on the results of similar studies that McLagan had conducted for us which showed that his base salary and targeted incentives lagged the competitive range for his position.

In setting the base salaries of our other named executive officers for 2019, the Committee took into consideration the results of the 2018 Pay Study, which showed that each of these executive's total direct compensation was below the median market composite compensation for his position. Three of the positions were within the competitive market range, while one position (our Head of Capital Markets) was just outside the competitive market range. Based on this information and Mr. Bhasin's subjective assessments of various other factors, he recommended, and the Committee approved, above standard merit increases of 4.5 percent for Mr. Pan and 3.5 percent for Mr. Madhavan and standard merit increases of 3.0 percent for Messrs. Lewis and Joiner.

The base salaries of our named executive officers are presented in the Summary Compensation Table on page 108.

Short-Term Incentive Compensation

The 2019 EIP provides cash-based award opportunities to all of our executive officers by means of an annual award ("Annual Award"). The Annual Award was based on the achievement of short-term performance goals for the period from January 1, 2019 through December 31, 2019 (the "2019 Performance Goals") and, for 50 percent of that award, the satisfaction of safety and soundness goals for the period from January 1, 2020 through December 31, 2022.

The 2019 Performance Goals that were used to calculate the Annual Award were established by the Board of Directors and fell into the following broad categories: (a) business activity and financial execution goals (which included, among other objectives, an earnings objective); (b) diversity and inclusion initiatives; (c) learning initiatives; (d) execution objectives; and (e) operational excellence, which was structured as one goal comprising 12 projects. Within each category other than operational excellence, there were multiple goals and each goal (including the operational excellence goal) was assigned a specific percentage weight. For 2019 Performance Goals comprising 65.25 percent of the executives' 2019 Annual Award opportunity, each goal was assigned a threshold, target and stretch objective. For 2019 Performance Goals comprising 22.75 percent of the executives' 2019 Annual Award opportunity, each goal was assigned only a target and stretch objective. The remaining 12 percent of the executives' 2019 Annual Award opportunity was based upon performance goals for which achievement was assessed on a pass/fail basis.

For our President and Chief Executive Officer, the incentive factor for each 2019 Performance Goal could have been 0 percent (if the threshold objective was not met or, in those cases where there was not a threshold objective, the target objective was not met or, in the case of a pass/fail objective, the objective was not met), 50 percent (if results were equal to the threshold objective for those 2019 Performance Goals that had a threshold objective), 75 percent (if results were equal to the target objective) or 95 percent (if results were equal to or greater than the stretch objective or, in the case of a pass/fail objective, the objective was met). For our other named executive officers, the incentive factor for each 2019 Performance Goal could have been 0 percent (if the threshold objective was not met or, in those cases where there was not a threshold objective, the target objective was not met or, in the case of a pass/fail objective, the objective was not met), 30 percent (if results were equal to the threshold objective for those 2019 Performance Goals that had a threshold objective), 50 percent (if results were equal to the target objective) or 65 percent (if results were equal to or greater than the stretch objective or, in the case of a pass/fail objective, the objective was met).

Achievement levels between threshold and target and between target and stretch for each 2019 Performance Goal that had those achievement levels were interpolated in a manner as determined by the Committee. The results for each 2019 Performance Goal were multiplied by the assigned percentage weight to determine its contribution to the overall 2019 EIP short-term goal percentage for each of our named executive officers. For example, if the stretch objective was achieved for a goal with a percentage weight of 22.75 percent, then the contribution of that goal to the President and Chief Executive Officer's overall short-term goal percentage was 21.6125 percent (22.75 percent x 95 percent). For the other named executive officers, the contribution of that same goal to their overall short-term goal percentage was 14.7875 percent (22.75 percent x 65 percent). The percentages derived from this calculation for each 2019 Performance Goal were added together to derive each executive's overall short-term goal percentage for the 2019 EIP, which percentage was then multiplied by the executive's 2019 base salary to determine his final Annual Award.

Generally, the Board of Directors has attempted to set the threshold, target and stretch objectives for our short-term plans such that the relative difficulty of achieving each level is consistent from year to year.

For 2019, the Board of Directors established 18 separate performance goals, each of which had a specific percentage weight ranging from 0.25 percent to 22.75 percent. As further set forth in the table below, the goals relating to our business activity and financial execution objectives, diversity and inclusion initiatives, learning initiatives, execution objectives and operational excellence comprised 65 percent, 5 percent, 5 percent, 7 percent and 18 percent, respectively, of our overall 2019 Performance Goals.

As more fully discussed in the section entitled "Grants of Plan-Based Awards" beginning on page 109, the Board of Directors could, among other things, adjust the 2019 Performance Goals to ensure the purposes of the 2019 EIP were served. In addition, the Board of Directors, in its discretion, could consider extraordinary occurrences when assessing performance results and determining award payments. Extraordinary occurrences mean those events that, in the opinion and at the discretion of the Board of Directors, are outside the significant influence of the executive or us and are likely to have a significant unanticipated effect, whether positive or negative, on our operating and/or financial results. No adjustments were made to the 2019 Performance Goals.

Our earnings objective for purposes of the 2019 EIP (and, as discussed later, our 2017 EIP Gap Year Award) was based upon a measure of our net income that excluded (1) unrealized gains and losses on derivatives and hedging activities (including the exclusion of the related basis adjustments in the calculation of the gains or losses associated with the sale of our previously hedged investment securities), (2) net prepayment fees on advances, (3) other-than-temporary impairment charges on our private-label mortgage-backed securities, if any (and any subsequent recoveries of those charges) and (4) interest expense on mandatorily redeemable capital stock. In addition, so as not to exclude the costs associated with our interest rate caps, we included proforma amortization of the premiums paid for such caps. Further, for similar reasons, we included the actual losses (i.e., principal shortfalls) incurred on our private-label mortgage-backed securities.

2019 EIP Objectives
(dollars in millions)

	Percentage Weight	Objective Threshold	Objective Target	Objective Stretch	Results	Contribution to Mr. Bhasin's Overall Goal Percentage	Contribution to Other Executives' Overall Goal Percentage
Business Activity and Financial Execution							
1. Earnings (Adjusted Net Income)	22.750%	$ 185	$ 200	$ 209	$ 214.9	21.6125 %	14.7875 %
2. Average month-end Advances Outstanding in 2019	19.500%	$ 38,000	$ 40,500	$41,000	$ 37,808	— %	— %
3. Average Outstanding Letters of Credit in 2019	3.250%	$ 13,000	$ 15,000	$17,000	$ 19,665	3.0875 %	2.1125 %
4. Annual Advances Growth to Members under CFI Asset Cap (12/31/19 balance vs. 12/31/18 balance for 2019 CFIs)	3.250%	1%	3%	4%	(13.2)%	— %	— %
5. AMA Acquisitions in 2019	9.750%	$ 1,000	$ 1,100	$ 1,250	$ 2,386	9.2625 %	6.3375 %
6. Small Business Boost Disbursements in 2019	3.250%	$ 1	$ 1.5	$ 2	$ 3	3.0875 %	2.1125 %
7. Complete internal preparations to launch new AMA product	3.250%		Pass/Fail		Pass	3.0875 %	2.1125 %
	65.000%					40.1375 %	27.4625 %
Diversity and Inclusion Initiatives							
1. Conduct All Employee Training	1.250%		Pass/Fail		Pass	1.1875 %	0.8125 %
2. Host Diverse Businesses at the Bank Quarterly	1.250%		Pass/Fail		Pass	1.1875 %	0.8125 %
3. Develop Searchable Diverse Vendor Database	2.500%		Pass/Fail		Pass	2.3750 %	1.6250 %
	5.000%					4.7500 %	3.2500 %
Learning Initiatives							
1. External: (1) conduct regional workshops, (2) conduct community investment workshops, and (3) conduct member webinars	1.500%	N/A	2 of 3	3 of 3	3 of 3	1.4250 %	0.9750 %
2. Internal: (1) implement mentoring program, (2) develop and implement Power BI training program, (3) implement behavioral/values-based hiring, and (4) implement Phase 1 HR dashboards	2.000%	N/A	3 of 4	4 of 4	4 of 4	1.9000 %	1.3000 %
3. Individual:							
(a) Conduct subject matter expert employee-led sessions	0.250%	N/A	50	70	92	0.2375 %	0.1625 %
(b) Conduct mandatory bank-wide OKR training	0.250%		Pass/Fail		Pass	0.2375 %	0.1625 %
4. Corporate: (1) participate in a large community project and (2) implement Phase 2 of Corporate Social Responsibility Program	1.000%	N/A	1 of 2	2 of 2	2 of 2	0.9500 %	0.6500 %
	5.000%					4.7500 %	3.2500 %
Execution Objectives							
1. EDW availability at threshold time	3.500%	85%	90%	95%	96.4%	3.3250 %	2.2750 %
2. Complete SOFR plan and associated 2019 action items	3.500%		Pass/Fail		Pass	3.3250 %	2.2750 %
	7.000%					6.6500 %	4.5500 %
Operational Excellence	18.000%	N/A	10 of 12	12 of 12	12 of 12	17.1000 %	11.7000 %
Implement AMA Accounting Solution					Completed		
Implement Collateral Decustomization Phase 2					Completed		
Implement LOC Replacement					Completed		
Develop Wire System Roadmap					Completed		
Complete Capital Stock Phase 1					Completed		
Implement EDW in the Cloud					Completed		
Develop a New Website for AHP Online					Completed		
Migrate to Windows 10					Completed		
Upgrade Budget Module					Completed		
Move Data Center					Completed		
Implement OKR System					Completed		
Implement Automated Swap Collateral System					Completed		
Overall 2019 EIP Goal Percentage						73.3875 %	50.2125 %

As shown in the table above, we achieved the stretch objective for 10 of the 12 performance goals that had either threshold, target and stretch objectives or target and stretch objectives only. For each of the other 2 goals in these categories, we did not achieve the threshold level of performance. In addition, we passed the six goals that had a pass/fail objective. These results produced an overall achievement rate for Mr. Bhasin and the other named executive officers of 77.25 percent (73.3875 percent divided by a maximum of 95 percent and 50.2125 percent divided by a maximum of 65 percent, respectively). In comparison, Mr. Bhasin's overall achievement rate under the 2018 EIP was 97.20 percent, while the other named executive officers' overall achievement rate was 96.92 percent. The overall achievement rate for the 2017 EIP Annual Award was 100 percent for all of our named executive officers. The results for 2017 represented the only time we have attained the highest possible achievement level for one of our short-term incentive plans.

Because each named executive officer received at least a "Meets Expectations" performance rating for 2019, 50 percent of the executive's final Annual Award under the 2019 EIP (the "2019 Current Award") became earned and vested on December 31, 2019 and was payable no later than March 15, 2020. The remaining 50 percent of the executive's final Annual Award under the 2019 EIP (the "2019 Deferred Award") will become earned and vested on December 31, 2022 if the conditions described in the Grants of Plan-Based Awards section are satisfied.

The possible Annual Awards that could be earned by our named executive officers for 2019 are presented in the Grants of Plan-Based Awards section. The calculation of the Annual Awards earned by our named executive officers in 2019 is shown in the table below. The 2019 Current Awards are included in the Summary Compensation Table on page 108 in the column entitled "Non-Equity Incentive Plan Compensation."

Name	Base Salary as of January 1, 2019 ($)	2019 EIP Goal Percentage	2019 EIP Annual Award ($)	2019 EIP Current Award ($)	2019 EIP Deferred Award ($)
Sanjay Bhasin	855,000	73.3875%	627,463	313,732	313,731
Tom Lewis	373,251	50.2125%	187,419	93,710	93,709
Kalyan Madhavan	521,679	50.2125%	261,948	130,974	130,974
Jibo Pan	411,319	50.2125%	206,534	103,267	103,267
Paul Joiner	362,471	50.2125%	182,006	91,003	91,003

Long-Term Incentive Compensation

Based on our decision to no longer offer LTIPs to our executive officers coupled with our decision to offer annual EIPs, each of which requires a 50 percent deferral over a 3-year period, our executives' incentive opportunities for 2019 would have been reduced by 50 percent in the absence of some type of transitional component. To address this gap in the executives' incentive opportunity for 2019, the Board of Directors determined it was appropriate to grant in 2017 a one-time special Gap Year Award to our executive officers. The Gap Year Award (provided by the 2017 EIP) was based on the achievement of long-term performance goals for the period from January 1, 2017 through December 31, 2019 (the "2017-2019 Performance Goals"). The other 50 percent of the executives' 2019 incentive opportunity was derived from the 2019 EIP Current Award discussed above.

The 2017-2019 Performance Goals were established by the Board of Directors and were based upon growth objectives relating to our advances, mortgage loans held for portfolio (AMA) and retained earnings as well as factors relating to our market value of equity, internal controls and Finance Agency examination findings.

Each of the 2017-2019 Performance Goals was assigned a percentage weight of either 15 or 20 percent together with a threshold, target and stretch objective. For our President and Chief Executive Officer, the incentive factor for each 2017-2019 Performance Goal could have been 0 percent (if the threshold objective was not met), 50 percent (if results were equal to the threshold objective), 75 percent (if results were equal to the target objective) or 95 percent (if results were equal to or greater than the stretch objective). For our other executive officers, the incentive factor for each 2017-2019 Performance Goal could have been 0 percent (if the threshold objective was not met), 30 percent (if results were equal to the threshold objective), 50 percent (if results were equal to the target objective) or 65 percent (if results were equal to or greater than the stretch objective).

Achievement levels between threshold and target and between target and stretch for each 2017-2019 Performance Goal were interpolated in a manner as determined by the Committee. The results for each 2017-2019 Performance Goal were multiplied by the assigned percentage weight (either 15 percent or 20 percent) to determine its contribution to the overall Gap Year Award percentage. For example, if the stretch objective was achieved for one of the goals with an assigned percentage of 20 percent, then the contribution of that goal to the President and Chief Executive Officer's overall Gap Year Award percentage would have been 19 percent (20 percent x 95 percent). For the other named executive officers, the contribution of that same goal to their overall Gap Year Award percentage would have been 13 percent (20 percent x 65 percent). The percentages derived from this calculation for each 2017-2019 Performance Goal were added together to derive each executive's overall goal percentage for the Gap Year Award, which percentage was then multiplied by the executive's average base salary during the 2017-2019 performance period. The result of this calculation was then multiplied by 50 percent to determine the executive's final Gap Year Award.

The Gap Year Awards became earned and vested on December 31, 2019 only if (i) the 2017-2019 Performance Goals were met, (ii) the executive received at least a "Meets Expectations" performance rating for 2019, and (iii) the executive was actively employed on December 31, 2019. The Gap Year Awards were payable no later than March 15, 2020.

The 2017-2019 Performance Goals for the Gap Year Award are shown in the table below.

2017 EIP Gap Year Award Objectives
(dollars in millions)

	Percentage Weight	Objective			Results	Contribution to Mr. Bhasin's Overall Goal Percentage	Contribution to Other Executives' Overall Goal Percentage
		Threshold	Target	Stretch			
1. Advances Outstanding at 12/31/2019	20%	$32,000	$36,000	$40,000	$36,944	15.94%	10.71%
2. AMA Outstanding at 12/31/2019	15%	$750	$1,500	$2,250	$3,994	14.25%	9.75%
3. Cumulative Contribution from Adjusted Net Income to Retained Earnings	20%	$160	$185	$210	$391	19.00%	13.00%
4. Maintain an Average Ratio of our Market Value of Equity (MVE) ≥ a specified percentage of our Book Value of Equity (BVE) for all month-end reporting periods during the 2017-2019 Performance Period	15%	Average MVE ≥ 100% of BVE	Average MVE ≥ 102% of BVE	Average MVE ≥ 104% of BVE	101.28%	9.90%	6.42%
5. Maintain the Integrity of our System of Internal Controls							
Minimize the number and severity of internal control deficiencies during the 2017-2019 Performance Period	15%	No material weaknesses	No material weaknesses and no more than 3 significant deficiencies	No material weaknesses and no more than 1 significant deficiency	No material weaknesses or significant deficiencies	14.25%	9.75%
6. Timely Remediation of Finance Agency Examination Findings [(1)]							
Adequately remediate Finance Agency examination findings for each year during the 2017-2019 Performance Period within the time periods specified in management's responses [(2)]	15%	Remediate 80% of exam findings rated "weakness" or more severe in specified time	Remediate 100% of exam findings rated "weakness" or more severe in specified time	In addition to meeting the Target Objective, remediate lower rated exam findings as identified in the remediation plan	95.24% of exam findings rated "weakness" or more severe during the Performance Period were remediated within the time period specified by management	10.36%	6.79%
Overall 2017 EIP Gap Year Goal Percentage						83.70%	56.42%

(1) Applied to findings from the 2016, 2017 and 2018 exams, excluding findings related to Internal Audit.

(2) The Board of Directors had discretion to determine the percentage achievement for the exam finding remediation objective based on management and Internal Audit reports, subsequent examination reports, and any additional feedback received from the Finance Agency prior to approval of the final awards.

As shown above, we achieved the stretch objective for three of our six 2017-2019 Performance Goals. For each of the other three goals, we achieved a level of performance between either the threshold and target objectives or the target and stretch objectives and, accordingly, the achievement levels for these goals were interpolated. These results produced an overall achievement rate for Mr. Bhasin and the other named executive officers of 88.11 percent (83.70 percent divided by a maximum of 95 percent) and 86.80 percent (56.42 percent divided by a maximum of 65 percent), respectively. In comparison, the overall achievement rate under the 2016 LTIP was 88.83 percent for Mr. Bhasin and 87.56 percent for our other named executive officers. The overall achievement rate under the 2015 LTIP was 100 percent for all of our named executive officers. The results for the 2015 LTIP represented the only time we have attained the highest possible achievement level for incentives earned over a three-year period.

The calculation of the 2017 EIP Gap Year Awards earned by our named executive officers is shown in the table below and such awards are included in the Summary Compensation Table on page 108 in the column entitled "Non-Equity Incentive Plan Compensation."

Name	Average Base Salary 2017-2019 ($)	2017 EIP Gap Year Goal Percentage	2017 EIP Gap Year Weighting Factor	2017 EIP Gap Year Award ($)
Sanjay Bhasin	801,667	83.70%	50%	335,498
Tom Lewis	361,358	56.42%	50%	101,939
Kalyan Madhavan	501,159	56.42%	50%	141,377
Jibo Pan	390,927	56.42%	50%	110,281
Paul Joiner	350,921	56.42%	50%	98,995

Defined Benefit Pension Plan

All regular employees hired prior to January 1, 2007 who work a minimum of 1,000 hours per year participate in the Pentegra Defined Benefit Plan for Financial Institutions, a tax-qualified multiemployer defined benefit pension plan. The plan also covers any of our regular employees hired on or after January 1, 2007 who work a minimum of 1,000 hours per year, provided that the employee had prior service with a financial services institution that participated in the Pentegra Defined Benefit Plan for Financial Institutions, during which service the employee was covered by such plan. Effective July 1, 2015, coverage was extended to include all of our non-highly compensated employees (as defined by Internal Revenue Service rules) who were hired on and after January 1, 2007 but before August 1, 2010 who work a minimum of 1,000 hours per year. Concurrently, we amended our participation in the Pentegra Defined Benefit Plan for Financial Institutions such that some of the benefits offered by the plan were reduced prospectively (that is, on and after July 1, 2015) for employees who were hired prior to July 1, 2003. Under these participation rules, all of our named executive officers participate in the plan. Because this is a qualified defined benefit plan, it is subject to certain compensation and benefit limitations imposed by the Internal Revenue Service. In 2019, the maximum compensation limit was $280,000 and the maximum annual benefit limit was $225,000. The pension benefit earned under the plan is based on the number of years of credited service (up to a maximum of 30 years) and compensation earned over an employee’s 36 highest consecutive months of earnings. For employees hired prior to July 1, 2003, the high 36-month average compensation for purposes of the benefit earned prior to that date became fixed as of July 1, 2015. For employees hired on and after July 1, 2003, the high 36-month average compensation is calculated over the employee's entire participation period.

This element of our compensation program is one of several that constitute an integral part of our retention strategy, which is to reward tenure by linking it to compensation. It also represents an effort on our part to partially offset our inability to provide equity-based compensation to our employees. We consider this benefit to be a significant element of our compensation program as it pertains to our named executive officers and other key tenured employees. Based on this belief, we have elected to provide a benefit under this plan that we believe is at or near the median for comparable companies that offer this benefit, although we have not conducted any recent studies to confirm this.

The details of this plan and the accumulated pension benefits for our named executive officers can be found in the Pension Benefits Table and accompanying narrative on pages 111-114 of this report.

Defined Contribution Savings Plan

We offer all regular employees who work a minimum of 1,000 hours per year, including our executive officers, the opportunity to participate in the FHLBank of Dallas 401(k) Retirement Plan ("FHLB Dallas DC Plan"), a tax-qualified defined contribution plan that we established effective December 1, 2018. Prior to December 1, 2018, our eligible employees had the opportunity to participate in the Pentegra Defined Contribution Plan for Financial Institutions ("Pentegra DC Plan"), a tax-qualified multiemployer defined contribution plan. For our active employees, the FHLB Dallas DC Plan replaced the Pentegra DC Plan on and after December 1, 2018. Because these are qualified plans, they are subject to the maximum compensation limit set by the Internal Revenue Code, which for 2019 was $280,000 per year. In addition, the combined calendar year contributions to a qualified defined contribution plan (and any successor plan in the same year) from both us and the employee are limited by the Internal Revenue Code. For 2019, combined contributions from both us and the employee to the FHLB Dallas DC Plan and the Pentegra DC Plan could not exceed $56,000. The FHLB Dallas DC Plan includes (and the Pentegra DC Plan included) a pre-tax 401(k) option along with an opportunity to make contributions on an after-tax basis. The limitation on combined contributions applies to an employee's pre-tax and after-tax contributions and any matching contributions we make on his or her behalf. The limitation on an employee's pre-tax contributions was $19,000 for 2019. Employees who were age 50 or older could elect in 2019 to make additional pre-tax contributions (commonly known as catch-up contributions) of up to $6,000. Catch-up contributions are not taken into account in applying the combined contribution limit.

Subject to the limits prescribed by the Internal Revenue Code, employees could (in 2017 and most of 2018) contribute up to 65 percent of their monthly base salary on either a pre-tax or after-tax basis. At the time the FHLB Dallas DC Plan was established, this percentage was increased to 75 percent. Employees are not permitted to contribute any of their incentive compensation.

For employees hired prior to January 1, 2019, we provide matching funds on the first 3 percent of eligible monthly base salary contributed by employees who are eligible to participate in the Pentegra Defined Benefit Plan for Financial Institutions, and on the first 5 percent of eligible monthly base salary contributed by employees who are not eligible to participate in the Pentegra Defined Benefit Plan for Financial Institutions. In each case, our matching contribution is 100 percent, 150 percent or 200 percent depending upon the employee's length of service, including, if applicable, their service with a financial services institution that participated in the Pentegra Defined Contribution Plan for Financial Institutions, during which service the employee was covered by such plan. Employees who are eligible to participate in the Pentegra Defined Benefit Plan for Financial Institutions are fully vested in our matching contributions at the time such funds are deposited in their account. For employees who do not participate in the Pentegra Defined Benefit Plan for Financial Institutions, there is a 2-6 year step vesting schedule for our matching contributions with the employee becoming fully vested after six years.

For employees hired on or after January 1, 2019, we provide matching funds on the first 3 percent of eligible monthly base salary contributed by the employee. For this group of employees, our matching contribution is 100 percent in the first three years of employment, 150 percent in the next two years and 200 percent after the employee has completed five years of employment. For this group of employees, there is a three-year step vesting schedule for our matching contributions, with the employee becoming fully vested after three years.

Under the FHLB Dallas DC Plan, participants can elect to invest plan contributions in up to 26 different fund options. Under the Pentegra DC Plan, participants could elect to invest plan contributions in up to 28 different fund options.

Based on their tenure with us (and, in the case of Messrs. Bhasin, Madhavan and Pan, their service with the Federal Home Loan Bank of Chicago during which service each of them was covered by the Pentegra Defined Contribution Plan for Financial Institutions), each of our named executive officers was eligible to receive in 2019 a 200 percent matching contribution on the first 3 percent of his eligible monthly base salary that he contributed to the plan, subject in all cases to the compensation limit prescribed by the Internal Revenue Code. The matching contributions that were made by us are included in the "All Other Compensation" column of the Summary Compensation Table found on page 108 and further set forth under the "401(k)/Thrift Plan" column of the related "Components of All Other Compensation for 2019" table.

We offer the savings plan as a competitive practice and believe that our matching contributions to the plan are at or above the market median for comparable companies, although we have not conducted any recent studies to confirm this.

Deferred Compensation Program

Under the terms of our nonqualified deferred compensation program, we offer our highly compensated employees, including our named executive officers, the opportunity to voluntarily defer receipt of all or part of their base salary and all or part of their non-equity incentive plan compensation, regardless of its source. Prior to 2016 (for amounts to be earned in 2017), we did not permit participants to defer any portion of their LTIP awards. The program allows participants to save for retirement or other future-dated in-service obligations (e.g., college, home purchase, etc.) in a tax-effective manner, as contributions and earnings on those contributions are not taxable to the participant until received. Under the program, amounts deferred by the participant and our matching contributions can be invested in an array of externally managed mutual funds.

We offer the program to allow our highly compensated employees to voluntarily defer more compensation than they would otherwise be permitted to defer under our tax-qualified defined contribution savings plan as a result of the limits imposed by the Internal Revenue Code. Further, we offer this program as a competitive practice to help us attract and retain top talent. The matching contributions that we provide in this plan are intended to make the participant whole with respect to the amount of matching funds that he or she would have otherwise been eligible to receive in our tax-qualified defined contribution savings plan if not for the limits imposed by the Internal Revenue Code. These matching contributions are included in the "All Other Compensation" column of the Summary Compensation Table found on page 108 and further set forth under the "Nonqualified Deferred Compensation Plan (NQDC Plan)" column of the related "Components of All Other Compensation for 2019" table. As noted above, we believe that our matching contributions to the qualified savings plan are at or above the market median for comparable companies. Based on our experience and general knowledge of the competitive market, we believe this may also be true for the matching contributions that we provide under the deferred compensation program, although we have not conducted a study to confirm this. The provisions of this program are described more fully in the narrative accompanying the Nonqualified Deferred Compensation table on pages 114-118.

Supplemental Executive Retirement Plan

We maintain a supplemental executive retirement plan ("SERP") that benefits Mr. Lewis and some of our former executives, including Mr. Joiner, who retired at the end of 2019. The SERP is a nonqualified defined contribution plan and, as such, it does not provide for a specified retirement benefit. Based on a recommendation from management in 2014, the Committee and Board of Directors decided to discontinue contributions to our SERP for the foreseeable future. While the Committee and Board of Directors could consider reactivating or replacing the SERP at some point in the future, there is no current plan to do so. If the SERP is ever reactivated or replaced, the Committee and Board of Directors would expect to add our other executive officers as participants. While active, our intent with the SERP was to make up a portion of the pension benefit that was lost under our tax-qualified plan due to limitations imposed by the Internal Revenue Code (it was never our intention to provide a full restoration of the lost benefit under the tax-qualified defined benefit plan). Our final contribution to the SERP was made in 2014. Each participant's benefit under the SERP consists of the contributions we made on his behalf, plus an allocation of the investment gains or losses on the assets used to fund the plan. Contributions to the SERP were determined solely at the discretion of our Board of Directors and were, during the periods in which they were made, based upon our desire to provide a reasonable level of supplemental retirement income to the participants. Generally, benefits under the SERP vest when the participant attains the "Rule of 70." A participant attains the Rule of 70 when the sum of his age and years of service with us is at least 70. As of December 31, 2019, Messrs. Lewis and Joiner had met the Rule of 70. The provisions of the plan provide for accelerated vesting and payment in the event of a participant's death or disability if such participant is not otherwise vested at the time of his death or disability. Otherwise, vested benefits are not payable to the participant until he reaches age 62 or, if later, upon retirement. We maintain the right at any time to amend or terminate the SERP, or remove a participant from the SERP at our discretion, except that no amendment, modification or termination may reduce the then vested account balance of any participant.

Many other comparable financial institutions in our defined competitive markets offer supplemental executive retirement plans that are designed to fully restore the lost benefits under their tax qualified plans and therefore our decision not to offer this form of compensation may put us at a competitive disadvantage.

For details regarding the operation of Groups 1 and 2 of our SERP and the account balances for Messrs. Lewis and Joiner as of December 31, 2019, please refer to the Nonqualified Deferred Compensation table and accompanying narrative beginning on page 114.

Other Benefits

We offer a number of other benefits to our executive officers pursuant to benefit programs that are available to all of our regular, full-time employees. These benefits include: medical, dental, vision and prescription drug benefits; paid time off (in the form of vacation and flex leave); short- and long-term disability coverage; life and accidental death and dismemberment insurance; charitable gift matching (limited to $500 per employee per year); health and dependent care flexible spending accounts; healthcare savings accounts; and certain other benefits including, but not limited to, retiree health and life insurance benefits (provided certain eligibility requirements are met).

Our employees accrue vacation at different rates depending upon their length of service, with some exceptions for officers during their first five years of employment with us. After an employee has completed 12 or more years of service (including any prior service with another FHLBank, subject to certain exceptions), he or she is entitled to 200 hours of annual vacation leave. We limit the amount of accrued and unused vacation leave that an employee can accumulate to two times the amount of vacation he or she earns in an annual period. This policy is effected by allowing employees to carry over no more than the amount of vacation that he or she earns in an annual period to the next calendar year. Unused vacation in excess of the amount earned in an annual period, if any, is deducted from an employee's vacation account balance on December 31. Based on their length of service (including, in the case of Messrs. Bhasin, Madhavan and Pan, their service with the Federal Home Loan Bank of Chicago), each of our named executive officers currently accrue 200 hours of vacation leave per year. If an employee's employment with us is terminated for any reason, he or she is entitled to receive a payment for all accrued but unused vacation time as of their termination date, which, as noted above, cannot exceed two times the amount of vacation that he or she earns in an annual period. This payment is derived by multiplying the number of accrued but unused vacation hours as of the employee's termination date by his or her hourly rate. For this purpose, the hourly rate is computed by dividing the employee's base salary by 2,080 hours.

All of our regular full-time employees, including our executive officers, accrue 80 hours of flex leave per year. Flex leave is defined as accrued leave that is available for personal injury or illness, family injury or illness, personal time off (which was limited to no more than 32 hours per year prior to 2019), and leave covered under the provisions of the Family and Medical

Leave Act of 1993. In 2019, we limited flex leave for personal time off to no more than 8 hours. Beginning in 2020, no more than 16 hours of flex leave can be used for personal time off. We limit employees' annual flex leave carryover amount to 520 hours. Employees (including executive officers) are not entitled to receive any payments under our flex leave policy under any circumstances, including a termination of their employment for any reason.

Perquisites

In 2019, we did not provide any perquisites to our named executive officers other than Mr. Joiner. As previously noted, Mr. Joiner retired from the Bank at the end of 2019. In recognition of Mr. Joiner's distinguished service to us for more than 36 years, we provided him with perquisites totaling $14,189 at the time of his retirement. These perquisites consisted of retirement gifts valued at $13,474 and meal cost reimbursements totaling $715 for members of Mr. Joiner's immediate family who attended a function that was held in part to honor him. Our Chairman of the Board of Directors, Vice Chairman of the Board of Directors, and Chairman of the Compensation and Human Resources Committee of the Board of Directors authorized a retirement gift valued at $12,000. The other retirement gifts (valued at $1,474) and the meal cost reimbursements were authorized by our President and Chief Executive Officer.

Executive Employment Agreement

On March 24, 2015, we entered into an employment agreement with Mr. Bhasin. This agreement was authorized and approved by the Committee and Board of Directors and resulted from the Board's desire to retain Mr. Bhasin's services for no less than the one-year term of the agreement. On each yearly anniversary, Mr. Bhasin's employment agreement automatically renews for an additional one-year term unless either we or Mr. Bhasin gives a notice of non-renewal not less than 30 days prior to the expiration date. Because neither we nor Mr. Bhasin gave a notice of non-renewal, his employment agreement was (on March 24, 2020) automatically extended through March 23, 2021.

As more fully described in the section entitled "Potential Payments Upon Termination or Change in Control" beginning on page 118, the employment agreement with Mr. Bhasin provides for payments in the event that his employment with us is terminated either by him for good reason or by us other than for cause, by reason of his death or disability, or as a result of us giving notice of non-renewal of the employment agreement at a time when he is willing and able to continue his employment on substantially the same terms. We believe the specified triggering events and the payments resulting from those events are similar in nature and amount to those commonly found in agreements used by comparable companies and therefore advance our objective of retaining Mr. Bhasin.

We considered the action with respect to Mr. Bhasin to be prudent based on our belief that he is extremely well qualified to perform the duties of his job, that he has a skill set that is highly sought after in the financial services industry, and that his continued employment with us is essential to our ability to meet our business objectives.

Currently, we do not have employment agreements with Messrs. Lewis, Madhavan or Pan, nor do we expect to enter into employment agreements with these executives in the foreseeable future. Prior to his retirement, we did not have an employment agreement with Mr. Joiner.

Compensation Committee Report

The Compensation and Human Resources Committee has reviewed and discussed with management the Compensation Discussion and Analysis found on pages 95-107 of this report. Based on our review and discussions, we recommended to the Board of Directors that the Compensation Discussion and Analysis be included in the Bank's Annual Report on Form 10-K.

The Compensation and Human Resources Committee

Mary E. Ceverha, Chairman
G. Granger MacDonald, Vice Chairman
A. Fred Miller, Jr.
Sally I. Nelson
Joseph F. Quinlan, Jr.
Robert M. Rigby

SUMMARY COMPENSATION TABLE

The following table sets forth the total compensation for 2019, 2018 and 2017 of our President and Chief Executive Officer, our Executive Vice President and Chief Financial Officer, and our three other most highly compensated executive officers who were serving as executive officers at the end of 2019. Collectively, the five individuals presented in the table are referred to as our "named executive officers."

Name and Principal Position	Year	Salary ($)	Bonus ($)	Stock Awards ($)	Option Awards ($)	Non-equity Incentive Plan Compensation ($) (1)	Change in Pension Value and Nonqualified Deferred Compensation Earnings ($) (2)	All Other Compensation ($) (3)	Total ($)
Sanjay Bhasin	2019	855,000	—	—	—	649,230	279,000	51,300	1,834,530
President/CEO	2018	825,000	—	—	—	691,264	—	49,475	1,565,739
	2017	725,000	—	—	—	1,087,500	156,000	43,500	2,012,000
Tom Lewis	2019	373,251	—	—	—	195,649	370,000	22,395	961,295
EVP/Chief Financial	2018	362,380	—	—	—	213,658	4,000	21,718	601,756
Officer	2017	348,442	—	—	—	522,663	222,000	20,907	1,114,012
Kalyan Madhavan	2019	521,679	—	—	—	272,351	267,000	30,063	1,091,093
EVP/Chief Business	2018	504,037	—	—	—	294,246	12,000	28,835	839,118
Officer	2017	477,760	—	—	—	716,640	154,000	27,092	1,375,492
Jibo Pan	2019	411,319	—	—	—	213,548	296,000	22,332	943,199
EVP/Head of Capital	2018	393,606	—	—	—	228,819	—	21,184	643,609
Markets	2017	367,856	—	—	—	551,784	161,000	21,269	1,101,909
Paul Joiner [4]	2019	362,471	—	—	—	189,998	472,000	55,191	1,079,660
EVP/Chief Strategy	2018	351,913	—	—	—	207,487	117,000	14,956	691,356
Officer	2017	338,378	—	—	—	507,567	107,000	18,960	971,905

(1) Amounts for 2019 represent EIP awards earned for services rendered in 2019 and Gap Year Awards earned for services rendered during 2017, 2018 and 2019. Amounts for 2018 represent EIP awards earned for services rendered in 2018 and LTIP awards earned for services rendered during 2016, 2017 and 2018. Amounts for 2017 represent EIP awards earned for services rendered in 2017 and LTIP awards earned for services rendered during 2015, 2016 and 2017, subject to an overall limit equal to 1.5 times the executive's 2017 base salary (which limit was met).The amounts shown for 2019 were paid to the executive officers on February 28, 2020. The amounts shown for 2018 and 2017 were paid to the executive officers in February 2019 and February 2018, respectively. The components of this column for 2019 are provided in the table below entitled "Components of Non-Equity Incentive Plan Compensation for 2019."

(2) Amounts reported in this column for 2019, 2018 and 2017 are attributable solely to the change in the actuarial present value of the named executive officers' accumulated benefit under the Pentegra Defined Benefit Plan for Financial Institutions during those years, calculated for each such period in accordance with the assumptions and limitations set forth in the narrative following the pension benefits table on pages 111-114. None of our named executive officers received preferential or above-market earnings on nonqualified deferred compensation during 2019, 2018 or 2017. In 2018, the actuarial present value of the accumulated pension benefits for Mr. Bhasin and Mr. Pan decreased by $4,000 and $24,000, respectively.

(3) The components of this column for 2019 are provided in the table below entitled "Components of All Other Compensation for 2019."

(4) Mr. Joiner's last day of employment with us was December 31, 2019. He retired from the Bank after more than 36 years of service.

Components of Non-Equity Incentive Plan Compensation for 2019

Name	2019 EIP Current Award ($)	2017 EIP Gap Year Award ($)	Total Non-Equity Incentive Plan Compensation ($)
Sanjay Bhasin	313,732	335,498	649,230
Tom Lewis	93,710	101,939	195,649
Kalyan Madhavan	130,974	141,377	272,351
Jibo Pan	103,267	110,281	213,548
Paul Joiner	91,003	98,995	189,998

Table of Contents

Components of All Other Compensation for 2019

Name	Bank Contributions to Vested Defined Contribution Plans: 401(k)/Thrift Plan ($)	Bank Contributions to Vested Defined Contribution Plans: Nonqualified Deferred Compensation Plan (NQDC Plan) ($)	Payouts for Unused Vacation Upon Termination ($)	Perquisites ($)	Tax Gross ups ($)	Retirement Service Award ($)	Total All Other Compensation ($)
Sanjay Bhasin	16,800	34,500	—	—	—	—	51,300
Tom Lewis	16,800	5,595	—	—	—	—	22,395
Kalyan Madhavan	15,562	14,501	—	—	—	—	30,063
Jibo Pan	14,453	7,879	—	—	—	—	22,332
Paul Joiner	16,800	4,948	16,754	14,189 (1)	—	2,500 (2)	55,191

(1) Mr. Joiner's perquisites consisted of retirement gifts valued at $13,474 and meal cost reimbursements totaling $715 for members of his immediate family who attended a function that was held in part to recognize Mr. Joiner for his 36.4 years of service to us.

(2) Reflects a cash payment to Mr. Joiner pursuant to our service award program. Any employee with 15 or more years of service or that elects early retirement via the Rule of 70 is entitled to receive $2,500 upon his or her termination from the Bank.

GRANTS OF PLAN-BASED AWARDS

As discussed in the Compensation Discussion and Analysis, the 2019 EIP provided for an Annual Award, which was comprised of a Current Award and a Deferred Award. For the incentives that could be earned in 2019, our executive officers derived 50 percent of their incentive opportunity from the 2019 EIP (via the 2019 Current Award) and 50 percent of their incentive opportunity from the 2017 EIP (via the Gap Year Award).

For our President and Chief Executive Officer, the potential Annual Award under the 2019 EIP (before interest on the deferred portion, as described below), could have been 44.025 percent of salary (if the threshold objective was achieved for each of our 2019 Performance Goals that had a threshold objective and all of the pass/fail goals were met), 77.4 percent of salary (if the target objective was achieved for each of our 2019 Performance Goals that had a target objective and all of the pass/fail goals were met) or 95 percent of salary (if the stretch objective was achieved for each of our 2019 Performance Goals that had a stretch objective and all of the pass/fail goals were met). For each of our other named executive officers, the potential Annual Award under the 2019 EIP (before interest on the deferred portion), could have been 27.375 percent of salary (if the threshold objective was achieved for each of our 2019 Performance Goals that had a threshold objective and all of the pass/fail goals were met), 51.8 percent of salary (if the target objective was achieved for each of our 2019 Performance Goals that had a target objective and all of the pass/fail goals were met) or 65 percent of salary (if the stretch objective was achieved for each of our 2019 Performance Goals that had a stretch objective and all of the pass/fail goals were met).

The Current Award, representing 50 percent of the Annual Award, became earned and vested on December 31, 2019. The Deferred Award, representing the other 50 percent of the Annual Award, will become earned and vested on December 31, 2022 if: (i) the safety and soundness goals set forth in the next paragraph are satisfied during the three-year deferral performance period which runs from January 1, 2020 through December 31, 2022 (the "Deferral Performance Period"); (ii) the executive receives at least a "Meets Expectations" performance rating for 2022; and (iii) the executive is actively employed on December 31, 2022. An executive’s Deferred Award under the 2019 EIP is payable no later than March 15, 2023 with interest at 6 percent compounded annually over the three-year deferral performance period.

The safety and soundness goals that must be satisfied during the three-year deferral performance period are: (i) no material risk management deficiency exists at the Bank; (ii) no operational errors or omissions result in material revisions to our financial results, information submitted to the Finance Agency, or data used to determine incentive payouts; (iii) no submission of material information to the SEC, the FHLBanks Office of Finance, and/or the Finance Agency is significantly past due; (iv) we make sufficient progress, as determined by the Board of Directors, in the timely remediation of significant examination, monitoring and other supervisory findings; and (v) we have sufficient capital to pay dividends and repurchase members’ stock.

The following table sets forth an estimate of the possible Current Awards and Deferred Awards (before interest) that could have been earned by our named executive officers under the 2019 EIP. The achievement levels described above were used to compute the estimated awards shown in the table. Given the number of variables involved in the calculation of the Annual Awards, the ultimate awards (other than the maximum awards) could have varied significantly. For instance, the Annual Awards could have been less than 44.025 percent of salary for our President and Chief Executive Officer and 27.375 percent of salary for each of our other named executive officers if we failed to achieve the threshold objective for one or more of our 2019 Performance Goals that had a threshold objective but achieved the threshold objective for each of our other 2019 Performance Goals that had a threshold objective. In addition, because achievement levels between threshold and target and between target and stretch for each 2019 Performance Goal that had those achievement levels are interpolated, the ultimate 2019 EIP awards earned by the named executive officers could have varied significantly between the threshold and maximum amounts presented in the table. The 2019 EIP Current Awards that were actually earned by our named executive officers are presented in the Non-Equity Incentive Plan Compensation column in the Summary Compensation Table above and are described more fully in the Compensation Discussion and Analysis on pages 95 through 107.

Estimated Possible Awards for 2019 EIP

	2019 Current Award			2019 Deferred Award			Total 2019 Annual Award		
Name	**Threshold ($)**	**Target ($)**	**Maximum ($)**	**Threshold ($)**	**Target ($)**	**Maximum ($)**	**Threshold ($)**	**Target ($)**	**Maximum ($)**
Sanjay Bhasin	188,207	330,885	406,125	188,207	330,885	406,125	376,414	661,770	812,250
Tom Lewis	51,089	96,672	121,307	51,089	96,672	121,306	102,178	193,344	242,613
Kalyan Madhavan	71,405	135,115	169,546	71,405	135,115	169,545	142,810	270,230	339,091
Jibo Pan	56,300	106,532	133,679	56,299	106,531	133,678	112,599	213,063	267,357
Paul Joiner	49,613	93,880	117,803	49,613	93,880	117,803	99,226	187,760	235,606

The following table shows the anticipated growth in the threshold, target and maximum Deferred Awards (from the table above) during the period from January 1, 2020 through December 31, 2022 and the total Deferred Awards (inclusive of interest) that would have been payable in early 2023 at each of these achievement levels.

Estimated Possible Payouts in Early 2023 Under Non-Equity Incentive Plan Awards for 2019 EIP

	2019 Deferred Award			Interest on Deferred Award [1]			Total Deferred Award Including Interest		
Name	**Threshold ($)**	**Target ($)**	**Maximum ($)**	**Threshold ($)**	**Target ($)**	**Maximum ($)**	**Threshold ($)**	**Target ($)**	**Maximum ($)**
Sanjay Bhasin	188,207	330,885	406,125	35,951	63,204	77,576	224,158	394,089	483,701
Tom Lewis	51,089	96,672	121,306	9,759	18,466	23,171	60,848	115,138	144,477
Kalyan Madhavan	71,405	135,115	169,545	13,639	25,809	32,386	85,044	160,924	201,931
Jibo Pan	56,299	106,531	133,678	10,754	20,349	25,535	67,053	126,880	159,213
Paul Joiner	49,613	93,880	117,803	9,477	17,933	22,502	59,090	111,813	140,305

[1] Amounts represent interest on the Deferred Awards at 6 percent, compounded annually.

The following table shows the actual deferred awards under the 2019 EIP, the anticipated growth in those awards during the period from January 1, 2020 through December 31, 2022, and the total Deferred Awards (inclusive of interest) that will be payable in early 2023 provided all of the conditions for payment are met. With Mr. Joiner's retirement at the end of 2019, he is no longer eligible to receive the 2019 Deferred Award (nor is he eligible to receive the Deferred Awards under the 2017 or 2018 EIPs).

Name	Actual 2019 EIP Deferred Award ($)	Interest on Deferred Award ($)	Total Deferred Award Including Interest ($)
Sanjay Bhasin	313,731	59,928	373,659
Tom Lewis	93,709	17,900	111,609
Kalyan Madhavan	130,974	25,018	155,992
Jibo Pan	103,267	19,726	122,993
Paul Joiner	—	—	—

If an executive officer's employment is terminated for any reason other than death, disability or a reduction in force (as defined in the 2019 EIP), his or her unvested 2019 EIP awards will be forfeited.

If an executive officer’s employment had been terminated in 2019 due to death or disability, then his or her Current Award would have been treated as earned and vested based on the portion of 2019 during which the executive was employed based on the assumption that we would have achieved the 2019 Performance Goals at the target achievement level. If an executive's employment is terminated during the Deferral Performance Period due to his or her death or disability, then his or her Deferred Award will be treated as fully earned and vested based on the assumption that we would achieve the safety and soundness goals applicable to that award. Payment of awards in connection with a death or disability would be made in a single lump sum within 75 days of the executive’s termination date. For the Deferred Award, the payment would include interest through the executive's termination date.

If an executive’s employment had been terminated in 2019 due to a reduction in force, then his or her Current Award would have been treated as earned and vested based on the portion of 2019 during which the executive was employed and the extent to which the 2019 Performance Goals were ultimately satisfied. If an executive’s employment is terminated during the Deferral Performance Period due to a reduction in force, then his or her Deferred Award will be treated as fully earned and vested upon completion of the three-year performance period and the achievement of the safety and soundness goals applicable to that award. Payment of awards in connection with a reduction in force would be made according to the normal scheduled dates and would be contingent upon the executive executing the severance agreement offered by us.

If, in 2019, we had been involved in a merger, consolidation, reorganization or sale of all or substantially all of our assets, or we had been liquidated or dissolved (collectively, a "Reorganization"), subject to certain exceptions for which the Director of the Finance Agency had determined should not be a basis for accelerated vesting, then the Current Award would have been treated as earned and vested on a pro rata basis through the date of the Reorganization. If we are involved in a Reorganization during the Deferral Performance Period, then the Deferred Award will be treated as fully earned and vested effective as of the Reorganization date based on the assumption that we would have achieved the safety and soundness goals applicable to that award. Payment of awards in connection with a Reorganization would be made in a single lump sum on the date on which the Reorganization occurs. For the Deferred Award, the payment would include interest through the Reorganization date.

The Board of Directors may adjust the 2019 Performance Goals to ensure the purposes of the 2019 EIP are served. In addition, the Board of Directors, in its discretion, may consider extraordinary occurrences when assessing performance results and determining award payments. Extraordinary occurrences mean those events that, in the opinion and at the discretion of the Board of Directors, are outside the significant influence of the executive or us and are likely to have a significant unanticipated effect, whether positive or negative, on our operating and/or financial results.

Any awards not yet paid may be reduced or eliminated if any actual losses or other measures or aspects of performance are realized which would have caused a reduction in the amount of the awards. Further, if during the most recent examination of us by the Finance Agency, the Finance Agency identified an unsafe or unsound practice or condition that is material to the financial operation of the Bank within the executive’s area(s) of responsibility and such unsafe or unsound practice or condition is not subsequently resolved in our favor, then all of an executive’s vested and unvested awards under the 2019 EIP will be forfeited. Any future payments for a vested award will cease and we will have no further obligation to make such payments.

By resolution, the Board of Directors may reduce or eliminate an award that is otherwise earned under the 2019 EIP but not yet paid if the Board of Directors finds that a serious, material safety and soundness problem or a serious, material risk management deficiency exists at the Bank, or if: (i) operational errors or omissions result in material revisions to our financial results, the information submitted to the Finance Agency, or the data used to determine incentive payouts; (ii) the submission of material information to the SEC, the FHLBanks Office of Finance, and/or the Finance Agency is significantly past due; or (iii) we fail to make sufficient progress, as determined by the Board of Directors, in the timely remediation of significant examination, monitoring and other supervisory findings.

The Board of Directors may amend the 2019 EIP at any time in its sole discretion. However, the Board of Directors may not amend the 2019 EIP to reduce an executive’s awards as determined on the day immediately preceding the effective date of the amendment or to otherwise retroactively impair or adversely affect the rights of an executive.

In addition, the Board of Directors may terminate the 2019 EIP at any time in its sole discretion. Absent an amendment to the contrary, incentives that were earned and vested prior to the termination will be paid at the times and in the manner provided for by the 2019 EIP at the time of the termination.

PENSION BENEFITS

All of our regular full-time employees hired prior to January 1, 2007 participate in the Pentegra Defined Benefit Plan for Financial Institutions (“Pentegra DB Plan”), a tax-qualified multiemployer defined benefit pension plan. The Pentegra DB Plan also covers any of our regular full-time employees who were hired on or after January 1, 2007, provided that the employee had prior service with a financial services institution that participated in the Pentegra DB Plan, during which service the employee was covered by such plan. Effective July 1, 2015, coverage was extended to include all of our non-highly compensated employees (as defined by Internal Revenue Service rules) who were hired on and after January 1, 2007 but before August 1, 2010. Concurrently, we amended our participation in the Pentegra DB Plan such that some of the benefits offered by the plan were reduced prospectively (that is, on and after July 1, 2015) for employees who were hired prior to July 1, 2003. Messrs. Lewis and Joiner were hired prior to July 1, 2003. Messrs. Bhasin, Madhavan and Pan, each of whom was hired after January 1, 2007, participate in the Pentegra DB Plan because each of them had prior service with the Federal Home Loan Bank of Chicago during which service each of them was covered by the plan. We do not offer any other defined benefit plans (including supplemental executive retirement plans) that provide for specified retirement benefits. The following table shows the present value of the current accrued pension benefit and the number of years of credited service for each of our named executive officers as of December 31, 2019. The number of years of credited service and the pension benefits shown for Messrs. Bhasin, Madhavan and Pan are inclusive of their prior service with the Federal Home Loan Bank of Chicago.

Name	Plan Name	Number of Years of Credited Service (#)	Present Value of Accumulated Benefit ($)	Payments During Last Fiscal Year ($)
Sanjay Bhasin	Pentegra DB Plan	15.1	972,000	—
Tom Lewis	Pentegra DB Plan	16.9	1,575,000	—
Kalyan Madhavan	Pentegra DB Plan	14.2	977,000	—
Jibo Pan	Pentegra DB Plan	16.8	962,000	—
Paul Joiner	Pentegra DB Plan	30.0	3,428,000	—

The regular form of retirement benefit under the Pentegra DB Plan is a single life annuity that includes a lump sum death benefit. The normal retirement age is 65, but the plan provides for an unreduced retirement benefit beginning at age 60 as it relates solely to benefits that were accrued prior to July 1, 2015 (for employees hired prior to July 1, 2003) or age 62 (for employees hired on or after July 1, 2003 that meet the eligibility requirements to participate in the Pentegra DB Plan and, for employees hired prior to July 1, 2003, the benefits that those employees accrue on and after July 1, 2015). For employees hired prior to January 1, 2019 who are not eligible to participate in the Pentegra DB Plan, we offer an enhanced defined contribution plan.

Valuation Assumptions

The accumulated pension benefits reflected in the table above were calculated using the following assumptions:

- Retirement at the earliest age at which retirement benefits may be received without any reduction in benefits (that is, benefits that have been accumulated through December 31, 2019 commence at age 62 for Messrs. Bhasin, Lewis, Madhavan and Pan and are discounted to December 31, 2019);
- Mr. Joiner's accumulated benefit is not discounted as he was eligible to receive an unreduced benefit as of December 31, 2019;
- Present values are calculated by weighting the present value of a benefit provided in the form of an annuity by 50 percent and the value of a benefit provided as a lump sum by 50 percent. The annuity benefit is calculated using a discount rate of 3.22 percent. The lump sum benefit is calculated using a discount rate of either 3.22 percent or, for those participants impacted by the Internal Revenue Code Section 415 limits, 5.50 percent (which is the discount rate used to calculate the maximum lump sum payable under Internal Revenue Code Section 415);
- The annuity benefit is valued using the Pri-2012 white collar worker annuitant table with mortality improvement scale MP-2019 and the lump sum benefit is valued using the applicable Internal Revenue Service mortality table for 2019; and
- No pre-retirement decrements (i.e., no pre-retirement termination from any cause including but not limited to voluntary resignation, death or early retirement).

Tax Code Limitations

As a tax-qualified defined benefit plan, the Pentegra DB Plan is subject to limitations imposed by the Internal Revenue Code of 1986, as amended. Specifically, Section 415(b)(1)(A) of the Internal Revenue Code places a limit on the amount of the annual pension benefit that can be paid from a tax-qualified plan (for 2019, this amount was $225,000 at age 65). The annual pension benefit limit is less than $225,000 in the event that an employee retires before reaching age 65 (the extent to which the limit is reduced is dependent upon the age at which the employee retires, among other factors). In addition, Section 401(a)(17) of the Internal Revenue Code limits the amount of annual earnings that can be used to calculate a pension benefit (for 2019, this amount was $280,000).

From time to time, the Internal Revenue Service may increase the maximum compensation limit for qualified plans. Future increases, if any, would be expected to increase the value of the accumulated pension benefits accruing to our named executive officers. For 2020, the Internal Revenue Service increased the maximum compensation limit to $285,000 per year. In addition, the Internal Revenue Service increased the maximum allowable annual benefit to $230,000 for 2020.

Benefit Formula

Subject to the exceptions noted below for Messrs. Bhasin, Madhavan and Pan, the annual benefit payable under the Pentegra DB Plan (assuming a participant chooses a single life annuity with a lump sum death benefit) is calculated using the following formula:

- 3 percent x years of service credited prior to July 1, 2003 x high 36-month average compensation earned prior to July 1, 2015

plus

- 2 percent x years of service credited on or after July 1, 2003 x high 36-month average compensation for the entire period of participation in the Pentegra DB Plan

The high 36-month average compensation is the average of a participant's highest 36 consecutive months of compensation. Compensation covered by the Pentegra DB Plan includes taxable compensation as reported on the executive officer's W-2 (reduced by any receipts of compensation deferred from a prior year) plus any pre-tax contributions to our Section 401(k) plan and/or Section 125 cafeteria plan, subject to the Internal Revenue Code limitation which, for 2019, 2018 and 2017, was $280,000, $275,000 and $270,000, respectively. In each of those years, the compensation of all of our named executive officers exceeded the applicable Internal Revenue Code limit; accordingly, the high 36-month average compensation for each of our named executive officers was limited to $275,000 as of December 31, 2019. Based on the Internal Revenue Code limitations in effect prior to July 1, 2015, the high 36-month average compensation for purposes of the first part of the benefit formula is limited to $255,000 for Messrs. Lewis and Joiner. The first part of the benefit formula does not apply to Messrs. Bhasin, Madhavan and Pan as they were not employed by us prior to July 1, 2003.

The plan limits the maximum years of benefit service for all participants to 30 years. As of December 31, 2019, Messrs. Bhasin, Lewis, Madhavan, Pan and Joiner had accumulated 5.6, 16.5, 5.3, 5.3 and 10.1 years of credited service, respectively, at the 2 percent service accrual rate. For Mr. Lewis and Mr. Joiner, the remainder of their service (0.4 and 19.9 years, respectively) has been credited at the 3 percent service accrual rate. While employed by the Federal Home Loan Bank of Chicago, Messrs. Bhasin, Madhavan and Pan accrued benefits at a service accrual rate of 2.25 percent. As a matter of policy, we do not grant extra years of credited service to participants in the Pentegra DB Plan.

Vesting

As of December 31, 2019, all of our named executive officers were fully vested in their accrued pension benefits.

Early Retirement

Employees enrolled in the Pentegra DB Plan are eligible for early retirement at age 45 if hired prior to July 1, 2003. If hired on or after July 1, 2003 and before January 1, 2007, employees are eligible for early retirement at age 55 if they have at least 10 years of service with us. Employees hired on or after January 1, 2007 who meet the eligibility requirements to participate in the Pentegra DB Plan are eligible for early retirement at age 55 if they have at least 10 years of accrued benefit service in the Pentegra DB Plan, including prior credited service. If an employee wishes to retire before reaching his or her unreduced benefit age, an early retirement reduction factor (or penalty) is applied. If the sum of an employee's age and benefit service (including any prior credited service) is at least 70, the "Rule of 70" would apply and the employee's benefit would be reduced by 1.5 percent for each year that the benefit is paid prior to reaching his or her unreduced benefit age. If an employee hired prior to July 1, 2003 terminates his or her employment prior to attaining the Rule of 70, the portion of that employee's benefit that was earned prior to July 1, 2015 would be reduced by 3 percent for each year that the benefit is paid prior to reaching age 60. The portion of the benefit earned by that employee on and after July 1, 2015 (if commenced before reaching age 62) would be reduced by 6 percent per year from age 62 to age 60, 4 percent per year from age 60 to age 55 and 3 percent per year from age 55 to age 45. The penalties that apply from age 55 until the employee reaches age 62 (as described in the immediately preceding sentence) are equivalent to the penalties that apply to employees hired on or after July 1, 2003 who have not attained the Rule of 70 prior to termination. The early retirement reduction factor does not apply to an eligible employee if he or she retires as a result of a disability.

As of December 31, 2019, Mr. Joiner was eligible to retire with full benefits. Because Mr. Lewis was hired prior to July 1, 2003, he is eligible to receive his pre-July 1, 2015 benefits without reduction at age 60 and his post-June 30, 2015 benefits without reduction at age 62. Given their hire dates, Messrs. Bhasin, Madhavan and Pan are eligible to receive an unreduced benefit at age 62. As of December 31, 2019, Mr. Lewis was eligible for early retirement with reduced benefits. Because he had met the Rule of 70 as of December 31, 2019, the early retirement reduction factors applicable to Mr. Lewis as of that date would have been approximately 4.5 percent as it relates to the benefits he had earned prior to July 1, 2015 and approximately 7.5 percent as it relates to the benefits he had earned on and after July 1, 2015. Given their ages and hire dates, Messrs. Bhasin, Madhavan and Pan are not yet eligible for early retirement.

Forms of Benefit

Participants in the Pentegra DB Plan can choose from among the following standard payment options:

- Single life annuity — that is, a monthly payment for the remainder of the participant's life (this option provides for the largest annuity payment);
- Single life annuity with a lump sum death benefit equal to 12 times the annual retirement benefit — under this option, the death benefit is reduced by 1/12 for each year that the retiree receives payments under the annuity. Accordingly, the death benefit is no longer payable after 12 years (this option provides for a smaller annuity payment as compared to the single life annuity);
- Joint and 50 percent survivor annuity — a monthly payment for the remainder of the participant's life. If the participant dies before his or her survivor, the survivor receives (for the remainder of his or her life) a monthly payment equal to 50 percent of the amount the participant was receiving prior to his or her death (this option provides for a smaller annuity payment as compared to the single life annuity with a lump sum death benefit);
- Joint and 100 percent survivor annuity with a 10-year certain benefit feature — a monthly payment for the remainder of the participant's life. If the participant dies before his or her survivor, the survivor receives (for the remainder of his or her life) the same monthly payment that the participant was receiving prior to his or her death. If both the participant and the survivor die before the end of 10 years, the participant's named beneficiary receives the same monthly payment for the remainder of the 10-year period (this option provides for a smaller annuity payment as compared to the joint and 50 percent survivor annuity); or
- Lump sum payment at retirement in lieu of a monthly annuity.

In addition, other payment options, actuarially equivalent to the foregoing, can be designed for a participant, subject to certain limitations.

NONQUALIFIED DEFERRED COMPENSATION

The following table sets forth information for 2019 regarding our nonqualified deferred compensation plan ("NQDC Plan") and our Special Nonqualified Deferred Compensation Plan. The Special Nonqualified Deferred Compensation Plan serves primarily as a supplemental executive retirement plan ("SERP") for Messrs. Lewis and Joiner. Messrs. Bhasin, Madhavan and Pan do not participate in the SERP. As discussed more fully in the Compensation Discussion and Analysis on pages 117-118, we do not intend in the foreseeable future to add any new participants to the SERP, nor do we intend to make any additional SERP contributions on behalf of Mr. Lewis. As Mr. Joiner retired at the end of 2019, he would not be eligible to receive additional SERP contributions in the unlikely event that our intentions change. The term "NQDC Plan" refers to our 2017 Deferred Compensation Plan, our Consolidated Deferred Compensation Plan and any predecessor plans. The NQDC Plan and the SERP are defined contribution plans. The assets associated with these plans are held in a grantor trust that is administered by a third party. All assets held in the trust may be subject to forfeiture in the event of our receivership or conservatorship. As explained in the narrative following the table, our SERP is divided into two groups (Group 1 and Group 2) based upon differences in participation and vesting characteristics.

Name	Executive Contributions in Last Fiscal Year ($) (1)	Registrant Contributions in Last Fiscal Year ($) (2)	Aggregate Earnings (Losses) in Last Fiscal Year ($) (3)	Aggregate Withdrawals/ Distributions ($)	Aggregate Balance at Last Fiscal Year End ($)(4)
Sanjay Bhasin					
NQDC Plan	146,076	34,500	176,997	—	848,012
Tom Lewis					
NQDC Plan	56,000	5,595	5,834	6,161	311,728
SERP — Group 1	—	—	63,766	—	399,236
SERP — Group 2	—	—	2,369	—	14,607
	56,000	5,595	71,969	6,161	725,571
Kalyan Madhavan					
NQDC Plan	247,123	14,501	179,915	39,720	1,038,710
Jibo Pan					
NQDC Plan	50,000	7,879	25,249	243,572	137,103
Paul Joiner					
NQDC Plan	3,625	4,948	165,786	—	1,020,660
SERP — Group 1	—	—	94,148	—	589,455
	3,625	4,948	259,934	—	1,610,115

(1) All amounts in this column are included in the "Salary" column for 2019 in the Summary Compensation Table.

(2) All amounts in this column are included in the "All Other Compensation" column for 2019 in the Summary Compensation Table.

(3) The earnings presented in this column are not included in the "Change in Pension Value and Nonqualified Deferred Compensation Earnings" column for 2019 in the Summary Compensation Table as such earnings are not at above-market or preferential rates.

(4) The balances presented in this column are comprised of the amounts shown in the table below entitled "Components of Nonqualified Deferred Compensation Accounts at Last Fiscal Year End."

Components of Nonqualified Deferred Compensation Accounts at Last Fiscal Year End

The following table sets forth the amounts included in the aggregate balance of each named executive officer's nonqualified deferred compensation accounts as of December 31, 2019 that are attributable to: (1) executive and Bank contributions that are reported in the Summary Compensation Table on page 108; (2) executive and Bank contributions that either were reported in the summary compensation tables for 2006 through 2016 or that would have been reportable in years prior to 2006 if we had been a registrant in those years and a summary compensation table (in the tabular format presented on page 108) had been required; and (3) earnings (losses) accumulated through December 31, 2019 (2019 and prior years) that either have not been reported, or would not have been reportable, in a summary compensation table because such earnings were not at above-market or preferential rates. Because Messrs. Lewis, Madhavan, Pan and Joiner have received distributions from our NQDC Plan in the past, the amounts presented for these officers exclude any prior contributions and the accumulated earnings or losses on those contributions that have previously been distributed, as such assets are no longer held in their NQDC Plan accounts.

Name	Amounts Reported in Summary Compensation Table 2019 ($)	2018 ($)	2017 ($)	Reported/ Reportable Compensation Related to Years Prior to 2017 ($)	Cumulative Earnings (Losses) Excluded from Reportable Compensation ($)	Total ($)
Sanjay Bhasin	111,450	168,101	172,300	188,065	208,096	848,012
Tom Lewis	11,595	60,018	223,504	242,637	187,817	725,571
Kalyan Madhavan	114,501	261,644	323,641	154,551	184,373	1,038,710
Jibo Pan	57,879	57,091	5,871	—	16,262	137,103
Paul Joiner	8,573	—	569,017	569,946	462,579	1,610,115

NQDC Plan

Through 2015, our named executive officers and other highly compensated employees could elect under our NQDC Plan to defer receipt of all or part of their VPP award and all or part of their base salary. Deferral elections are made in December of each year for amounts to be earned in the following year and are irrevocable. In 2015 and prior years, we did not permit the deferral of LTIP awards. In 2016, we froze our Consolidated Deferred Compensation Plan and established the 2017 Deferred Compensation Plan for deferrals made on and after January 1, 2017. Deferred compensation that was earned in 2016 (whether it was paid in 2016 or, in the case of the 2016 VPP, early 2017) is governed by the Consolidated Deferred Compensation Plan while compensation earned in 2017 and later years (to the extent it is deferred) is governed by the 2017 Deferred Compensation Plan. Among other things, the 2017 Deferred Compensation Plan expanded the deferral sources to include any non-equity incentive plan compensation, including but not limited to LTIP awards. By way of example, a named executive officer could have elected in December 2016 to defer all or part of his 2017 EIP Current Award and/or his 2015 LTIP award, all of which were payable in early 2018. In addition, that same executive officer could have elected to defer all or part of his 2018 base salary.

Based upon the length of service of our named executive officers (including, in the case of Messrs. Bhasin, Madhavan and Pan, their service with the Federal Home Loan Bank of Chicago during which service each of them was a participant in the Pentegra Defined Contribution Plan for Financial Institutions), we match 200 percent of the first 3 percent of their contributed base salary reduced by 6 percent of their eligible compensation under the Pentegra Defined Contribution Plan for Financial Institutions (for 2019, the maximum compensation limit for this plan was $280,000). We do not provide any matching on employees' incentive compensation awards that are contributed to the NQDC Plan. Base salary and incentive compensation deferred under our NQDC Plan are not included in eligible compensation for purposes of our defined benefit pension plan (the Pentegra DB Plan). All of our participating employees, including our named executive officers, are fully vested in their NQDC Plan account balance at all times, including our matching contributions.

Participating executives direct the investment of their NQDC Plan account balances in an array of externally managed mutual funds that are approved from time to time by our Investment and Administrative Committee, which is comprised of several of our officers, some of whom are senior officers. Participants can choose from among several different investment options, including domestic and international equity funds, bond funds, money market funds and advisor managed portfolios. The mutual funds offered through the NQDC Plan (and our other non-qualified plans) employ investment strategies that are similar (although not identical) to those used in the funds that are available to participants in our tax-qualified 401(k) plan, which is managed by a different third-party sponsor. Participants can change their investment selections prospectively by contacting the trust administrator. There are no limitations on the frequency and manner in which participants can change their investment selections.

When participants elect to defer amounts into our NQDC Plan, they also specify when the amounts will ultimately be distributed to them. Under our Consolidated Deferred Compensation Plan, distributions could either be made in a specific year, whether or not the participant's employment has then ended, or at a time that begins at or after the participant's retirement or separation. Participants could elect to receive either a lump sum distribution or annual installment payments over periods ranging from 2 to 20 years.

Under the 2017 Deferred Compensation Plan, participants can have up to five scheduled in-service accounts and one retirement account. Distributions may either be made in a specific year (or years in the case of installments) or upon retirement, which for this purpose is defined as a separation of service on or after the participant has attained age 55. For scheduled distribution accounts, participants can elect to receive either a lump sum distribution or equal annual installments over a period of up to 4 years (in January of the year designated by the participant and, if installments are elected, in each succeeding January). For retirement accounts, participants can elect to receive either a lump sum distribution or equal annual installments over a period of up to 15 years (in January of the year following the year in which the retirement occurs and, if installments are elected, in each succeeding January). In the event of a participant's termination of service (other than a termination of service that qualifies as a retirement), the vested balances of his or her retirement account and any scheduled distribution accounts that have not yet commenced distribution will be paid in a lump sum in the month following the month in which the termination of service occurs. In the event of a participant's termination of service that qualifies as a retirement, the vested balances of his or her scheduled distribution accounts that have not yet commenced distribution will be paid in a lump sum distribution in January of the year following the year in which the retirement occurs unless the participant has made an alternative election on a timely basis to receive equal annual installments over a period of up to 15 years. In the event of a participant's termination of service for any reason (other than death) after one or more scheduled distribution accounts has commenced installment payments, such installment payments will continue as if the termination of service had not occurred. In the event of a participant's death, all vested balances then remaining in any retirement or scheduled distribution accounts will be paid to the participant's beneficiary in a lump sum in the month following the month in which the death occurs.

Once selected, participants' distribution schedules cannot be accelerated under our NQDC Plan. For deferrals made on or after January 1, 2005, a participant may postpone a distribution from the NQDC Plan to a future date that is later than the date originally specified on the deferral election form if the following two conditions are met: (1) the participant must make the election to postpone the distribution at least one year prior to the date the distribution was originally scheduled to occur and (2) the future date must be at least five years later than the originally scheduled distribution date. Participants may not postpone deferrals made prior to January 1, 2005 without the approval of our Investment and Administrative Committee.

SERP

Our SERP was established primarily to provide supplemental retirement benefits to those employees who were serving as our executive officers at the time the SERP was established. With Mr. Joiner's retirement at the end of 2019, Mr. Lewis is the only remaining executive from that group. As noted above, our SERP is divided into two groups (Group 1 and Group 2) based upon differences in participation and vesting characteristics. Group 2, as explained below, was established to provide benefits to a specified group of our employees, only one of whom is a named executive officer.

Group 1

Messrs. Lewis and Joiner participate in Group 1. Each participant's benefit in Group 1 consists of contributions made by us on the participant's behalf, plus or minus an allocation of the investment gains or losses on the assets used to fund the plan. Group 1 benefits vest on the date on which the sum of the participant's age and years of service with us is at least 70. If, prior to becoming vested, the officer had terminated employment for any reason other than death or disability, or he had been removed from Group 1, all benefits under the plan would have been forfeited. The provisions of the plan provide for accelerated vesting in the event of a participant's death or disability. Contributions to the Group 1 SERP are determined solely at the discretion of our Board of Directors and we have no obligation or current intention to make any future contributions to the Group 1 SERP. Mr. Lewis is not permitted to make contributions to the Group 1 SERP, nor was Mr. Joiner permitted to make contributions to the Group 1 SERP during his employment with us. The ultimate benefit to Mr. Lewis and Mr. Joiner is based solely on the past contributions that were made by us on their behalf and the earnings or losses on those contributions. We do not guarantee a specific benefit amount or investment return to either participant. In addition, we have the right at any time to amend or terminate the Group 1 SERP, or to remove a participant at our discretion, except that no amendment, modification or termination may reduce the then vested account balance of either participant. Based upon their ages and years of service with us, Mr. Lewis and Mr. Joiner were fully vested in their Group 1 benefits as of December 31, 2019. If a vested executive retires or is terminated prior to reaching age 62, that participant's Group 1 account balance will be paid at the time the executive reaches age 62, in either a lump sum distribution or annual installment payments over periods ranging from 2 to 20 years based on that participant's preexisting election. If the executive retires or is terminated after reaching age 62, or upon a separation of service at any age due to a disability, the participant's Group 1 account balance will be paid at that time in either a lump sum distribution or annual installment payments over periods ranging from 2 to 20 years based on that participant's preexisting election. Mr. Joiner elected to receive his Group 1 benefits in annual installments over 10 years. Mr. Lewis has elected to receive his Group 1 benefits in a lump sum distribution. If Mr. Lewis dies before reaching age 62, his Group 1 account balance will be paid to his beneficiary in a lump sum distribution within 90 days of his death. Group 1 assets are currently invested in a portfolio of mutual funds that are actively managed by the administrator of our grantor trust. Decisions regarding the investment of the Group 1 assets are the sole responsibility of our Investment and Administrative Committee.

Group 2

Mr. Lewis is the only named executive officer who participates in Group 2. Eligibility for the Group 2 SERP was limited to all of our employees who were employed as of June 30, 2003 but who were not eligible to receive a special one-time supplemental contribution to our qualified plan at that time (the Pentegra Defined Contribution Plan for Financial Institutions) because of limitations imposed by that plan (only employees eligible to receive a matching contribution as of December 31, 2002 were eligible to receive the one-time supplemental contribution to our qualified plan). At the time the SERP was established, 22 ineligible employees, including Mr. Lewis, were enrolled in Group 2. The supplemental contribution, equal to 3 percent of each ineligible employee's base salary as of June 30, 2003, was made to the Group 2 SERP to partially offset a reduction in the employee service accrual rate applicable to our defined benefit pension plan (the Pentegra DB Plan) from 3 percent to 2 percent effective July 1, 2003. Because Mr. Joiner, our only other named executive officer who was employed by us as of June 30, 2003, was eligible to receive a matching contribution as of December 31, 2002, the special one-time supplemental contribution was made on his behalf to our qualified plan in 2003. Our employees are not permitted to make contributions to the Group 2 SERP, nor do we intend to make any future contributions to the Group 2 SERP. Mr. Lewis is fully vested in the one-time contribution and the accumulated earnings on that contribution. The ultimate benefit to be derived by Mr. Lewis from Group 2 is dependent upon the earnings or losses generated on the one-time contribution. We have not guaranteed a specific benefit amount or investment return to him or any of the other employees participating in Group 2. Based on his preexisting election, Mr. Lewis' benefit under Group 2 is payable as a lump sum distribution upon termination of his employment for any reason. Group 2 assets are currently invested in one of the asset allocation funds managed by the administrator of our grantor trust. Similar to Group 1, decisions regarding the investment of the Group 2 assets are the sole responsibility of our Investment and Administrative Committee.

POTENTIAL PAYMENTS UPON TERMINATION OR CHANGE IN CONTROL

On March 24, 2015, we entered into an employment agreement with Mr. Bhasin that provides for certain termination benefits in specified circumstances. As of December 31, 2019 (and as of the date of this report), no employment agreement or contract of any kind existed between us and Messrs. Lewis, Madhavan, Pan or Joiner. However, we have a Reduction in Workforce Policy ("RIF Policy") that applied to all of our employees at that date other than four executive officers with whom we have entered into employment agreements, one of whom is Mr. Bhasin. With certain exceptions, our RIF Policy provides severance pay and the continuation of certain employee benefits for any employee in a job position that is eliminated due to economic conditions, functional reorganization, budgetary constraints or other business conditions. A reduction in force can also occur when a position changes so significantly that the related job responsibilities are no longer needed or applicable (collectively, a "RIF Policy Triggering Event"). Accordingly, at December 31, 2019, Messrs. Lewis, Madhavan, Pan and Joiner would have been entitled to termination benefits under our RIF Policy if (and only if) a RIF Policy Triggering Event had occurred on that date. The potential payments upon termination under Mr. Bhasin's employment agreement and our RIF Policy (as applied to our named executive officers other than Mr. Bhasin) are discussed in the following sections.

Employment Agreement with Mr. Bhasin

On March 24, 2015, we entered into an employment agreement with Mr. Bhasin. This employment agreement provides that we will employ Mr. Bhasin for one year (such period, as it may be extended, the "Employment Period"), unless terminated earlier for any of the following reasons: (1) death; (2) disability; (3) termination by us for cause (as discussed below); (4) termination by us for other than cause (i.e., for any other reason or for no reason); or (5) termination by Mr. Bhasin with good reason (as discussed below). On each yearly anniversary, the employment agreement automatically renews for an additional one-year term unless either we or Mr. Bhasin gives a notice of non-renewal. Not less than 30 days prior to the anniversary date, either we or Mr. Bhasin may give a notice of non-renewal, in which case Mr. Bhasin's employment with us would terminate at the end of the Employment Period. We may, in our sole discretion, pay Mr. Bhasin in lieu of such 30-day notice an amount equal to the base salary that would otherwise be payable to him for such 30-day period, in which case the termination of Mr. Bhasin would become effective immediately upon the date of such payment. Because neither we nor Mr. Bhasin gave a notice of non-renewal, his employment agreement was, on March 24, 2020, automatically extended through March 23, 2021.

For purposes of the employment agreement, cause for termination shall mean a finding by us that: (i) Mr. Bhasin has failed to perform his assigned duties for us after written notice of the failure and an opportunity to cure within 10 days of receipt of the notice (provided we determine that the failure is curable); (ii) Mr. Bhasin has failed or refused to comply in any material respect with our policies, procedures, practices, standards or other written directives; (iii) Mr. Bhasin has engaged in dishonesty, misconduct, gross negligence or falsification of records involving us; (iv) Mr. Bhasin has committed an act which injures or could reasonably be expected to injure our reputation, business or business relationships; (v) Mr. Bhasin fails to devote all of his business time and attention exclusively to our business and affairs; (vi) Mr. Bhasin has been convicted of, or has entered a plea of guilty or *nolo contendere* to, any crime involving moral turpitude or any felony; (vii) Mr. Bhasin has engaged in conduct which causes him to be barred from employment with us by any law or regulation or by any order of, or agreement with, any regulatory authority; or (viii) Mr. Bhasin breaches his employment agreement.

For purposes of the employment agreement, good reason means the occurrence, without Mr. Bhasin's written consent, of any of the following events: (a) any material diminution in Mr. Bhasin's authority, duties or responsibilities with us; (b) a material reduction by us in Mr. Bhasin's incentive compensation award range, except for an across-the-board reduction similarly affecting substantially all similarly-situated employees; (c) a material reduction in Mr. Bhasin's base salary, except for across-the-board salary reductions similarly affecting substantially all similarly-situated employees; (d) a requirement by us that Mr. Bhasin perform his principal services more than 100 miles from his place of primary employment on March 24, 2015 or such other location at which he has later agreed to provide such services; (e) a material breach by us of any material provision of the employment agreement; or (f) we, or substantially all of our assets, are effectively acquired by another FHLBank through merger or other form of acquisition and the surviving bank's Board of Directors or President makes a material diminution in Mr. Bhasin's authority, duties or responsibilities.

No resignation will be treated as resignation for good reason unless (x) Mr. Bhasin has given written notice to us of his intention to terminate his employment for good reason, describing in detail the grounds for such action, no later than 30 days after the first occurrence of such circumstance, (y) Mr. Bhasin has provided us with at least 30 days in which to cure the circumstance, and (z) if we are not successful in curing the circumstance, Mr. Bhasin ends employment within 30 days following the conclusion of the cure period in (y). If we inform Mr. Bhasin that we will not treat his resignation as for good reason, he may either withdraw the resignation and remain employed by us (provided that he does so before the original notice of resignation becomes effective) or proceed to dispute our decision.

Under the terms of Mr. Bhasin's employment agreement, in the event that his employment with us is terminated either by him for good reason or by us other than for cause, or in the event that we give notice of non-renewal while he is willing and able to continue employment on the same terms (each, a "Triggering Event"), Mr. Bhasin shall be entitled to receive the following severance benefits in addition to those payable under any applicable incentive and benefit programs in effect at the time of termination and in accordance with their terms:

(a) base salary continuation (at the base salary in effect at the time of termination) for 12 months;

(b) a pro rata portion of his non-equity incentive plan compensation for the year in which his termination occurs, based on actual performance for such year and payable at the time that annual incentive awards, if any, are paid to other executives, but in no event later than March 15 following the year in which the termination occurred; and

(c) continuation of any elective group health and dental insurance benefits that we are providing to him as of his termination date for a period of 12 months.

If Mr. Bhasin's employment with us is terminated for any reason other than a Triggering Event, he will be entitled only to his base salary through the last day of his actual employment with us unless his termination is due to a death or disability in which case he (or his estate) will also be entitled to receive his base salary for an additional 30-day period.

The terms of the employment agreement specify that the right to receive payments under items (a) through (c) above is contingent upon Mr. Bhasin delivering to us an executed severance agreement and a release of claims in a form provided by us.

The terms of the employment agreement with Mr. Bhasin provide that during his employment and for a period of one year after the termination of such employment for any reason, he will not: (i) engage in a managerial capacity in any business or enterprise in which he would serve in a role to affect that entity's decisions with respect to any product or service that competes with our credit products; (ii) directly or indirectly, either alone or in association with others, solicit, recruit, induce, or attempt to solicit, recruit or induce for employment or hire or engage as an independent contractor, any of our employees with whom he had contact during his employment with us; or (iii) directly or indirectly, either alone or in association with others, solicit, divert or take away, or attempt to solicit, divert or take away, the business or patronage of any of our members or customers with which he had material contact during his employment with us or about which he learned confidential information.

The following table sets forth the amounts that would have been payable to Mr. Bhasin as of December 31, 2019 if a Triggering Event had occurred on that date. If the Triggering Event had been related to a reduction in force, then Mr. Bhasin would also have been entitled, under the terms of the 2017 EIP and 2018 EIP, to receive (in early 2021 and early 2022, respectively), his 2017 EIP Deferred Award and 2018 EIP Deferred Award with interest at 6 percent compounded annually over the three-year deferral performance periods. The payment of these awards would have been dependent upon the satisfaction of the applicable safety and soundness goals.

Name	Accrued/ Unused Vacation as of 12/31/19 ($)	Undiscounted Value of Base Salary Continuation ($)	2019 Non-Equity Incentive Plan Compensation ($)	Undiscounted Value of Health Care Benefits Continuation ($)	Total Termination Benefit if Triggering Event was not a RIF ($)	2017 EIP Deferred Award ($)	2018 EIP Deferred Award ($)	Total Estimated Termination Benefit if Triggering Event was a RIF ($)
Sanjay Bhasin	82,212	855,000	649,230	26,180	1,612,622	410,156	453,661	2,476,439

If our employment of Mr. Bhasin had been terminated on December 31, 2019 due to his death or disability, he (or his beneficiary in the case of his death) would have been entitled to receive an amount totaling $1,593,389, comprised of the following: (i) his accrued/unused vacation ($82,212); (ii) his base salary for one month ($71,250); (iii) his 2019 non-equity incentive plan compensation comprised of the 2019 EIP Current Award and 2017 EIP Gap Year Award ($649,230); (iv) his 2017 EIP Deferred Award (with interest at 6 percent compounded annually for the period from January 1, 2018 through December 31, 2019) based on the assumption that the applicable safety and soundness goals would have been achieved ($386,940); and (v) his 2018 EIP Deferred Award (with interest at 6 percent for the period from January 1, 2019 through December 31, 2019) based on the assumption that the applicable safety and soundness goals would have been achieved ($403,757).

Termination Benefits for Messrs. Lewis, Madhavan, Pan and Joiner Under our RIF Policy

As of December 31, 2019, no employment agreement or contract of any kind existed between us and Messrs. Lewis, Madhavan, Pan or Joiner. However, as discussed above, Messrs. Lewis, Madhavan and Pan would have been entitled to benefits under our RIF Policy as of December 31, 2019 if a RIF Policy Triggering Event had occurred on that date. A RIF Policy Triggering Event could not occur for Mr. Joiner as he retired from the Bank at the end of 2019. The severance benefit provided under the RIF Policy is based upon an employee's status (nonexempt, exempt, officer or senior officer), length of service (including, in the case of Messrs. Madhavan and Pan, their service with the Federal Home Loan Bank of Chicago pursuant to our standard FHLBank System transfer procedures) and base salary at the time of termination, subject to certain minimum and maximum amounts. In no event may the severance benefit paid to any senior officer under the RIF Policy exceed an amount equal to one year's base salary plus the continuation of certain employee benefits for a one-year period. In addition, employees are entitled to receive a lump sum payment for any accrued and unused vacation.

Benefits continuation includes vacation that would have been accrued by the employee during the severance benefit period, matching contributions that otherwise would have been made on his or her behalf to our 401(k)/Thrift Plan during the severance benefit period (based on elections in effect at the date of termination), and continuation of any health care benefits that we were providing to the employee at the date of his or her termination (our health care benefits are elective and include medical, dental, vision and prescription drug benefits). The dollar equivalent of the future vacation benefit and matching contributions are paid in cash to the employee upon termination. Employees are eligible to continue their pre-existing participation in our health care benefit program, if any, for the length of the severance period by paying premiums at the same subsidized rates that we charge our active employees. If an employee elects to continue his or her coverage, we will pay the difference between the subsidized rate and the full cost of providing the health care benefits during the severance period (in the table below, these amounts are presented in the column entitled "Undiscounted Value of Health Care Benefits Continuation").

Any employee who voluntarily resigns, retires or is discharged for cause is not entitled to any benefits under our RIF Policy. We reserve the right in our sole discretion to amend or discontinue our RIF Policy at any time.

As of December 31, 2019, Messrs. Lewis, Madhavan and Pan would have been entitled under our RIF Policy to severance pay and benefits continuation for one year. The following table sets forth the amounts that would have been payable to these executive officers as of December 31, 2019 if a RIF Policy Triggering Event had occurred on that date. For the 2017 EIP Deferred Awards (payable in early 2021) and 2018 EIP Deferred Awards (payable in early 2022), the amounts presented in the table were based on the assumption that the applicable safety and soundness goals would be met.

Name	Accrued/ Unused Vacation as of 12/31/19 ($)	Undiscounted Value of Base Salary Continuation ($)	2019 Non-Equity Incentive Compensation ($)	Undiscounted Value of Health Care Benefits Continuation ($)	Lump Sum Payment for Loss of Future Vacation Benefits ($)	Lump Sum Payment for Loss of Future Matching Contributions ($)	SERP ($) [(1)]	2017 EIP Deferred Award ($) [(2)]	2018 EIP Deferred Award ($) [(2)]	Total Termination Benefit ($)
Tom Lewis	35,890	373,251	195,649	26,180	35,890	16,800	413,843	134,874	135,953	1,368,330
Kalyan Madhavan	49,070	521,679	272,351	26,112	50,161	15,562	—	184,931	189,099	1,308,965
Jibo Pan	39,550	411,319	213,548	26,112	39,550	14,453	—	142,390	147,669	1,034,591

(1) Amounts reflect the vested balances in Mr. Lewis' Group 1 and Group 2 SERP accounts. Mr. Lewis' Group 1 SERP account ($399,236) would have been payable to him as a lump sum upon reaching age 62. His Group 2 SERP account ($14,607) would have been payable to him as a lump sum upon his termination.

(2) Amounts assume that the safety and soundness goals applicable to the 2017 and 2018 EIP Deferred Awards would have been met. These awards include interest at 6 percent compounded annually over the three-year deferral performance periods.

Messrs. Lewis, Madhavan and Pan would have been required to execute non-disparagement/confidentiality agreements in order to receive the termination benefits provided by the RIF Policy (i.e., base salary and health care benefits continuation and lump sum payments for the loss of future vacation benefits and matching contributions). These executive officers would not have been required to execute any type of agreement in order to receive their accrued/unused vacation and SERP benefits, if applicable. In order to receive the termination benefits arising under the 2017 and 2018 EIPs, the executives would have been required to execute the severance agreement offered by us, the provisions of which are not dictated by the either the 2017 or 2018 EIP.

If our employment of Messrs. Lewis, Madhavan or Pan had been terminated on December 31, 2019 due to the executive's death or disability, the executive (or his beneficiary in the case of his death) would have been entitled to receive the following: (i) his accrued/unused vacation; (ii) his 2019 non-equity incentive plan compensation comprised of the 2019 EIP Current Award and

2017 EIP Gap Year Award; (iii) his 2017 EIP Deferred Award (with interest at 6 percent compounded annually for the period from January 1, 2018 through December 31, 2019) based on the assumption that the applicable safety and soundness goals would be met; and (iv) his 2018 EIP Deferred Award (with interest at 6 percent for the period from January 1, 2019 through December 31, 2019) based on the assumption that the applicable safety and soundness goals would be met. For Messrs. Lewis, Madhavan and Pan, these amounts total $479,777, $664,182 and $518,853, respectively. These amounts would have been payable no later than March 15, 2020.

If on December 31, 2019: (1) we had merged or consolidated with or reorganized into or with another FHLBank or other entity, or another FHLBank or other entity had merged or consolidated into us; (2) we had sold or transferred all or substantially all of our business and/or assets to another FHLBank or other entity; or (3) we had liquidated or dissolved (each, a "Significant Transaction"), then the 2019 EIP Current Award, the 2017 EIP Gap Year Award, the 2017 EIP Deferred Award (based on the assumption that the applicable safety and soundness goals had been met and with interest at 6 percent compounded annually for the period from January 1, 2018 through December 31, 2019) and the 2018 EIP Deferred Award (based on the assumption that the applicable safety and soundness goals had been met and with interest at 6 percent for the period from January 1, 2019 through December 31, 2019) would have been payable to Messrs. Lewis, Madhavan and Pan on that date. In the event the 2019 EIP Current Award, the 2017 EIP Gap Year Award, the 2017 EIP Deferred Award and the 2018 EIP Deferred Award would not otherwise have been payable to Mr. Bhasin under the terms of his employment agreement, he would have been entitled under the terms of the 2017, 2018 and 2019 EIPs to receive $1,439,927 on December 31, 2019 if a Significant Transaction had occurred on that date. This amount would have been comprised of his 2019 EIP Current Award, his 2017 EIP Gap Year Award and his 2017 and 2018 EIP Deferred Awards with interest at 6 percent compounded annually through December 31, 2019 (based on the assumption that the applicable safety and soundness goals had been met).

Other than his vested benefits in the Pentegra DB Plan, the FHLB Dallas DC Plan, the NQDC Plan and the SERP, and life insurance benefits under our retirement benefits program, Mr. Joiner is not entitled to receive any other post-employment benefits from us.

Other

In the event of the death or disability of any of our executive officers, we have no obligation to provide any life insurance or disability benefits beyond those that are provided for in our group life and disability insurance programs that are available generally to all salaried employees and that do not discriminate in scope, terms or operation in favor of our executive officers. Except as previously noted with regard to our SERP, our qualified and nonqualified retirement plans do not provide for any enhancements or accelerated vesting in connection with a termination, including a termination resulting from any of the events described above or the death or disability of a named executive officer. Following a termination for any reason, the balance of a named executive officer's NQDC Plan account would be distributed pursuant to the instructions in his deferral election forms or as prescribed by the 2017 Deferred Compensation Plan, as applicable, and he would be entitled to cash out any accrued and unused vacation. Other than the benefits described above in connection with each covered circumstance and ordinary retirement benefits subject to applicable requirements for those benefits (such as eligibility), we do not provide any post-employment benefits or perquisites to any employees, including our named executive officers.

We also sponsor a retirement benefits program that includes health care and life insurance benefits for eligible retirees. While eligibility for participation in the program and required participant contributions vary depending upon an employee's age, hire date and length of service, the provisions of the plan apply equally to all employees, including our executive officers. For a discussion of our retirement benefits program, see pages F-45 through F-49 of this Annual Report on Form 10-K.

Regulatory Rules Regarding Golden Parachute Payments

On July 30, 2008, the Housing and Economic Recovery Act of 2008 was enacted. Among other things, this legislation gave the Director of the Finance Agency (the "Director") the authority to limit, by regulation or order, any golden parachute payment. On January 28, 2014, the Finance Agency published a final rule relating to golden parachute payments (the "Golden Parachute Regulation"). The Golden Parachute Regulation defines a "golden parachute payment" as any payment (or any agreement to make any payment) in the nature of compensation by any FHLBank for the benefit of certain entity-affiliated parties (including but not limited to a FHLBank's officers) that (i) is contingent on, or by its terms is payable on or after, the termination of such party's primary employment or affiliation with the FHLBank and (ii) is received on or after, or is made in contemplation of, any of the following events: (a) the insolvency of the FHLBank; (b) the appointment of any conservator or receiver for the FHLBank; or (c) the FHLBank is in a troubled condition.

The Golden Parachute Regulation prohibits a FHLBank from making, or agreeing to make, any golden parachute payment unless: (1) the Director determines that the payment or agreement is permissible; (2) the agreement is made in order to hire a person to become an entity-affiliated party either at the time when the FHLBank is insolvent, in a troubled condition or the subject of a conservatorship or receivership or in an effort to prevent such an event, and the Director consents in writing to the amount and terms of the golden parachute payment; or (3) the payment is made pursuant to an agreement which provides for a reasonable severance payment, not to exceed 12 months' salary, in the event of a change in control (excluding a change in control resulting from a conservatorship or receivership); provided, however, that the consent of the Director is obtained prior to making the payment. In all of these cases, the FHLBank must demonstrate that it does not have any reasonable basis to believe that the payee (a) has committed any fraudulent act or omission, breach of trust or fiduciary duty, or insider abuse that is likely to have a material adverse effect on the FHLBank; (b) is substantially responsible for the insolvency of, the appointment of a conservator or receiver for, or the troubled condition of the FHLBank; (c) has materially violated any applicable federal or state law or regulation that has had or is likely to have a material effect on the FHLBank; and (4) has violated or conspired to violate certain specified sections of the United States Code.

The following types of payments are excluded from the definition of "golden parachute payment" under the Golden Parachute Regulation: (i) any payment made pursuant to a pension or retirement plan that is qualified (or is intended within a reasonable period of time to be qualified) under Section 401 of the Internal Revenue Code of 1986 or pursuant to a pension or other retirement plan that is governed by the laws of any foreign country; (ii) any payment made pursuant to any plan, contract, agreement or other arrangement which is an "employee welfare benefit plan" as that term is defined in section 3(1) of the Employee Retirement Income Security Act of 1974, as amended, or other usual and customary plans such as dependent care, tuition reimbursement, group legal services, or cafeteria plans; (iii) any payment made pursuant to a bona fide deferred compensation plan or arrangement (iv) any payment made by reason of death or by reason of termination caused by the disability of the entity-affiliated party; (v) any payment made pursuant to a nondiscriminatory severance pay plan or arrangement that provides for payment of severance benefits of not more than 12 months' base compensation to all eligible employees upon involuntary termination other than for cause, voluntary resignation or early retirement (other than payments to a named executive officer and any other officer identified by the Director whose base salary exceeds $300,000); or (vi) any severance or similar payment that is required to be made pursuant to a state statute or foreign law that is applicable to all employers within the appropriate jurisdiction (with the exception of employers that may be exempt due to their small number of employees or other similar criteria).

The Golden Parachute Regulation was effective February 27, 2014. Accordingly, payments that might otherwise be payable to Mr. Bhasin under his employment agreement or our other named executive officers under our RIF Policy could be reduced if the event giving rise to such payments were to occur at a time at which we were (or it was contemplated that we could become) insolvent, in a troubled condition or the subject of a conservatorship or receivership.

On January 28, 2014, the Finance Agency also published a final rule relating broadly to executive compensation (the "Executive Compensation Regulation"). Under the Executive Compensation Regulation, which became effective on February 27, 2014, the Director has the authority to prohibit us from providing compensation (including termination benefits) to any named executive officer that the Director determines is not reasonable and comparable with compensation for employment in other similar businesses involving similar duties and responsibilities. In determining whether compensation to a named executive officer is not reasonable and comparable, the Director may take into consideration any factors the Director considers relevant, including any wrongdoing on the part of the executive, such as any fraudulent act or omission, breach of trust or fiduciary duty, violation of law, rule, regulation, order or written agreement, and insider abuse. The Executive Compensation Regulation provides that we must provide at least 30 days' advance written notice prior to making any payments to a named executive officer in connection with a change in control or a termination of the executive's employment with us. Accordingly, it is possible that payments that might otherwise be payable to our named executive officers could be reduced even if the event that triggers those payments were to occur at a time when we were not insolvent, in a troubled condition or the subject of a conservatorship or receivership.

On December 20, 2018, the Finance Agency published a final rule on golden parachute and indemnification payments (the "Golden Parachute Rule") to address areas of supervisory concern and to reduce administrative and compliance burdens. The Golden Parachute Rule, which became effective on January 22, 2019, sets forth the standards the Finance Agency would take into consideration when limiting or prohibiting golden parachute and indemnification payments by a FHLBank to an entity-affiliated party if the FHLBank were in a troubled condition, in conservatorship or receivership, or insolvent. The provisions of the rule: (i) focus the standards on payments to and agreements with executive officers, broad-based plans covering large numbers of employees (such as severance plans), and payments to employees other than executive officers who may have engaged in certain types of wrongdoing; and (ii) revise and clarify definitions, exemptions and procedures to implement the Finance Agency's supervisory approach.

PAY RATIO

For 2019, the estimated ratio of our President/CEO's total compensation to the median annual total compensation of all of our other employees was 11.4 to 1. The estimated median annual total compensation of all of our other employees was determined by calculating their compensation in the same manner as total compensation is calculated for our President/CEO, which calculation includes, among other things, amounts attributable to the change in pension value for those of our employees who participate in the Pentegra DB Plan ("DB Plan Participants"), as discussed in the "Pension Benefits" section on page 111. The change in pension value for DB Plan Participants varies based upon their age, compensation and tenure with us. For 2019, the estimated median annual total compensation of all of our employees (excluding our President/CEO) was $161,076 and the total compensation of our President/CEO was $1,834,530, as shown in the Summary Compensation Table on page 108.

We identified the median by estimating the annual total compensation for each of our employees who were employed by us on December 31, 2019 (excluding our President/CEO) and then ranking the total compensation for those employees from lowest to highest. The ranking included 200 full-time employees and 2 part-time employees. For those employees who were not employed by us during the entire year, we annualized their total compensation. For base salaries (or, in the case of our hourly employees, wages plus overtime), incentive compensation and our matching contributions to qualified and nonqualified defined contribution plans, we used actual (or, as appropriate, annualized) amounts. To determine the annual change in pension value for each of the DB Plan Participants, changes were calculated for a judgmentally selected sample of employees and, based on the results of those calculations, we estimated the change in pension value for each of our other DB Plan Participants. While our calculation method for DB Plan Participants who were not part of the sample involved a degree of imprecision, we believe it was sufficient to allow us to reasonably approximate the change in pension values for those employees, which, in turn, allowed us to reasonably estimate the median annual total compensation of our workforce as of December 31, 2019.

DIRECTOR COMPENSATION

Director fees and reimbursable expenses are determined at the discretion of our Board of Directors, subject to the authority of the Finance Agency's Director to object to, and to prohibit prospectively, compensation and/or expenses that he determines are not reasonable. For 2019, our directors received fees based on the number of our regularly scheduled board meetings that they attended in person and the number of telephonic meetings in which they participated, subject to a maximum compensation limit. The following table sets forth the annual compensation limits and attendance fees that our directors were entitled to receive for each regular board meeting that they attended in 2019 (subject to a maximum of five out of the six meetings held). In addition, each director was entitled to receive (subject to the annual compensation limits) $1,000 for his or her participation in telephonic meetings of the Board of Directors and $1,000 for his or her participation in telephonic or special in-person meetings of its committees.

	Annual Compensation Limit for 2019	Fee For Attendance at Each Regular Board Meeting
Chairman of the Board	$ 132,613	$ 26,523
Vice Chairman of the Board	116,699	23,340
Chairman of the Audit Committee	116,699	23,340
Chairmen of all other Board Committees	111,395	22,279
All other Directors	100,786	20,157

The following table sets forth the actual compensation earned by our directors in 2019.

Name	Fees Earned or Paid in Cash ($)	Stock Awards ($)	Option Awards ($)	Non-equity Incentive Plan Compensation ($)	Change in Pension Value and Nonqualified Deferred Compensation Earnings ($)	All Other Compensation ($)	Total ($)
Joseph F. Quinlan, Jr., Chairman in 2019	132,613	—	—	—	—	*	132,613
Robert M. Rigby, Vice Chairman in 2019	116,699	—	—	—	—	*	116,699
Cheryl D. Alston	100,786	—	—	—	—	*	100,786
Dianne W. Bolen	111,395	—	—	—	—	*	111,395
Patricia P. Brister	111,395	—	—	—	—	*	111,395
Tim H. Carter	100,786	—	—	—	—	*	100,786
Mary E. Ceverha	100,786	—	—	—	—	*	100,786
Albert C. Christman	111,395	—	—	—	—	*	111,395
James D. Goudge	100,786	—	—	—	—	*	100,786
W. Wesley Hoskins	100,786	—	—	—	—	*	100,786
Michael C. Hutsell	100,786	—	—	—	—	*	100,786
G. Granger MacDonald	100,786	—	—	—	—	*	100,786
A. Fred Miller, Jr.	100,786	—	—	—	—	*	100,786
Sally I. Nelson	100,786	—	—	—	—	*	100,786
John P. Salazar	111,395	—	—	—	—	*	111,395
Margo S. Scholin	111,395	—	—	—	—	*	111,395
Ron G. Wiser	116,699	—	—	—	—	*	116,699

* Our directors did not receive any other form of compensation in 2019 other than the limited perquisites which are discussed below. For each director, the aggregate amount of such perquisites was either less than $1,625 or zero.

Sadly, Patricia P. Brister, an independent director from Mandeville, Louisiana, passed away on February 3, 2020. Ms. Brister had served as a director of the Bank since 2008 and she had recently been re-elected to serve a four-year term that commenced on January 1, 2020. Including a previous term from 2002 to 2004, Ms. Brister had served as a director of the Bank for 15 years. For the last eight years, she had served as President of St. Tammany Parish. To honor Ms. Brister's legacy, our Board of Directors authorized a $25,000 contribution in her name to the Northshore Community Foundation, a non-profit organization focused on enhancing the quality of life in the parishes along the north shore of Lake Pontchartrain including, among others, St. Tammany Parish. In addition, our Board of Directors authorized $77,500 in funding for a scholarship fund to be established in her name. The Pat Brister Scholarship Fund is expected to benefit college-bound students who have attended public schools in St. Tammany Parish.

Under our NQDC Plan, our directors may elect to defer any or all of their fees. Deferral elections must be made in December of each year for amounts to be earned in the following year and are irrevocable. Participating board members can elect to receive distributions under the same rules that apply to our highly compensated employees who have elected to participate in the plan. Similarly, directors' distribution schedules cannot be accelerated but they can be postponed under the same rules that apply to our highly compensated employees who have elected to participate in the plan. Participating board members direct the investment of their deferred fees among the same externally managed mutual funds that are available to our employee participants. As the earnings derived from these mutual funds are not at above-market or preferential rates, they are not included in the table above. Our liability for directors' deferred compensation (including both current and former directors), which consists of the accumulated compensation deferrals and the accrued earnings or losses on those deferrals, totaled $3,338,000 at December 31, 2019.

We have a policy under which we will reimburse our directors for all travel and meal expenses of a spouse accompanying them to no more than two meetings of our board and/or any of its committees each year. In addition, we will reimburse our directors for the meal expenses of a spouse accompanying them to any group functions of the Board of Directors regardless of whether the meal occurs during one of the trips specified in the immediately preceding sentence provided the meal was incurred in connection with a group outing in which directors and officers were in attendance. Further, we will pay for the expenses of directors' spouses attending up to two group spousal functions annually, provided the functions are organized by us. In 2019, 9 of our 17 directors used these benefits to some extent at a total cost to us of $8,600. As no individual director was reimbursed more than $1,624 for spousal travel and meal expenses, these perquisites are not reportable as compensation in the table above.

In accordance with Finance Agency regulations, we have established a formal policy governing the travel reimbursement provided to our directors. During 2019, our directors' Bank-related travel expenses totaled $198,207 not including the spousal travel and meal reimbursements described above.

For 2020, our directors will receive fees based on the number of our regularly scheduled board meetings that they attend in person and the number of telephonic meetings in which they participate, subject to a maximum compensation limit. The following table sets forth the annual compensation limits and attendance fees that our directors will be entitled to receive for each regular board meeting that they attend in 2020 (subject to a maximum of five out of the six meetings to be held). In addition, each director will receive (subject to the annual compensation limits) $1,000 for his or her participation in telephonic meetings of the Board of Directors and $1,000 for his or her participation in telephonic or special in-person meetings of its committees.

	Annual Compensation Limit for 2020	Fee For Attendance at Each Regular Board Meeting
Chairman of the Board	$ 136,591	$ 27,319
Vice Chairman of the Board	120,200	24,040
Chairman of the Audit Committee	120,200	24,040
Chairmen of all other Board Committees	114,737	22,947
All other Directors	103,810	20,762

Compensation Committee Interlocks and Insider Participation

None of our directors who served on our Compensation and Human Resources Committee during 2019 was, prior to or during 2019, an officer or employee of the Bank, nor did they have any relationships requiring disclosure under applicable related party requirements. None of our executive officers served as a member of the compensation committee (or similar committee) or board of directors of any entity whose executive officers served on our Compensation and Human Resources Committee or Board of Directors.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The Bank has two sub-classes of Class B capital stock authorized and outstanding, Class B-1 and Class B-2 Capital Stock, both of which have a par value of $100 per share. The Bank does not have any other authorized classes of capital stock. The Bank is a cooperative and all of its outstanding capital stock is owned by its members or, in some cases, by non-member institutions that acquire stock by virtue of acquiring member institutions, by a federal or state agency or insurer acting as a receiver of a closed institution, or by former members of the Bank that retain capital stock to support advances or other activity that remains outstanding or until any applicable stock redemption or withdrawal notice period expires. No individual owns any of the Bank's capital stock. As a condition of membership, members are required to maintain an investment in Class B-1 Capital Stock of the Bank that is equal to a percentage of the member's total assets, subject to minimum and maximum thresholds. In addition, members are required to hold Class B-2 Capital Stock based upon an activity-based investment requirement. Financial institutions that cease to be members are required to continue to comply with the Bank's activity-based investment requirement until such time that the activities giving rise to the requirement have been fully extinguished.

As provided by statute and as further discussed in Item 10. Directors, Executive Officers and Corporate Governance, the Bank's members are entitled to vote for the election of directors. Each member directorship is designated to one of the five states in the Bank's district and a member is entitled to vote only for member director candidates for the state in which the member's principal place of business is located. In addition, all eligible members in the Bank's five-state district are entitled to vote for the nominees for independent directorships. In each case, a member is entitled to cast, for each applicable directorship, one vote for each share of Class B-1 and Class B-2 Capital Stock that the member is required to hold, subject to a statutory limitation. Under this limitation, the total number of votes that a member may cast is limited to the average number of shares of the Bank's capital stock that were required to be held by all members in that member's state as of the record date for voting. Non-member shareholders are not entitled to cast votes for the election of directors.

As of March 6, 2020, there were 25,242,531 shares of the Bank's capital stock (including mandatorily redeemable capital stock) outstanding. The following table sets forth certain information with respect to each shareholder that beneficially owned more than five percent of the Bank's outstanding capital stock as of March 6, 2020. Each shareholder has sole voting and investment power for all shares shown (subject to the restrictions described above), none of which represent shares with respect to which the shareholder has a right to acquire beneficial ownership.

Beneficial Owners of More than 5% of the Bank's Outstanding Stock

Name and Address of Beneficial Owner	Number of Shares Owned	Percentage of Outstanding Shares Owned
Comerica Bank 1717 Main Street, Dallas, TX 75201	1,628,000	6.45%
American General Life Insurance Company 2727-A Allen Parkway, Houston, TX 77019	1,436,462	5.69%
Texas Capital Bank, N.A. 2000 McKinney Avenue, Dallas, TX 75201	1,331,591	5.28%

The Bank does not offer any type of compensation plan under which its equity securities are authorized to be issued to any person. Nine of the Bank's 17 directorships are designated as member directorships which by law must be occupied by officers or directors of a member of the Bank. The following table sets forth, as of March 6, 2020, the number of shares owned beneficially by members that have one of their officers and/or directors serving as a director of the Bank and the name of the director of the Bank who is affiliated with each such member. Each shareholder has sole voting and investment power for all shares shown (subject to the restrictions described above), none of which represent shares with respect to which the shareholder has a right to acquire beneficial ownership.

Security Ownership of Directors' Financial Institutions

Name and Address of Beneficial Owner	Bank Director Affiliated with Beneficial Owner	Number of Shares Owned**	Percentage of Outstanding Shares Owned
Southside Bank 1201 South Beckham, Tyler, TX 75701	Tim H. Carter	500,875	1.98%
Broadway National Bank 1177 NE Loop 410, San Antonio, TX 78209	James D. Goudge	122,204	*
First Security Bank 314 North Spring, Searcy, AR 72143	Michael C. Hutsell	68,067	*
First National Bankers Bank 7813 Office Park Boulevard, Baton Rouge, LA 70809	Joseph F. Quinlan, Jr./ Albert C. Christman	14,844	*
Legend Bank, N.A 101 West Tarrant Street, Bowie, TX 76230	Robert M. Rigby	14,724	*
Guaranty Bank & Trust Company of Delhi 120 Oak Street, Delhi, LA 71232	Albert C. Christman	14,536	*
Bank of Anguilla 130 Holland Street, Anguilla, MS 38721	A. Fred Miller, Jr.	11,723	*
Bank of the Southwest 226 North Main Street, Roswell, NM 88201	Ron G. Wiser	4,724	*
First Community Bank 416 North Water Street, Corpus Christi, TX 78401	W. Wesley Hoskins	1,847	*
All Directors' Financial Institutions as a group		753,544	2.99%

* Indicates less than one percent ownership.

** All shares owned by the Directors' Financial Institutions are pledged as collateral to secure extensions of credit from the Bank.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

Transactions with Related Persons

Our capital stock can only be held by our members or, in some cases, by non-member institutions that acquire stock by virtue of acquiring member institutions, by a federal or state agency or insurer acting as a receiver of a closed institution, or by our former members that retain capital stock to support advances or other activity that remains outstanding or until any applicable stock redemption or withdrawal notice period expires. All members are required by law to purchase our capital stock. As a cooperative, our products and services are provided almost exclusively to our shareholders. In the ordinary course of business, transactions between us and our shareholders are carried out on terms that either are determined by competitive bidding in the case of auctions for our advances and deposits or are established by us, including pricing and collateralization terms, under our Member Products and Credit Policy, which treats all similarly situated members on a non-discriminatory basis. We provide, in the ordinary course of business, products and services to members whose officers or directors may serve as our directors ("Directors' Financial Institutions"). Currently, 9 of our 17 directors are officers and/or directors of member institutions. Our products and services are provided to Directors' Financial Institutions and to holders of more than five percent of our capital stock on terms that are no more favorable to them than comparable transactions with our other similarly situated members.

We have adopted written policies prohibiting our employees and directors from accepting any personal benefits where such acceptance may create either the appearance of, or an actual, conflict of interest. These policies also prohibit our employees and directors from having a direct or indirect financial interest that conflicts, or appears to conflict, with that employee's or director's duties and responsibilities to us, subject to certain exceptions. Any of our employees who regularly deal with our members or major financial institutions that do business with us must disclose any personal financial relationships with those members or major financial institutions annually in a manner that we prescribe. Our directors are required to disclose all actual or apparent conflicts of interest and any financial interest of the director or an immediate family member or business associate of the director in any matter to be considered by the Board of Directors. Directors must refrain from participating in the deliberations regarding or voting on any matter in which they, any immediate family members or any business associates have a financial interest, except that member directors may vote on the terms on which our products are offered to all members and other routine corporate matters, such as the declaration of dividends. With respect to our AHP, directors and employees may not participate in or attempt to influence decisions by us regarding the evaluation, approval, funding or monitoring, or any remedial process for an AHP project if the director or employee, or a family member of such individual, has a financial interest in, or is a director, officer or employee of, an organization involved in such AHP project.

In addition, our Board of Directors has adopted a written policy for the review and approval or ratification of a "related person transaction" as defined by policy (the "Transactions with Related Persons Policy"). The Transactions with Related Persons Policy requires that each related person transaction must be presented to the Audit Committee of the Board of Directors for review and consideration. Those members of the Audit Committee who are not related persons with respect to the related person transaction in question will consider the transaction to determine whether, if practicable, the related person transaction will be conducted on terms that are no less favorable than the terms that could be obtained from a non-related person or an otherwise unaffiliated third party on an arms'-length basis. In making such determination, the Audit Committee will review all relevant factors regarding the goods or services that form the basis of the related party transaction, including, as applicable, (i) the nature of the goods or services, (ii) the scope and quality of the goods or services, (iii) the timing of receiving the goods or services through the related person transaction versus a transaction not involving a related person or an otherwise unaffiliated third party, (iv) the reputation and financial standing of the provider of the goods or services, (v) any contractual terms and (vi) any competitive alternatives (if practicable).

After review, the Audit Committee will approve such transaction only if the Audit Committee reasonably believes that the transaction is in, or is not opposed to, our best interests. If a related person transaction is not presented to the Audit Committee for review in advance of such transaction, the Audit Committee may ratify such transaction only if the Audit Committee reasonably believes that the transaction is in, or is not opposed to, our best interests.

A "related person" is defined by the Transactions with Related Persons Policy to be (i) any person who was one of our directors or executive officers at any time since the beginning of our last fiscal year, (ii) any immediate family member of any of the foregoing persons and (iii) any of our members or non-member institutions owning more than five percent of our total outstanding capital stock when the transaction occurred or existed.

For purposes of the Transactions with Related Persons Policy, a "related person transaction" is a transaction, arrangement or relationship (or any series of similar transactions, arrangements or relationships) in which we were, are or will be a participant and in which any related person has or will have a direct or indirect material interest. The Transactions with Related Persons Policy includes as exceptions to the definition of "related person transaction" those exceptions set forth in Item 404(a) of Regulation S-K (and the related instructions to that item) promulgated under the Exchange Act. Additionally, in connection with the registration of our capital stock under Section 12 of the Exchange Act, the SEC issued a no-action letter dated

September 13, 2005 concurring with our view that, despite registration of our capital stock under Section 12(g) of the Exchange Act, disclosure of related party transactions pursuant to the requirements of Item 404 of Regulation S-K is not applicable to us to the extent that such transactions are in the ordinary course of our business. Also, the HER Act specifically exempts the FHLBanks from periodic reporting requirements under the securities laws pertaining to the disclosure of related party transactions that occur in the ordinary course of business between the FHLBanks and their members. The Transactions with Related Persons Policy, therefore, also excludes from the definition of "related person transaction" acquisitions or sales of our capital stock by members or non-member institutions, payment by us of dividends on our capital stock and provision of our products and services to members. This exception applies to Directors' Financial Institutions.

Since January 1, 2019, we have not engaged in any transactions with any of our directors, executive officers, or any members of their immediate families that require disclosure under applicable rules and regulations, including Item 404 of Regulation S-K. Additionally, since January 1, 2019, we have not had any dealings with entities that are affiliated with our directors that require disclosure under applicable rules and regulations. None of our directors or executive officers or any of their immediate family members has been indebted to us at any time since January 1, 2019.

As of December 31, 2019 and 2018, advances outstanding to Directors' Financial Institutions aggregated $1.045 billion and $0.793 billion, respectively, representing 2.8 percent and 1.9 percent, respectively, of our total outstanding advances as of those dates.

Director Independence

General

Our Board of Directors is currently comprised of 17 directors. Nine of our directors were elected by our member institutions to represent the five states in our district ("member directors") while seven of our directors were elected by a plurality of our members at-large ("independent directors"). In addition, one independent director was elected by our Board of Directors to fulfill the unexpired term of a former independent director. All member directors must be an officer or director of a member institution, but no member director can be one of our employees or officers. Independent directors, as well as their spouses, are prohibited from serving as an officer of any FHLBank and (subject to the specific exception noted below) from serving as a director, officer or employee of a member of the FHLBank on whose board the director serves, or of any recipient of advances from that FHLBank. The exception provides that an independent director or an independent director's spouse may serve as a director, officer or employee of a holding company that controls one or more members of, or recipients of advances from, the FHLBank if the assets of all such members or recipients of advances constitute less than 35 percent of the assets of the holding company, on a consolidated basis. Additional discussion of the qualifications of member and independent directors is included in Item 10. Directors, Executive Officers and Corporate Governance.

We are required to determine whether our directors are independent pursuant to three distinct director independence standards. First, Finance Agency regulations establish independence criteria for directors who serve as members of our Audit Committee. Second, the HER Act requires us to comply with Rule 10A-3 of the Exchange Act regarding independence standards relating to audit committees. Third, the SEC's rules and regulations require that our Board of Directors apply the definition of independence of a national securities exchange or inter-dealer quotation system to determine whether our directors are independent.

Finance Agency Regulations

The Finance Agency's regulations prohibit directors from serving as members of our Audit Committee if they have one or more disqualifying relationships with us or our management that would interfere with the exercise of that director's independent judgment. Disqualifying relationships include employment with us currently or at any time during the last five years; acceptance of compensation from us other than for service as a director; being a consultant, advisor, promoter, underwriter or legal counsel for us currently or at any time within the last five years; and being an immediate family member of an individual who is or who has been within the past five years, one of our executive officers. The current members of our Audit Committee are Tim H. Carter, Mary E. Ceverha, Michael C. Hutsell, Sally I. Nelson, Joseph F. Quinlan, Jr., Robert M. Rigby, Margo S. Scholin and Ron G. Wiser, each of whom is independent within the meaning of the Finance Agency's regulations.

Rule 10A-3 of the Exchange Act

Rule 10A-3 of the Exchange Act ("Rule 10A-3") requires that each member of our Audit Committee be independent. In order to be considered independent under Rule 10A-3, a member of the Audit Committee may not, other than in his or her capacity as a member of the Audit Committee, the Board of Directors or any other committee of the Board of Directors (i) accept directly or indirectly any consulting, advisory or other compensatory fee from us, provided that compensatory fees do not include the receipt of fixed amounts of compensation under a retirement plan (including deferred compensation) for prior service with us (provided that such compensation is not contingent in any way on continued service); or (ii) be an affiliated person of us.

For purposes of Rule 10A-3, "indirect" acceptance of any consulting, advisory or other compensatory fee includes acceptance of such a fee by a spouse, a minor child or stepchild or a child or stepchild sharing a home with the Audit Committee member, or by an entity in which the Audit Committee member is a partner, member, principal or officer, such as managing director, or occupies a similar position (except limited partners, non-managing members and those occupying similar positions who, in each case, have no active role in providing services to the entity) and that provides accounting, consulting, legal, investment banking, financial or other advisory services or any similar services to us. The term "affiliate" of, or a person "affiliated" with, a specified person, means a person that directly, or indirectly through one or more intermediaries, controls, or is controlled by, or is under common control with, the person specified. "Control" (including the terms "controlling," "controlled by" and under "common control with") means the possession, direct or indirect, of the power to direct or cause the direction of the management and policies of a person, whether through the ownership of voting securities, by contract or otherwise. A person will be deemed not to be in control of a specified person if the person (i) is not the beneficial owner, directly or indirectly, of more than 10 percent of any class of voting equity securities of the specified person and (ii) is not an executive officer of the specified person.

The current members of our Audit Committee are independent within the meaning of Rule 10A-3.

SEC Rules and Regulations

The SEC's rules and regulations require us to determine whether each of our directors is independent under a definition of independence of a national securities exchange or of an inter-dealer quotation system. Because we are not a listed issuer whose securities are listed on a national securities exchange or listed in an inter-dealer quotation system, we may choose which national securities exchange's or inter-dealer quotation system's definition of independence to apply. Our Board of Directors has selected the independence standards of the New York Stock Exchange (the "NYSE") for this purpose. However, because we are not listed on the NYSE, we are not required to meet the NYSE's director independence standards and our Board of Directors is using such NYSE standards only to make the independence determination required by SEC rules, as described below.

Our Board of Directors determined that presumptively our member directors are not independent under the NYSE's subjective independence standard. Our Board of Directors determined that, under the NYSE independence standards, member directors have a material relationship with us through their member institutions' relationships with us. This determination was based upon the fact that we are a member-owned cooperative and each member director is required to be an officer or director of a member institution. Also, a member director's member institution may routinely engage in transactions with us that could occur frequently and in large dollar amounts and that we encourage. Furthermore, because the level of each member institution's business with us is dynamic and our desire is to increase our level of business with each of our members, our Board of Directors determined it would be inappropriate to make a determination of independence with respect to each member director based on the director's member's given level of business as of a particular date. As the scope and breadth of the member director's member's business with us changes, such member's relationship with us might, at any time, constitute a disqualifying transaction or business relationship with respect to the member's member director under the NYSE's objective independence standards. Therefore, our member directors are presumed to be not independent under the NYSE's independence standards. Our Board of Directors could, however, in the future, determine that a member director is independent under the NYSE's independence standards based on the particular facts and circumstances applicable to that member director. Furthermore, the determination by our Board of Directors regarding member directors' independence under the NYSE's standards is not necessarily determinative of any member director's independence with respect to his or her service on any special or *ad hoc* committee of the Board of Directors to which he or she may be appointed in the future. Our current member directors are Tim H. Carter, Albert C. Christman, James D. Goudge, W. Wesley Hoskins, Michael C. Hutsell, A. Fred Miller, Jr., Joseph F. Quinlan, Jr., Robert M. Rigby and Ron G. Wiser.

Our Board of Directors affirmatively determined that each of our current independent directors who served as a director during 2019 is independent under the NYSE's independence standards. Our Board of Directors noted as part of its determination that independent directors and their spouses are specifically prohibited from being an officer of any FHLBank or an officer, employee or director of any of our members, or of any recipient of advances from us, subject to the exception discussed above for positions in certain holding companies. This independence determination applies to Cheryl D. Alston, Dianne W. Bolen, Mary E. Ceverha, G. Granger MacDonald, Sally I. Nelson, John P. Salazar and Margo S. Scholin. This determination also applies to Patricia P. Brister, who served on our Board of Directors during 2019. Ms. Brister passed away on February 3, 2020. Felipe A. Rael did not serve on our Board of Directors during 2019. Prior to electing him, our Board of Directors did ascertain that Mr. Rael met all of the requirements to serve as an independent director.

Our Board of Directors also assessed the independence of the members of our Audit Committee under the NYSE standards for audit committees. Our Board of Directors determined that, for the same reasons set forth above regarding the independence of our directors generally, none of the member directors serving on our Audit Committee (Tim H. Carter, Michael C. Hutsell, Joseph F. Quinlan, Jr., Robert M. Rigby and Ron G. Wiser) is independent under the NYSE standards for audit committees.

Our Board of Directors determined that Mary E. Ceverha, Sally I. Nelson and Margo S. Scholin, independent directors who serve on our Audit Committee, are independent under the NYSE standards for audit committees.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The following table sets forth the aggregate fees billed to the Bank for the years ended December 31, 2019 and 2018 for services rendered by PricewaterhouseCoopers LLP ("PwC"), the Bank's independent registered public accounting firm.

	(In thousands) Year Ended December 31,	
	2019	2018
Audit fees	$ 832	$ 829
Audit-related fees	40	27
Tax fees	—	—
All other fees	—	—
Total fees	$ 872	$ 856

In 2019 and 2018, audit fees were for services rendered in connection with the integrated audits of the Bank's financial statements and its internal control over financial reporting.

In 2019 and 2018, the fees associated with audit-related services were for consultations concerning new accounting standards (and PwC's review of the Bank's planned adoption of those standards) and discussions regarding other miscellaneous accounting-related matters.

The Bank is assessed its proportionate share of the costs of operating the FHLBanks Office of Finance, which includes the expenses associated with the annual audits of the combined financial statements of the 11 FHLBanks. The audit fees for the combined financial statements are billed directly by PwC to the Office of Finance and the Bank is assessed its proportionate share of these expenses. In 2019 and 2018, the Bank was assessed $37,000 and $36,000, respectively, for the costs associated with PwC's audits of the combined financial statements for those years. These assessments are not included in the table above.

Under the Audit Committee's pre-approval policies and procedures, the Audit Committee is required to pre-approve all audit and permissible non-audit services (including the fees and terms thereof) to be performed by the Bank's independent registered public accounting firm, subject to the *de minimis* exceptions for non-audit services described in Section 10A(i)(1)(B) of the Exchange Act. The Audit Committee has delegated pre-approval authority to the Chairman of the Audit Committee for: (1) permissible non-audit services that would be characterized as "Audit-Related Services" and (2) auditor-requested fee increases associated with any unforeseen cost overruns relating to previously approved "Audit Services" (if additional fees are requested by the independent registered public accounting firm as a result of changes in audit scope, the Audit Committee must specifically pre-approve such increase). The Chairman's pre-approval authority is limited in all cases to $50,000 per service request. The Chairman must report (for informational purposes only) any pre-approval decisions that he or she has made to the Audit Committee at its next regularly scheduled meeting. Bank management is required to periodically update the Audit Committee with regard to the services provided by the independent registered public accounting firm and the fees associated with those services.

All of the services provided by PwC in 2019 and 2018 were pre-approved by the Audit Committee. There were no services for which the *de minimis* exception was used.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

(a) Financial Statements

The financial statements are set forth on pages F-1 through F-58 of this Annual Report on Form 10-K.

(b) Exhibits

3.1	Organization Certificate of the Registrant (incorporated by reference to Exhibit 3.1 to the Bank's Registration Statement on Form 10 filed February 15, 2006).
3.2	Bylaws of the Registrant (incorporated by reference to Exhibit 3.2 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2015, filed on March 22, 2016).*
4.1	Capital Plan of the Registrant, as amended and revised on December 3, 2014 and approved by the Federal Housing Finance Agency on June 1, 2015 and for which notice of implementation was given to shareholders on August 31, 2015 (filed as Exhibit 4.1 to the Bank's Current Report on Form 8-K dated August 31, 2015 and filed with the SEC on August 31, 2015, which exhibit is incorporated herein by reference).*
10.1	Deferred Compensation Plan of the Registrant, effective July 24, 2004 (governs deferrals made prior to January 1, 2005) (incorporated by reference to Exhibit 10.1 to the Bank's Registration Statement on Form 10 filed February 15, 2006).
10.2	2011 Amendment to Deferred Compensation Plan of the Registrant for Deferrals Prior to January 1, 2005, effective March 31, 2011 (incorporated by reference to Exhibit 10.2 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2011, filed on March 23, 2012).*
10.3	Deferred Compensation Plan of the Registrant for Deferrals Effective January 1, 2005 (incorporated by reference to Exhibit 10.2 to the Bank's Registration Statement on Form 10 filed February 15, 2006).
10.4	2008 Amendment to Deferred Compensation Plan of the Registrant for Deferrals Effective January 1, 2005, dated December 10, 2008 (incorporated by reference to Exhibit 10.3 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2008, filed on March 27, 2009).*
10.5	2010 Amendment to Deferred Compensation Plan of the Registrant for Deferrals Effective January 1, 2005, dated July 22, 2010 (incorporated by reference to Exhibit 10.1 to the Bank's Quarterly Report on Form 10-Q for the fiscal quarter ended September 30, 2010, filed on November 12, 2010).*
10.6	Non-Qualified Deferred Compensation Plan for the Board of Directors of the Registrant, effective July 24, 2004 (governs deferrals made prior to January 1, 2005) (incorporated by reference to Exhibit 10.3 to the Bank's Registration Statement on Form 10 filed February 15, 2006).
10.7	2011 Amendment to Non-Qualified Deferred Compensation Plan for the Board of Directors of the Registrant for deferrals prior to January 1, 2005, effective March 31, 2011 (incorporated by reference to Exhibit 10.7 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2011, filed on March 23, 2012).*
10.8	Non-Qualified Deferred Compensation Plan for the Board of Directors of the Registrant for Deferrals Effective January 1, 2005 (incorporated by reference to Exhibit 10.4 to the Bank's Registration Statement on Form 10 filed February 15, 2006).
10.9	2008 Amendment to Non-Qualified Deferred Compensation Plan for the Board of Directors of the Registrant for Deferrals Effective January 1, 2005, dated December 10, 2008 (incorporated by reference to Exhibit 10.6 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2008, filed on March 27, 2009).*
10.10	2010 Amendment to Non-Qualified Deferred Compensation Plan for the Board of Directors of the Registrant for Deferrals Effective January 1, 2005, dated July 22, 2010 (incorporated by reference to Exhibit 10.2 to the Bank's Quarterly Report on Form 10-Q for the fiscal quarter ended September 30, 2010, filed on November 12, 2010).*
10.11	Consolidated Deferred Compensation Plan of the Registrant for deferrals made on or after January 1, 2011, as adopted by the Bank's Board of Directors on December 29, 2010 (incorporated by reference to Exhibit 10.9 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2010, filed on March 25, 2011).*
10.12	2017 Deferred Compensation Plan of the Registrant for deferrals made on or after January 1, 2017, as adopted by the Bank's Board of Directors on July 21, 2016 (incorporated by reference to Exhibit 10.12 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2016, filed on March 24, 2017).*

10.13 Form of Special Non-Qualified Deferred Compensation Plan of the Registrant, as amended and restated effective December 31, 2010 (filed as Exhibit 10.1 to the Bank's Current Report on Form 8-K dated May 25, 2011 and filed with the SEC on June 1, 2011, which exhibit is incorporated herein by reference).*

10.14 Amended and Restated Federal Home Loan Banks P&I Funding and Contingency Plan Agreement entered into effective January 1, 2017, by and among the Office of Finance and each of the Federal Home Loan Banks (incorporated by reference to Exhibit 10.14 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2016, filed on March 24, 2017).*

10.15 Form of Employment Agreement between the Registrant and each of Brehan Chapman and Gustavo Molina, entered into effective January 1, 2014 (incorporated by reference to Exhibit 10.15 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2013, filed on March 24, 2014).*

10.16 Employment Agreement between the Registrant and Sandra Damholt, entered into effective January 1, 2014 (incorporated by reference to Exhibit 10.16 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2013, filed on March 24, 2014).*

10.17 Employment Agreement between the Registrant and Sanjay Bhasin, entered into effective March 24, 2015 (incorporated by reference to Exhibit 10.2 to the Bank's Quarterly Report on Form 10-Q for the fiscal quarter ended March 31, 2015, filed on May 13, 2015).*

10.18 2017 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.22 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2016, filed on March 24, 2017).*

10.19 2018 Executive Incentive Plan (incorporated by reference to Exhibit 10.22 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2017, filed on March 22, 2018).*

10.20 2019 Executive Incentive Plan (incorporated by reference to Exhibit 10.22 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2018, filed on March 25, 2019).*

10.21 Form of Indemnification Agreement between the Registrant and each of its executive officers, entered into on November 9, 2018 (incorporated by reference to Exhibit 10.1 to the Bank's Quarterly Report on Form 10-Q for the fiscal quarter ended September 30, 2018, filed on November 13, 2018).*

10.22 Form of Indemnification Agreement between the Registrant and each of its directors, entered into on November 9, 2018 (incorporated by reference to Exhibit 10.2 to the Bank's Quarterly Report on Form 10-Q for the fiscal quarter ended September 30, 2018, filed on November 13, 2018).*

10.23 Joint Capital Enhancement Agreement, as amended effective August 5, 2011 (filed as Exhibit 10.1 to the Bank's Current Report on Form 8-K dated August 5, 2011 and filed with the SEC on August 5, 2011, which exhibit is incorporated herein by reference).*

14.1 Code of Ethics for Financial Professionals.

31.1 Certification of principal executive officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.

31.2 Certification of principal financial officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.

32.1 Certification of principal executive officer and principal financial officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.

99.1 Charter of the Audit Committee of the Board of Directors.

99.2 Report of the Audit Committee of the Board of Directors.

101 The following materials from the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2019, formatted in eXtensible Business Reporting Language ("XBRL"): (i) Statements of Condition as of December 31, 2019 and 2018, (ii) Statements of Income for the Years Ended December 31, 2019, 2018 and 2017, (iii) Statements of Comprehensive Income for the Years Ended December 31, 2019, 2018 and 2017, (iv) Statements of Capital for the Years Ended December 31, 2019, 2018 and 2017, (v) Statements of Cash Flows for the Years Ended December 31, 2019, 2018 and 2017, and (vi) Notes to the Financial Statements for the fiscal year ended December 31, 2019.

* Commission File No. 000-51405

ITEM 16. FORM 10-K SUMMARY

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

Federal Home Loan Bank of Dallas

March 25, 2020	By	/s/ Sanjay Bhasin
Date		Sanjay Bhasin President and Chief Executive Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities indicated on March 25, 2020.

/s/ Sanjay Bhasin
Sanjay Bhasin
President and Chief Executive Officer
(Principal Executive Officer)

/s/ Tom Lewis
Tom Lewis
Executive Vice President and Chief Financial Officer
(Principal Financial and Accounting Officer)

/s/ Joseph F. Quinlan, Jr.
Joseph F. Quinlan, Jr.
Chairman of the Board of Directors

/s/ Robert M. Rigby
Robert M. Rigby
Vice Chairman of the Board of Directors

/s/ Cheryl D. Alston
Cheryl D. Alston
Director

/s/ Dianne W. Bolen
Dianne W. Bolen
Director

/s/ Tim H. Carter
Tim H. Carter
Director

/s/ Mary E. Ceverha
Mary E. Ceverha
Director

/s/ Albert C. Christman
Albert C. Christman
Director

/s/ James D. Goudge
James D. Goudge
Director

/s/ W. Wesley Hoskins
W. Wesley Hoskins
Director

/s/ Michael C. Hutsell
Michael C. Hutsell
Director

/s/ G. Granger MacDonald
G. Granger MacDonald
Director

/s/ A. Fred Miller, Jr.
A. Fred Miller, Jr.
Director

/s/ Sally I. Nelson
Sally I. Nelson
Director

Felipe A. Rael
Director

/s/ John P. Salazar
John P. Salazar
Director

/s/ Margo S. Scholin
Margo S. Scholin
Director

/s/ Ron G. Wiser
Ron G. Wiser
Director

Federal Home Loan Bank of Dallas

Index to Financial Statements

Management's Report on Internal Control over Financial Reporting

Management of the Federal Home Loan Bank of Dallas (the "Bank") is responsible for establishing and maintaining adequate internal control over financial reporting. The Bank's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the Bank's assets; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the Bank are being made only in accordance with authorizations of the Bank's management and board of directors; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the Bank's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Further, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management evaluated the effectiveness of the Bank's internal control over financial reporting as of December 31, 2019 based on the framework set forth by the Committee of Sponsoring Organizations of the Treadway Commission in the 2013 edition of *Internal Control — Integrated Framework*. Based upon that evaluation, management concluded that the Bank's internal control over financial reporting was effective as of December 31, 2019.

The effectiveness of the Bank's internal control over financial reporting as of December 31, 2019 has been audited by PricewaterhouseCoopers LLP, the Bank's independent registered public accounting firm, as stated in their report which appears on page F-3.

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of the
Federal Home Loan Bank of Dallas

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying statements of condition of the Federal Home Loan Bank of Dallas (the "Bank") as of December 31, 2019 and 2018, and the related statements of income, comprehensive income, capital and cash flows for each of the three years in the period ended December 31, 2019, including the related notes (collectively referred to as the "financial statements"). We also have audited the Bank's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Bank as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Bank maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Basis for Opinions

The Bank's management is responsible for these financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express opinions on the Bank's financial statements and on the Bank's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Bank in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the financial statements included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ PricewaterhouseCoopers LLP
Dallas, Texas
March 25, 2020

We have served as the Bank's auditor since 1990.

FEDERAL HOME LOAN BANK OF DALLAS
STATEMENTS OF CONDITION
(In thousands, except share data)

	December 31, 2019	December 31, 2018
ASSETS		
Cash and due from banks	$ 20,551	$ 35,157
Interest-bearing deposits	1,670,249	2,500,317
Securities purchased under agreements to resell (Note 12)	4,310,000	6,215,000
Federal funds sold (Notes 18 and 19)	4,505,000	1,731,000
Trading securities (Note 3)	5,460,136	1,818,178
Available-for-sale securities (Notes 4, 12 and 17) ($842,256 and $712,547 pledged at December 31, 2019 and 2018, respectively, which could be rehypothecated)	16,766,500	15,825,155
Held-to-maturity securities [(a)] (Note 5)	1,206,170	1,462,279
Advances (Notes 6, 8 and 18)	37,117,455	40,793,813
Mortgage loans held for portfolio, net of allowance for credit losses of $1,149 and $493 at December 31, 2019 and 2018, respectively (Notes 7, 8 and 18)	4,075,464	2,185,503
Accrued interest receivable	154,218	152,670
Premises and equipment, net	15,103	16,419
Derivative assets (Notes 12 and 13)	41,271	9,878
Other assets (including $14,222 and $12,376 of securities held at fair value at December 31, 2019 and 2018, respectively)	39,488	27,921
TOTAL ASSETS	$ 75,381,605	$ 72,773,290
LIABILITIES AND CAPITAL		
Deposits (Notes 9 and 18)		
Interest-bearing	$ 1,286,199	$ 963,972
Non-interest bearing	20	20
Total deposits	1,286,219	963,992
Consolidated obligations (Note 10)		
Discount notes	34,327,886	35,731,713
Bonds	35,745,827	31,931,929
Total consolidated obligations	70,073,713	67,663,642
Mandatorily redeemable capital stock (Note 14)	7,140	6,979
Accrued interest payable	115,350	122,938
Affordable Housing Program (Note 11)	57,247	44,358
Derivative liabilities (Notes 12 and 13)	3,855	45,991
Other liabilities (Note 4)	40,113	161,134
Total liabilities	71,583,637	69,009,034
Commitments and contingencies (Notes 11, 13, 15 and 17)		
CAPITAL (Notes 14 and 18)		
Capital stock		
Capital stock — Class B-1 putable ($100 par value) issued and outstanding shares: 9,794,335 and 9,169,206 at December 31, 2019 and 2018, respectively	979,434	916,921
Capital stock — Class B-2 putable ($100 par value) issued and outstanding shares: 14,868,085 and 16,379,675 at December 31, 2019 and 2018, respectively	1,486,808	1,637,967
Total Class B Capital Stock	2,466,242	2,554,888
Retained earnings		
Unrestricted	1,038,533	932,675
Restricted	194,144	148,692
Total retained earnings	1,232,677	1,081,367
Accumulated other comprehensive income (Note 20)	99,049	128,001
Total capital	3,797,968	3,764,256
TOTAL LIABILITIES AND CAPITAL	$ 75,381,605	$ 72,773,290

[(a)] Fair values: $1,215,580 and $1,478,691 at December 31, 2019 and 2018, respectively.

The accompanying notes are an integral part of these financial statements.

Table of Contents

FEDERAL HOME LOAN BANK OF DALLAS
STATEMENTS OF INCOME
(In thousands)

	For the Years Ended December 31, 2019	2018	2017
INTEREST INCOME			
Advances	$ 906,671	$ 828,929	$ 421,588
Prepayment fees on advances, net	2,064	2,631	1,772
Interest-bearing deposits	37,043	22,576	2,126
Securities purchased under agreements to resell	87,073	67,984	7,504
Federal funds sold	58,435	88,906	82,782
Trading securities	100,875	19,529	2,306
Available-for-sale securities	465,023	417,793	239,193
Held-to-maturity securities	37,629	44,835	36,388
Mortgage loans held for portfolio	110,892	53,585	15,018
Total interest income	1,805,705	1,546,768	808,677
INTEREST EXPENSE			
Consolidated obligations			
Bonds	711,240	659,943	327,644
Discount notes	780,165	560,824	233,698
Deposits	20,167	15,132	9,551
Mandatorily redeemable capital stock	189	101	107
Other borrowings	113	80	109
Total interest expense	1,511,874	1,236,080	571,109
NET INTEREST INCOME	293,831	310,688	237,568
Provision for mortgage loan losses	656	222	130
NET INTEREST INCOME AFTER PROVISION FOR MORTGAGE LOAN LOSSES	293,175	310,466	237,438
OTHER INCOME (LOSS)			
Service fees	2,590	2,252	2,262
Net gains (losses) on trading securities	12,860	(1,149)	1,822
Net gains (losses) on derivatives and hedging activities	24,687	(10,256)	4,668
Net gains (losses) on other assets carried at fair value	1,964	(746)	—
Realized gains on sales of held-to-maturity securities	—	1,671	3,983
Net realized gains on sales of available-for-sale securities	852	—	1,399
Letter of credit fees	12,437	9,268	7,701
Other, net	930	921	648
Total other income	56,320	1,961	22,483
OTHER EXPENSE			
Compensation and benefits	50,003	48,431	50,725
Other operating expenses	36,141	32,022	25,672
Finance Agency	4,800	3,899	3,518
Office of Finance	4,271	3,991	3,663
Discretionary grants and donations	476	2,005	8,128
Derivative clearing fees	1,274	1,207	1,218
Total other expense	96,965	91,555	92,924
INCOME BEFORE ASSESSMENTS	252,530	220,872	166,997
Affordable Housing Program assessment	25,272	22,097	16,710
NET INCOME	$ 227,258	$ 198,775	$ 150,287

The accompanying notes are an integral part of these financial statements.

FEDERAL HOME LOAN BANK OF DALLAS
STATEMENTS OF COMPREHENSIVE INCOME
(In thousands)

	For the Years Ended December 31,		
	2019	2018	2017
NET INCOME	$ 227,258	$ 198,775	$ 150,287
OTHER COMPREHENSIVE INCOME (LOSS)			
Net unrealized gains (losses) on available-for-sale securities, net of unrealized gains and losses relating to hedged interest rate risk included in net income	26,705	(93,245)	155,037
Reclassification adjustment for net realized gains on sales of available-for-sale securities included in net income	(852)	—	(1,399)
Unrealized losses on cash flow hedges	(54,777)	(823)	(2,570)
Reclassification adjustment for losses (gains) on cash flow hedges included in net income	(1,829)	(950)	2,375
Accretion of non-credit portion of other-than-temporary impairment losses to the carrying value of held-to-maturity securities	2,027	2,934	3,556
Postretirement benefit plan			
Amortization of prior service cost included in net periodic benefit cost	20	20	20
Actuarial gain (loss)	(152)	(161)	204
Amortization of net actuarial gain included in net periodic benefit cost	(94)	(100)	(107)
Total other comprehensive income (loss)	(28,952)	(92,325)	157,116
TOTAL COMPREHENSIVE INCOME	$ 198,306	$ 106,450	$ 307,403

The accompanying notes are an integral part of these financial statements.

FEDERAL HOME LOAN BANK OF DALLAS
STATEMENTS OF CAPITAL
FOR THE YEARS ENDED DECEMBER 31, 2019, 2018 AND 2017
(In thousands)

	Capital Stock Class B-1 - Putable (Membership/Excess)		Capital Stock Class B-2 - Putable (Activity)		Retained Earnings			Accumulated Other Comprehensive Income (Loss)	Total Capital
	Shares	Par Value	Shares	Par Value	Unrestricted	Restricted	Total		
BALANCE, JANUARY 1, 2017	6,904	$ 690,411	12,397	$ 1,239,737	$ 745,104	$ 78,880	$ 823,984	$ 63,210	$ 2,817,342
Net transfers of shares between Class B-1 and Class B-2 Stock	12,156	1,215,774	(12,156)	(1,215,774)	—	—	—	—	—
Proceeds from sale of capital stock	78	7,836	14,406	1,440,697	—	—	—	—	1,448,533
Repurchase/redemption of capital stock	(10,725)	(1,072,618)	—	—	—	—	—	—	(1,072,618)
Net shares reclassified to mandatorily redeemable capital stock	(200)	(20,045)	(2)	(185)	—	—	—	—	(20,230)
Comprehensive income									
Net income	—	—	—	—	120,230	30,057	150,287	—	150,287
Other comprehensive income	—	—	—	—	—	—	—	157,116	157,116
Dividends on capital stock									
Cash	—	—	—	—	(266)	—	(266)	—	(266)
Mandatorily redeemable capital stock	—	—	—	—	(138)	—	(138)	—	(138)
Stock	321	32,104	—	—	(32,104)	—	(32,104)	—	—
BALANCE, DECEMBER 31, 2017	8,534	853,462	14,645	1,464,475	832,826	108,937	941,763	220,326	3,480,026
Net transfers of shares between Class B-1 and Class B-2 Stock	17,004	1,700,394	(17,004)	(1,700,394)	—	—	—	—	—
Proceeds from sale of capital stock	273	27,289	18,739	1,873,886	—	—	—	—	1,901,175
Repurchase/redemption of capital stock	(17,165)	(1,716,490)	—	—	—	—	—	—	(1,716,490)
Net shares reclassified to mandatorily redeemable capital stock	(65)	(6,576)	—	—	—	—	—	—	(6,576)
Comprehensive income									
Net income	—	—	—	—	159,020	39,755	198,775	—	198,775
Other comprehensive income (loss)	—	—	—	—	—	—	—	(92,325)	(92,325)
Dividends on capital stock									
Cash	—	—	—	—	(265)	—	(265)	—	(265)
Mandatorily redeemable capital stock	—	—	—	—	(64)	—	(64)	—	(64)
Stock	588	58,842	—	—	(58,842)	—	(58,842)	—	—
BALANCE, DECEMBER 31, 2018	9,169	916,921	16,380	1,637,967	932,675	148,692	1,081,367	128,001	3,764,256
Net transfers of shares between Class B-1 and Class B-2 Stock	16,966	1,696,611	(16,966)	(1,696,611)	—	—	—	—	—
Proceeds from sale of capital stock	40	4,026	15,454	1,545,452	—	—	—	—	1,549,478
Repurchase/redemption of capital stock	(17,114)	(1,711,435)	—	—	—	—	—	—	(1,711,435)
Shares reclassified to mandatorily redeemable capital stock	(23)	(2,326)	—	—	—	—	—	—	(2,326)
Adjustment to initially apply new lease accounting guidance (Note 2)	—	—	—	—	(25)	—	(25)	—	(25)
Comprehensive income									
Net income	—	—	—	—	181,806	45,452	227,258	—	227,258
Other comprehensive income (loss)	—	—	—	—	—	—	—	(28,952)	(28,952)
Dividends on capital stock									
Cash	—	—	—	—	(259)	—	(259)	—	(259)
Mandatorily redeemable capital stock	—	—	—	—	(27)	—	(27)	—	(27)
Stock	756	75,637	—	—	(75,637)	—	(75,637)	—	—
BALANCE, DECEMBER 31, 2019	9,794	$ 979,434	14,868	$ 1,486,808	$ 1,038,533	$ 194,144	$ 1,232,677	$ 99,049	$ 3,797,968

The accompanying notes are an integral part of these financial statements.

FEDERAL HOME LOAN BANK OF DALLAS
STATEMENTS OF CASH FLOWS
(In thousands)

	For the Years Ended December 31,		
	2019	2018	2017
OPERATING ACTIVITIES			
Net income	$ 227,258	$ 198,775	$ 150,287
Adjustments to reconcile net income to net cash provided by (used in) operating activities			
Depreciation and amortization			
Net premiums and discounts on advances, consolidated obligations, investments and mortgage loans	(34,559)	90,230	83,007
Concessions on consolidated obligations	8,269	5,421	4,435
Premises, equipment and computer software costs	4,100	3,837	3,730
Non-cash interest on mandatorily redeemable capital stock	201	72	91
Provision for mortgage loan losses	656	222	130
Net decrease (increase) in trading securities	(12,860)	1,149	(2,381)
Losses (gains) due to change in net fair value adjustment on derivative and hedging activities	(686,700)	42,326	32,653
Net losses (gains) on other assets carried at fair value	(1,964)	746	—
Gains on sales of held-to-maturity securities	—	(1,671)	(3,983)
Net gains on sales of available-for-sale securities	(852)	—	(1,399)
Increase in accrued interest receivable	(1,401)	(41,904)	(23,021)
Decrease (increase) in other assets	(5,787)	(3,924)	2,606
Increase in Affordable Housing Program (AHP) liability	12,889	13,112	8,375
Increase (decrease) in accrued interest payable	(7,589)	53,172	26,495
Increase (decrease) in other liabilities	2,118	(2,075)	3,376
Total adjustments	(723,479)	160,713	134,114
Net cash provided by (used in) operating activities	(496,221)	359,488	284,401
INVESTING ACTIVITIES			
Net decrease (increase) in interest-bearing deposits, including swap collateral pledged	837,278	(2,526,703)	103,406
Net decrease (increase) in securities purchased under agreements to resell	1,905,000	485,000	(3,600,000)
Net decrease (increase) in federal funds sold	(2,774,000)	6,049,000	(1,538,000)
Net decrease in loan to other FHLBank	—	—	290,000
Purchases of trading securities held for investment	(32,770,030)	(3,050,527)	—
Proceeds from maturities of trading securities	6,936,550	—	—
Proceeds from sales of trading securities	22,237,379	1,343,335	—
Purchases of available-for-sale securities	(1,254,235)	(2,045,926)	(2,714,047)
Proceeds from maturities of available-for-sale securities	463,055	304,811	991,472
Proceeds from sales of available-for-sale securities	511,194	—	375,468
Purchases of held-to-maturity securities	(74,433)	—	(125,000)
Proceeds from maturities of held-to-maturity securities	333,631	389,677	527,109
Proceeds from sales of held-to-maturity securities	—	99,267	162,789
Principal collected on advances	535,464,499	832,267,487	535,153,420
Advances made	(531,616,062)	(836,591,104)	(539,149,887)
Principal collected on mortgage loans held for portfolio	530,739	101,014	30,629
Purchases of mortgage loans held for portfolio	(2,431,776)	(1,409,487)	(783,106)
Purchases of premises, equipment and computer software	(4,044)	(4,621)	(3,484)
Net cash used in investing activities	(1,705,255)	(4,588,777)	(10,279,231)

	For the Years Ended December 31,		
	2019	2018	2017
FINANCING ACTIVITIES			
Net increase (decrease) in deposits, including swap collateral held	316,386	240,209	(151,274)
Net receipts (payments) on derivative contracts with financing elements	(169,372)	21,537	(86,007)
Net proceeds from issuance of consolidated obligations			
Discount notes	299,439,428	282,147,079	379,976,259
Bonds	39,250,090	19,402,948	24,870,844
Debt issuance costs	(9,453)	(6,478)	(5,365)
Payments for maturing and retiring consolidated obligations			
Discount notes	(300,795,531)	(278,987,984)	(374,433,733)
Bonds	(35,680,071)	(18,819,575)	(20,473,340)
Proceeds from issuance of capital stock	1,549,478	1,901,175	1,448,533
Payments for redemption of mandatorily redeemable capital stock	(2,391)	(5,675)	(17,934)
Payments for repurchase/redemption of capital stock	(1,711,435)	(1,716,490)	(1,072,618)
Cash dividends paid	(259)	(265)	(266)
Net cash provided by financing activities	2,186,870	4,176,481	10,055,099
Net increase (decrease) in cash and cash equivalents	(14,606)	(52,808)	60,269
Cash and cash equivalents at beginning of the year	35,157	87,965	27,696
Cash and cash equivalents at end of the year	$ 20,551	$ 35,157	$ 87,965
Supplemental disclosures			
Interest paid	$ 1,559,919	$ 1,124,736	$ 521,619
AHP payments, net	$ 12,383	$ 8,985	$ 8,335
Variation margin recharacterized as settlement payments on derivative contracts (Note 12)	$ —	$ 250,468	$ 72,053
Stock dividends issued	$ 75,637	$ 58,842	$ 32,104
Dividends paid through issuance of mandatorily redeemable capital stock	$ 27	$ 64	$ 138
Capital stock reclassified to mandatorily redeemable capital stock, net	$ 2,326	$ 6,576	$ 20,230
Right-of-use assets acquired by lease	$ 2,539	$ —	$ —

The accompanying notes are an integral part of these financial statements.

FEDERAL HOME LOAN BANK OF DALLAS

NOTES TO FINANCIAL STATEMENTS

Background Information

The Federal Home Loan Bank of Dallas (the "Bank"), a federally chartered corporation, is one of 11 district Federal Home Loan Banks (each individually a "FHLBank" and collectively the "FHLBanks," and, together with the Federal Home Loan Banks Office of Finance ("Office of Finance"), a joint office of the FHLBanks, the "FHLBank System") that were created by the Federal Home Loan Bank Act of 1932 (as amended, the "FHLB Act"). The FHLBanks serve the public by enhancing the availability of credit for residential mortgages and targeted community development. The Bank serves eligible financial institutions in Arkansas, Louisiana, Mississippi, New Mexico and Texas (collectively, the Ninth District of the FHLBank System). The Bank provides a readily available, competitively priced source of funds to its member institutions. The Bank is a cooperative whose member institutions own the capital stock of the Bank. Regulated depository institutions and insurance companies engaged in residential housing finance and Community Development Financial Institutions that are certified under the Community Development Banking and Financial Institutions Act of 1994 may apply for membership in the Bank. All members must purchase stock in the Bank. Housing associates, including state and local housing authorities, that meet certain statutory criteria may also borrow from the Bank; while eligible to borrow, housing associates are not members of the Bank and, as such, are not required or allowed to hold capital stock.

The Federal Housing Finance Agency ("Finance Agency"), an independent agency in the executive branch of the U.S. government, supervises and regulates the FHLBanks and the Office of Finance. The Finance Agency's stated mission is to ensure that the housing government-sponsored enterprises ("GSEs"), including the FHLBanks, operate in a safe and sound manner so that they serve as a reliable source of liquidity and funding for housing finance and community investment. Consistent with this mission, the Finance Agency establishes policies and regulations covering the operations of the FHLBanks. Each FHLBank operates as a separate entity with its own management, employees, and board of directors. The Bank does not have any special purpose entities or any other type of off-balance sheet conduits.

The Office of Finance facilitates the issuance and servicing of the FHLBanks' debt instruments (known as consolidated obligations). As provided by the FHLB Act and Finance Agency regulation, the FHLBanks' consolidated obligations are backed only by the financial resources of all 11 FHLBanks. Consolidated obligations are the joint and several obligations of all the FHLBanks and are the FHLBanks' primary source of funds. Deposits, other borrowings, and the proceeds from capital stock issued to members provide other funds. The Bank primarily uses these funds to provide loans (known as advances) to its members, to purchase single-family mortgage loans from its members, and to fund other investments. The Bank's credit services also include letters of credit issued or confirmed on behalf of members; in addition, the Bank offers interest rate swaps, caps and floors to its members. Further, the Bank provides its members with a variety of correspondent banking services, including overnight and term deposit accounts, wire transfer services, securities safekeeping and securities pledging services.

Note 1—Summary of Significant Accounting Policies

Use of Estimates and Assumptions. The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America ("U.S. GAAP") requires management to make assumptions and estimates. These assumptions and estimates may affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities, and the reported amounts of income and expenses. Significant estimates include the valuations of the Bank's investment securities, as well as its derivative instruments and any associated hedged items. Actual results could differ from these estimates.

Federal Funds Sold, Securities Purchased Under Agreements to Resell, Loans to Other FHLBanks and Interest-Bearing Deposits. These investments are carried at cost. Substantially all of the Bank's interest-bearing deposits are over the FDIC insurance limit.

Investment Securities. The Bank records investment securities on trade date. The Bank carries investment securities for which it has both the ability and intent to hold to maturity (held-to-maturity securities) at cost, adjusted for the amortization of premiums and accretion of discounts using the level-yield method. The carrying amount of held-to-maturity securities is further adjusted for any other-than-temporary impairment charges that were recorded on or before December 31, 2019, as described below. As discussed in Note 2, on January 1, 2020, the Bank adopted Accounting Standards Update ("ASU") 2016-13, *"Measurement of Credit Losses on Financial Instruments"* ("ASU 2016-13"), which amends the guidance related to the accounting for credit losses on financial instruments, including investment securities classified as held-to-maturity and available-for-sale, by replacing the impairment methodology with an expected credit loss methodology. The adoption of this guidance is not expected to have a material impact on the Bank's financial condition or results of operation.

The Bank classifies certain investment securities that it may sell before maturity as available-for-sale and carries them at fair value. For available-for-sale securities that have been hedged (with fixed-for-floating interest rate swaps) and qualify as fair value hedges, the Bank records the portion of the change in value related to the risk being hedged, together with the related change in the fair value of the derivative, in earnings. The Bank records the remainder of the change in value of the securities in other comprehensive income as “net unrealized gains (losses) on available-for-sale securities.”

The Bank classifies certain other investments as trading and carries them at fair value. The Bank records changes in the fair value of these investments in other income (loss) in the statements of income. Although the securities are classified as trading, the Bank does not engage in speculative trading practices.

The Bank computes the amortization and accretion of premiums and discounts on mortgage-backed securities ("MBS") for which prepayments are probable and reasonably estimable using the level-yield method over the estimated lives of the securities. This method requires a retrospective adjustment of the effective yield each time the Bank changes the estimated life as if the new estimate had been known since the original acquisition date of the securities. The Bank computes the amortization and accretion of premiums and discounts on other investments using the level-yield method to the contractual maturity of the securities.

The Bank computes gains and losses on sales of investment securities using the specific identification method and includes these gains and losses in other income (loss) in the statements of income. The Bank treats securities purchased under agreements to resell as collateralized financings.

Through December 31, 2019, the Bank evaluated outstanding available-for-sale and held-to-maturity securities for other-than-temporary impairment on a quarterly basis. An investment security was impaired if the fair value of the investment was less than its amortized cost. Amortized cost included adjustments (if any) made to the cost basis of an investment for accretion, amortization, the credit portion of previous other-than-temporary impairments and hedging. The Bank considered the impairment of a debt security to be other than temporary if the Bank (i) intended to sell the security, (ii) more likely than not would have been required to sell the security before recovering its amortized cost basis, or (iii) did not expect to recover the security’s entire amortized cost basis (even if the Bank did not intend to sell the security). Further, an impairment was considered to be other than temporary if the Bank’s best estimate of the present value of cash flows expected to be collected from the debt security was less than the amortized cost basis of the security (any such shortfall was referred to as a “credit loss”).

If an other-than-temporary impairment (“OTTI”) occurred because the Bank intended to sell an impaired debt security, or more likely than not would have been required to sell the security before recovery of its amortized cost basis, the impairment was recognized in earnings in an amount equal to the entire difference between fair value and amortized cost.

In instances in which a determination was made that a credit loss existed but the Bank did not intend to sell the debt security and it was not more likely than not that the Bank would have been required to sell the debt security before the anticipated recovery of its remaining amortized cost basis, the other-than-temporary impairment (i.e., the difference between the security’s then-current carrying amount and its estimated fair value) was separated into (i) the amount of the total impairment related to the credit loss (i.e., the credit component) and (ii) the amount of the total impairment related to all other factors (i.e., the non-credit component). The credit component was recognized in earnings and the non-credit component was recognized in other comprehensive income.

The non-credit component of any OTTI losses recognized in other comprehensive income for debt securities classified as held-to-maturity was (and will continue to be) accreted over the remaining life of the debt security (in a prospective manner based on the amount and timing of future estimated cash flows) as an increase in the carrying value of the security unless and until the security is sold, the security matures or, if on or prior to December 31, 2019, there was an additional other-than-temporary impairment that was recognized in earnings. In instances in which an additional other-than-temporary impairment was recognized in earnings, the amount of the credit loss was reclassified from accumulated other comprehensive income (loss) ("AOCI") to earnings. Further, if an additional other-than-temporary impairment was recognized in earnings and the held-to-maturity security’s then-current carrying amount exceeded its fair value, an additional non-credit impairment was concurrently recognized in other comprehensive income. Conversely, if an additional other-than-temporary impairment was recognized in earnings and the held-to-maturity security’s then-current carrying value was less than its fair value, the carrying value of the security was not increased. In periods subsequent to the recognition of an OTTI loss, the other-than-temporarily impaired debt security was accounted for as if it had been purchased on the measurement date of the other-than-temporary impairment at an amount equal to the previous amortized cost basis less the other-than-temporary impairment recognized in earnings. The difference between the new amortized cost basis and the cash flows expected to be collected was (and will continue to be) accreted as interest income over the remaining life of the security in a prospective manner based on the amount and timing of future estimated cash flows. Prior to January 1, 2020, in instances when there was a significant increase in a security's expected cash flows, the amount to be accreted was adjusted prospectively. Beginning January 1, 2020, accretion will not be adjusted for significant increases in expected cash flows. Those additional cash flows, if any, will be recognized when received.

Advances. The Bank reports advances at their principal amount outstanding, net of unearned commitment fees and deferred prepayment fees, if any, as discussed below. The Bank credits interest on advances to income as earned.

Mortgage Loans Held for Portfolio. Through the Mortgage Partnership Finance® ("MPF"®) program administered by the FHLBank of Chicago, the Bank invests in conventional residential mortgage loans. Under the MPF program, the Bank purchased conventional mortgage loans and government-guaranteed/insured mortgage loans (i.e., those insured or guaranteed by the Federal Housing Administration ("FHA") or the Department of Veterans Affairs ("DVA")) during the period from 1998 to mid-2003. The Bank resumed acquiring conventional mortgage loans under this program in 2016. Since 2016, all of the acquired mortgage loans were originated by certain of the Bank's member institutions that participate in the MPF program ("Participating Financial Institutions" or "PFIs") and the Bank acquired a 100 percent interest in such loans. For loans that were acquired from its members during the period from 1998 to mid-2003, the Bank retained title to the mortgage loans, subject to any participation interest in such loans that was sold to the FHLBank of Chicago; the interest in these loans that was retained by the Bank ranged from 1 percent to 49 percent. Additionally, during the period from 1998 to 2000, the Bank also acquired from the FHLBank of Chicago a percentage interest (ranging up to 75 percent) in certain MPF loans originated by PFIs of other FHLBanks. The Bank manages the liquidity, interest rate and prepayment risk of these loans, while the PFIs or their designees retain the servicing activities. The Bank and the PFIs share in the credit risk of the loans with the Bank assuming the first loss obligation limited by the First Loss Account ("FLA"), and the PFIs assuming credit losses in excess of the FLA, up to the amount of the credit enhancement obligation as specified in the master agreement ("Second Loss Credit Enhancement"). The Bank assumes all losses in excess of the Second Loss Credit Enhancement.

The Bank classifies mortgage loans held for portfolio as held for investment and, accordingly, reports them at their principal amount outstanding net of deferred premiums, discounts and the fair value amount of the delivery commitment (which represents the unrealized gains and losses from loans initially classified as mortgage loan commitments) as of the purchase (i.e., settlement) date. The Bank credits interest on mortgage loans to income as earned. The Bank amortizes or accretes the deferred amounts to interest income using the contractual method. The contractual method uses the cash flows required by the loan contracts, as adjusted for any actual prepayments, to apply the interest method. Future prepayments of principal are not anticipated under this method. The Bank has the ability and intent to hold these mortgage loans until maturity.

Allowance for Credit Losses. An allowance for credit losses is separately established for each of the Bank's identified portfolio segments, if necessary, to provide for probable losses inherent in its financing receivables portfolio and other off-balance sheet credit exposures as of the balance sheet date. To the extent necessary, an allowance for credit losses for off-balance sheet credit exposures is recorded as a liability. See Note 8 - Allowance for Credit Losses for information regarding the determination of the allowance for credit losses on the Bank's financing receivables and other off-balance sheet credit exposures and Note 2 - Recently Issued Accounting Guidance for a discussion of the guidance regarding credit losses on financial instruments that became effective for the Bank on January 1, 2020.

A portfolio segment is defined as the level at which an entity develops and documents a systematic method for determining its allowance for credit losses on financing receivables and other off-balance sheet credit exposures. The Bank has developed and documented a systematic methodology for determining an allowance for credit losses for the following portfolio segments: (1) advances and other extensions of credit to members, collectively referred to as "extensions of credit to members;" (2) government-guaranteed/insured mortgage loans held for portfolio; and (3) conventional mortgage loans held for portfolio.

Classes of financing receivables are generally a disaggregation of a portfolio segment and are determined on the basis of their initial measurement attribute, the risk characteristics of the financing receivable and an entity's method for monitoring and assessing credit risk. Because the credit risk arising from the Bank's financing receivables is assessed and measured at the portfolio segment level, the Bank does not have separate classes of financing receivables within each of its portfolio segments.

The Bank places a conventional mortgage loan on nonaccrual status when the collection of the contractual principal or interest is 90 days or more past due. When a mortgage loan is placed on nonaccrual status, accrued but uncollected interest is reversed against interest income. The Bank records cash payments received on nonaccrual loans as a reduction of principal. A loan on nonaccrual status is restored to accrual status when none of its contractual principal and interest is due and unpaid, and the Bank expects repayment of the remaining contractual interest and principal. Government-guaranteed/insured loans are not placed on nonaccrual status.

A loan is considered impaired when, based on current information and events, it is probable that the Bank will be unable to collect all amounts due according to the contractual terms of the loan agreement. Collateral-dependent loans that are 90 days or more past due are measured for impairment based on the fair value of the underlying mortgaged property less estimated selling costs. Loans are considered collateral-dependent if repayment is expected to be provided solely by the sale of the underlying property; that is, there is no other available and reliable source of repayment. A collateral-dependent loan is impaired if the fair value of the underlying collateral is insufficient to recover the unpaid principal balance on the loan. Interest income on impaired loans is recognized in the same manner as it is for nonaccrual loans noted above.

The Bank evaluates whether to record a charge-off on a conventional mortgage loan when the loan becomes 180 days or more past due or upon the occurrence of a confirming event, whichever occurs first. Confirming events include, but are not limited to, the occurrence of foreclosure or notification of a claim against any of the credit enhancements. A charge-off is recorded if the recorded investment in the loan will not be recovered.

Real Estate Owned. Real estate owned includes assets that have been received in satisfaction of debt or as a result of actual or in-substance foreclosures. Real estate owned is carried at the lower of cost or fair value less estimated costs to sell and is included in other assets in the statements of condition. If the fair value of the real estate owned less estimated costs to sell is less than the recorded investment in the mortgage loan at the date of transfer, the Bank recognizes a charge-off to the allowance for loan losses. Subsequent realized gains and realized or unrealized losses are included in other income (loss) in the statements of income.

Premises and Equipment. The Bank records premises and equipment at cost less accumulated depreciation and amortization. At December 31, 2019 and 2018, the Bank's accumulated depreciation and amortization relating to premises and equipment was $26,291,000 and $30,114,000, respectively. The Bank computes depreciation using the straight-line method over the estimated useful lives of assets ranging from 3 to 39 years. It amortizes leasehold improvements on the straight-line basis over the shorter of the estimated useful life of the improvement or the remaining term of the lease. The Bank capitalizes improvements and major renewals but expenses ordinary maintenance and repairs when incurred. Depreciation and amortization expense was $2,003,000, $2,156,000 and $2,212,000 during the years ended December 31, 2019, 2018 and 2017, respectively. The Bank includes gains and losses on disposal of premises and equipment, if any, in other income (loss) under the caption "other, net."

Computer Software. The cost of purchased computer software, certain costs incurred in developing computer software for internal use, and implementation costs associated with cloud computing arrangements that are service contracts are capitalized and amortized over future periods. As of December 31, 2019 and 2018, the Bank had $5,988,000 and $4,727,000, respectively, in unamortized computer software costs included in other assets. Total software costs charged to expense were $8,313,000, $6,996,000 and $6,156,000 for the years ended December 31, 2019, 2018 and 2017, respectively. Included in these total software costs was amortization of $2,097,000, $1,681,000 and $1,518,000, respectively.

Derivatives and Hedging Activities. The Bank accounts for derivatives and hedging activities in accordance with the guidance in Topic 815 of the Financial Accounting Standards Board's ("FASB") Accounting Standards Codification ("ASC") entitled *"Derivatives and Hedging"* ("ASC 815"). All derivatives are recognized on the statements of condition at their fair values, including accrued interest receivable and payable. For purposes of reporting derivative assets and derivative liabilities, the Bank offsets the fair value amounts recognized for derivative instruments (including the right to reclaim cash collateral and the obligation to return cash collateral) where a legally enforceable right of setoff exists.

Changes in the fair value of a derivative that is effective as — and that is designated and qualifies as — a fair value hedge, along with changes in the fair value of the hedged asset or liability that are attributable to the hedged risk (including changes that reflect gains or losses on firm commitments), are recorded in current period earnings. The application of hedge accounting generally requires the Bank to evaluate the effectiveness of the fair value hedging relationships on an ongoing basis and to calculate the changes in fair value of the derivatives and related hedged items independently. This is commonly known as the "long-haul" method of hedge accounting. Transactions that meet more stringent criteria qualify for the "shortcut" method of hedge accounting in which an assumption can be made that the change in fair value of a hedged item exactly offsets the change in value of the related derivative. The Bank considers hedges of committed advances to be eligible for the shortcut method of accounting as long as the settlement of the committed advance occurs within the shortest period possible for that type of instrument based on market settlement conventions, the fair value of the swap is zero at the inception of the hedging relationship, and the transaction meets all of the other criteria for shortcut accounting specified in ASC 815. The Bank has defined the market settlement convention to be five business days or less for advances.

As discussed in Note 2, effective January 1, 2019, the Bank adopted ASU 2017-12, *"Targeted Improvements to Accounting for Hedging Activities"* ("ASU 2017-12") which, among other things, impacts the presentation of gains/losses on derivatives and hedging activities for qualifying hedges.

Beginning January 1, 2019, any fair value hedge ineffectiveness (which represents the amount by which the change in the fair value of the derivative differs from the change in the fair value of the hedged item attributable to the hedged risk) and the net interest income/expense associated with that derivative are recorded in the same line item as the earnings effect of the hedged item (that is, interest income on advances, interest income on available-for-sale securities or interest expense on consolidated obligation bonds, as appropriate). Prior to January 1, 2019, any fair value hedge ineffectiveness was recorded in other income (loss) as "net gains (losses) on derivatives and hedging activities" while the net interest income/expense associated with the derivative was recorded as a component of net interest income.

On and after January 1, 2019, all changes in the fair value of a derivative that is designated and qualifies as a cash flow hedge are recorded in AOCI until earnings are affected by the variability of the cash flows of the hedged transaction, at which time these amounts are reclassified from AOCI to the income statement line where the earnings effect of the hedged item is reported (e.g., interest expense on consolidated obligation discount notes). Prior to January 1, 2019, changes in the fair value of a derivative that was designated and qualified as a cash flow hedge, to the extent that the hedge was effective, were recorded in AOCI until earnings were affected by the variability of the cash flows of the hedged transaction. Any ineffective portion of a cash flow hedge (which represented the amount by which the change in the fair value of the derivative differed from the change in fair value of a hypothetical derivative having terms that match identically the critical terms of the hedged forecasted transaction) was recognized in other income (loss) as “net gains (losses) on derivatives and hedging activities.”

An economic hedge is defined as a derivative hedging specific or non-specific assets or liabilities that does not qualify or was not designated for hedge accounting under ASC 815, but is an acceptable hedging strategy under the Bank’s Enterprise Market Risk Management Policy. These hedging strategies also comply with Finance Agency regulatory requirements prohibiting speculative derivative transactions. An economic hedge by definition introduces the potential for earnings variability as changes in the fair value of a derivative designated as an economic hedge are recorded in current period earnings with no offsetting fair value adjustment to an asset or liability. Both the net interest income/expense and the fair value changes associated with derivatives in economic hedging relationships are recorded in other income (loss) as “net gains (losses) on derivatives and hedging activities.”

The Bank records the changes in fair value of all derivatives (and, in the case of fair value hedges, the hedged items) beginning on the trade date.

Cash flows associated with all derivatives are reported as cash flows from operating activities in the statements of cash flows, unless the derivative contains an other-than-insignificant financing element, in which case its cash flows are reported as cash flows from financing activities.

The Bank may issue debt, make advances, or purchase financial instruments in which a derivative instrument is “embedded” and the financial instrument that embodies the embedded derivative instrument is not remeasured at fair value with changes in fair value reported in earnings as they occur. Upon execution of these transactions, the Bank assesses whether the economic characteristics of the embedded derivative are clearly and closely related to the economic characteristics of the remaining component of the financial instrument (i.e., the host contract) and whether a separate, non-embedded instrument with the same terms as the embedded instrument would meet the definition of a derivative instrument. When it is determined that (1) the embedded derivative possesses economic characteristics that are not clearly and closely related to the economic characteristics of the host contract and (2) a separate, stand-alone instrument with the same terms would qualify as a derivative instrument, the embedded derivative is separated from the host contract, carried at fair value, and designated as either (1) a hedging instrument in a fair value hedge or (2) a stand-alone derivative instrument pursuant to an economic hedge. However, if the entire contract were to be measured at fair value, with changes in fair value reported in current earnings, or if the Bank could not reliably identify and measure the embedded derivative for purposes of separating that derivative from its host contract, the entire contract would be carried on the statement of condition at fair value and no portion of the contract would be separately accounted for as a derivative.

The Bank discontinues hedge accounting prospectively when: (1) management determines that the derivative is no longer effective in offsetting changes in the fair value or cash flows of a hedged item; (2) the derivative and/or the hedged item expires or is sold, terminated, or exercised; (3) it is no longer probable that a forecasted transaction will occur within the originally specified time frame; (4) a hedged firm commitment no longer meets the definition of a firm commitment; or (5) management determines that designating the derivative as a hedging instrument in accordance with ASC 815 is no longer appropriate.

In all cases in which hedge accounting is discontinued and the derivative remains outstanding, the Bank will carry the derivative at its fair value on the statement of condition, recognizing any additional changes in the fair value of the derivative in current period earnings as a component of "net gains (losses) on derivatives and hedging activities."

When fair value hedge accounting for a specific derivative is discontinued due to the Bank’s determination that such derivative no longer qualifies for hedge accounting treatment or because the derivative is terminated, the Bank will cease to adjust the hedged asset or liability for changes in fair value and amortize the cumulative basis adjustment on the formerly hedged item into earnings over its remaining term using the level-yield method. The amortization is recorded in the same line item as the earnings effect of the formerly hedged item.

When hedge accounting is discontinued because the hedged item no longer meets the definition of a firm commitment, the Bank continues to carry the derivative on the statement of condition at its fair value, removing from the statement of condition any asset or liability that was recorded to recognize the firm commitment and recording it as a gain or loss in current period earnings.

When cash flow hedge accounting for a specific derivative is discontinued due to the Bank's determination that such derivative no longer qualifies for hedge accounting treatment or because the derivative is terminated, the Bank will reclassify the cumulative fair value gains or losses recorded in AOCI as of the discontinuance date from AOCI into earnings when earnings are affected by the original forecasted transaction. If the Bank expects at any time that continued reporting of a net loss in AOCI would lead to recognizing a net loss on the combination of the hedging instrument and hedged transaction in one or more future periods, the amount that is not expected to be recovered is immediately reclassified to earnings. These items are recorded in the same income statement line where the earnings effect of the hedged item is reported.

In cases where the cash flow hedge is discontinued because the forecasted transaction is no longer probable (i.e., the forecasted transaction will not occur in the originally expected period or within an additional two-month period of time thereafter), any fair value gains or losses recorded in AOCI as of the determination date are immediately reclassified to earnings as a component of "net gains (losses) on derivatives and hedging activities."

Mandatorily Redeemable Capital Stock. The Bank reclassifies shares of capital stock from the capital section to the liability section of its statement of condition at the point in time when a member submits a written redemption notice, gives notice of its intent to withdraw from membership, or becomes a non-member by merger or acquisition, charter termination, or involuntary termination from membership, as the shares of capital stock then meet the definition of a mandatorily redeemable financial instrument. Shares of capital stock meeting this definition are reclassified to liabilities at fair value. Following reclassification of the stock, any dividends paid or accrued on such shares are recorded as interest expense in the statement of income. Repurchase or redemption of these mandatorily redeemable financial instruments is reported as a cash outflow in the financing activities section of the statement of cash flows.

If a member cancels a written redemption or withdrawal notice, the Bank reclassifies the shares subject to the cancellation notice from liabilities back to equity. Following this reclassification to equity, dividends on the capital stock are once again recorded as a reduction of retained earnings.

Although mandatorily redeemable capital stock is excluded from capital for financial reporting purposes, it is considered capital for regulatory purposes. See Note 14 for more information, including restrictions on stock redemption.

Affordable Housing Program. The FHLB Act requires each FHLBank to establish and fund an Affordable Housing Program (“AHP”) (see Note 11). The Bank charges the required funding for AHP to earnings and establishes a liability. The Bank makes AHP funds available to members in the form of direct grants to assist in the purchase, construction, or rehabilitation of housing for very low-, low-, and moderate-income households.

Prepayment Fees. The Bank charges a prepayment fee when members/borrowers prepay certain advances before their original maturities. The Bank records prepayment fees received from members/borrowers net of hedging adjustments included in the book basis of the prepaid advance, if any, as interest income on advances in the statements of income either immediately (as prepayment fees on advances) or over time (as interest income on advances), as further described below. In cases in which the Bank funds a new advance concurrent with or within a short period of time before or after the prepayment of an existing advance, the Bank evaluates whether the new advance meets the accounting criteria to qualify as a modification of an existing advance. If the new advance qualifies as a modification of the existing advance, the net prepayment fee on the prepaid advance is deferred, recorded in the basis of the modified advance, and amortized into interest income over the life of the modified advance using the level-yield method. This amortization is recorded in interest income on advances. If the Bank determines that the advance should be treated as a new advance, or in instances where no new advance is funded, it records the net fees as “prepayment fees on advances” in the interest income section of the statements of income.

Commitment Fees. The Bank defers commitment fees for advances and amortizes them to interest income using the level-yield method over the life of the advance. The Bank records commitment fees for letters of credit as a deferred credit when it receives the fees and amortizes them over the term of the letter of credit using the straight-line method.

Concessions on Consolidated Obligations. The Bank defers and amortizes, using the level-yield method, the amounts paid to securities dealers in connection with the sale of consolidated obligation bonds over the term to maturity of the related bonds. The Office of Finance prorates the amount of the concession to the Bank based upon the percentage of the debt issued that is assumed by the Bank. Unamortized concessions were $4,479,000 and $3,295,000 at December 31, 2019 and 2018, respectively, and are recorded as a reduction in the balance of consolidated obligation bonds on the statements of condition. Amortization of such concessions is included in consolidated obligation bond interest expense and totaled $3,553,000, $835,000 and $846,000 during the years ended December 31, 2019, 2018 and 2017, respectively. The Bank charges to expense as incurred the concessions applicable to the sale of consolidated obligation discount notes because of the short maturities of these notes. Concessions related to the sale of discount notes totaling $4,716,000, $4,586,000 and $3,589,000 are included in interest expense on consolidated obligation discount notes in the statements of income for the years ended December 31, 2019, 2018 and 2017, respectively.

Discounts and Premiums on Consolidated Obligations. The Bank expenses the discounts on consolidated obligation discount notes using the level-yield method over the term to maturity of the related notes. It accretes the discounts and amortizes the premiums on consolidated obligation bonds to expense using the level-yield method over the term to maturity of the bonds.

Finance Agency and Office of Finance Expenses. The Bank is assessed its proportionate share of the costs of operating the Finance Agency and the Office of Finance. The assessment for the FHLBanks' portion of the Finance Agency's operating and capital expenditures is allocated among the FHLBanks based on the ratio between each FHLBank's minimum required regulatory capital and the aggregate minimum required regulatory capital of all FHLBanks determined as of June 30 of each year. The expenses of the Office of Finance are shared on a pro rata basis with two-thirds based on each FHLBank's total consolidated obligations outstanding (as of the current month-end) and one-third divided equally among all of the FHLBanks. These costs are included in the other expense section of the statements of income.

Estimated Fair Values. Some of the Bank's financial instruments (e.g., advances) lack an available trading market characterized by transactions between a willing buyer and a willing seller engaging in an exchange transaction. Therefore, the Bank uses internal models employing assumptions regarding interest rates, volatilities, prepayments, and other factors to perform present-value calculations when disclosing estimated fair values for these financial instruments. The Bank assumes that book value approximates fair value for certain financial instruments with three months or less to repricing or maturity. For a discussion of the Bank's valuation techniques for financial instruments measured at fair value on the statement of condition and the estimated fair values of all of its financial instruments, see Note 16.

Cash Flows. The Bank considers cash and due from banks as cash and cash equivalents in the statements of cash flows.

Note 2— Recently Issued Accounting Guidance

Guidance Adopted in 2019

Leases. On February 25, 2016, the FASB issued ASU 2016-02, *"Leases"* ("ASU 2016-02"), which requires entities that lease assets (lessees) to recognize in the balance sheet assets and liabilities for the rights and obligations created by those leases. Specifically, ASU 2016-02 requires a lessee of operating or finance leases to recognize a right-of-use asset and a liability to make lease payments for leases with terms of more than 12 months. Lessor accounting remains largely unchanged from current U.S. GAAP. The guidance is to be applied using a retrospective transition method to each period presented or, alternatively, by recognizing a cumulative effect adjustment to the opening balance of retained earnings in the period of adoption. The transition method allowing for a cumulative effect adjustment to the opening balance of retained earnings is provided by ASU 2018-11, *"Leases: Targeted Improvements"* ("ASU 2018-11"). ASU 2018-11 was issued by the FASB on July 30, 2018. ASU 2016-02 also requires extensive quantitative and qualitative disclosures to help financial statement users understand the amount, timing and uncertainty of cash flows arising from leases. For public business entities, the guidance in ASU 2016-02 is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2018 (January 1, 2019 for the Bank). Early adoption was permitted. The Bank adopted ASU 2016-02 effective January 1, 2019. In conjunction with the adoption of ASU 2016-02 (as amended by ASU 2018-11), the Bank recorded (on January 1, 2019) a cumulative effect adjustment to retained earnings of $25,000 and right-of-use assets and lease liabilities approximating $2,500,000. These assets and liabilities are included in other assets and other liabilities, respectively. Because these amounts are insignificant, the Bank has provided only limited quantitative disclosures and no qualitative disclosures regarding its right-of-use assets and lease liabilities in these financial statements (See Note 17 - Commitments and Contingencies).

Premium Amortization on Purchased Callable Debt Securities. On March 30, 2017, the FASB issued ASU 2017-08, *"Premium Amortization on Purchased Callable Debt Securities"* ("ASU 2017-08"), which amends the amortization period for certain purchased callable debt securities held at a premium, shortening such period to the earliest call date. For public business entities, the guidance in ASU 2017-08 is effective for fiscal years beginning after December 15, 2018 (January 1, 2019 for the Bank), and interim periods within those fiscal years. Early adoption, including adoption in an interim period, was permitted. If an entity early adopted ASU 2017-08 in an interim period, any adjustments were to be reflected as of the beginning of the fiscal year that included that interim period. The guidance was to be applied using a modified retrospective transition approach, with the cumulative-effect adjustment recognized in retained earnings as of the beginning of the period of adoption. The Bank adopted ASU 2017-08 on January 1, 2019. The adoption of this guidance did not have any impact on the Bank's results of operations or financial condition.

Derivatives and Hedging. On August 28, 2017, the FASB issued ASU 2017-12, which is intended to improve the financial reporting of hedging relationships to better portray the economic results of an entity's risk management activities in its financial statements. This guidance requires that, for fair value hedges, the entire change in the fair value of the hedging instrument included in the assessment of hedge effectiveness be presented in the same income statement line that is used to present the earnings effect of the hedged item. For cash flow hedges, the entire change in the fair value of the hedging instrument included in the assessment of hedge effectiveness must be recorded in other comprehensive income. In addition, the guidance provides for, but does not require, the use of a qualitative method of assessing hedge ineffectiveness. Among other things, the guidance also permits, but does not require, the following:

- For fair value hedges, measurement of the change in fair value of the hedged item on the basis of the benchmark rate component of the contractual coupon cash flows determined at hedge inception.
- Partial-term fair value hedges of interest-rate risk, in which it can be assumed that the hedged item has a term that reflects only the designated cash flows being hedged.
- For prepayable financial instruments, consideration only of how changes in the benchmark interest rate affect a decision to settle a debt instrument before its scheduled maturity in calculating the change in the fair value of the hedged item attributable to interest rate risk.
- For a cash flow hedge of interest-rate risk of a variable-rate financial instrument, designation of the variability in cash flows attributable to the contractually specified interest rate as the hedged risk (when the contractually specified variable rate is not a benchmark rate).
- For a closed portfolio of prepayable financial assets or one or more beneficial interests secured by a portfolio of prepayable financial instruments, designation of an amount that is not expected to be affected by prepayments, defaults and other events affecting the timing and amount of cash flows as a hedged item (commonly referred to as the "last-of-layer" method).

For public business entities, the guidance in ASU 2017-12 is effective for fiscal years beginning after December 15, 2018 (January 1, 2019 for the Bank), and interim periods within those fiscal years. Early adoption, including adoption in an interim period, was permitted. If an entity early adopted ASU 2017-12 in an interim period, any adjustments were to be reflected as of the beginning of the fiscal year that included that interim period. For cash flow hedges existing on the date of adoption, an entity was required to eliminate the separate measurement of ineffectiveness in earnings by means of a cumulative-effect adjustment to accumulated other comprehensive income with a corresponding adjustment to the opening balance of retained earnings. Among other things, an entity could elect at transition to modify the measurement methodology for hedged items in existing fair value hedges to the benchmark rate component of the contractual coupon cash flows. The cumulative effect of applying this election was to be recognized as an adjustment to the basis adjustment of the hedged item recognized on the balance sheet with a corresponding adjustment to the opening balance of retained earnings. The amended presentation and disclosure guidance is required only prospectively.

The Bank adopted ASU 2017-12 effective January 1, 2019. At adoption, the Bank did not modify any of its then existing fair value or cash flow hedging relationships. Because the Bank had not had any ineffectiveness associated with its cash flow hedges, a cumulative effect adjustment relating to such hedges was not required. The impact of recording fair value hedge ineffectiveness in the same line where the earnings effect of the hedged item is presented reduced net interest income by $17,909,000 and increased net gains on derivatives and hedging activities by an equal and offsetting amount for the year ended December 31, 2019. The amended presentation and disclosure guidance was applied prospectively; prior period comparative financial information has not been reclassified to conform to the current period presentation. Upon adoption, the Bank did not elect to change the way in which it assesses the effectiveness of its hedging relationships. The Bank is continuing to assess other opportunities that are available under the new guidance including, but not limited to, the use of the benchmark rate component to measure the hedged item in some of its fair value hedging relationships entered into after December 31, 2019 and the use of the last-of-layer method for its mortgage loans held for portfolio.

Inclusion of the Secured Overnight Financing Rate Overnight Index Swap Rate as a Benchmark Interest Rate. On October 25, 2018, the FASB issued ASU 2018-16, *"Inclusion of the Secured Overnight Financing Rate (SOFR) Overnight Index Swap (OIS) Rate as a Benchmark Interest Rate for Hedge Accounting Purposes"* ("ASU 2018-16"). ASU 2018-16 adds the OIS rate based on SOFR (a swap rate based on the underlying overnight SOFR rate) as an eligible benchmark interest rate for purposes of applying hedge accounting. SOFR is a volume-weighted median interest rate that is calculated daily based on overnight transactions from the prior day's trading activity in specified segments of the U.S. Treasury repo market. SOFR was selected by the Alternative Reference Rates Committee as its preferred alternative reference rate to LIBOR.

For entities that had not already adopted ASU 2017-12, the guidance in ASU 2018-16 was required to be adopted concurrently with the adoption of ASU 2017-12. The guidance is to be applied prospectively to qualifying new or redesignated hedging relationships entered into on and after the date of adoption. The Bank adopted ASU 2018-16 effective January 1, 2019. The adoption of this guidance did not have any impact on the Bank's results of operations or financial condition.

Guidance Adopted in 2020

Credit Losses on Financial Instruments. On June 16, 2016, the FASB issued ASU 2016-13, which amends the guidance for the accounting for credit losses on financial instruments by replacing the current incurred loss methodology with an expected credit loss methodology. Among other things, ASU 2016-13 requires:

• entities to present financial assets, or groups of financial assets, measured at amortized cost at the net amount expected to be collected, which is computed by deducting an allowance for credit losses from the amortized cost basis of the financial asset(s);

• the measurement of expected credit losses to be based upon relevant information about past events, including historical experience, current conditions, and reasonable and supportable forecasts that affect the collectability of the reported amount;

• the statement of income to reflect the measurement of credit losses for newly recognized financial assets, as well as the expected increases or decreases in expected credit losses that have taken place during the period;

• entities to determine the allowance for credit losses for purchased financial assets with a more-than-insignificant amount of credit deterioration since origination ("PCD assets") that are measured at amortized cost in a manner similar to other financial assets measured at amortized cost (the initial allowance for credit losses on PCD assets is added to the purchase price rather than being reported as a credit loss expense);

• credit losses relating to available-for-sale debt securities to be recorded through an allowance for credit losses, the amount of which is limited to the amount by which fair value is below amortized cost; and

• public business entities to further disaggregate the current disclosure of credit quality indicators in relation to the amortized cost of financing receivables by year of origination.

For public business entities that file with the Securities and Exchange Commission, the guidance in ASU 2016-13 is effective for fiscal years beginning after December 15, 2019 (January 1, 2020 for the Bank), and interim periods within those fiscal years. Early adoption was permitted for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. The guidance is to be applied on a modified retrospective basis through a cumulative-effect adjustment to retained earnings as of the beginning of the period in which the amendments are adopted. However, entities are required to use a prospective transition approach for debt securities for which an other-than-temporary impairment had been recognized before the date of adoption. The Bank adopted ASU 2016-13 effective January 1, 2020. In conjunction with the adoption of this guidance, the Bank recorded (on January 1, 2020) a cumulative effect adjustment to retained earnings of $2,191,000 and a corresponding increase in the allowance for credit losses on mortgage loans held for portfolio.

Fair Value Measurement Disclosures. On August 28, 2018, the FASB issued ASU 2018-13, *"Disclosure Framework - Changes to the Disclosure Requirements for Fair Value Measurement"* ("ASU 2018-13"), which modifies the disclosure requirements on fair value measurements in an effort to improve disclosure effectiveness. ASU 2018-13 removes or modifies certain existing disclosure requirements regarding fair value measurements, including a clarification that the measurement uncertainty disclosure is intended to communicate information about the uncertainty in measurement as of the reporting date. In addition to the limited removals and modifications, the guidance requires public business entities to disclose: (i) the changes in unrealized gains and losses for the period included in other comprehensive income for recurring Level 3 fair value measurements held at the end of the reporting period and (ii) the range and weighted average of significant unobservable inputs used to develop Level 3 fair value measurements (together, the "new disclosure requirements").

The amendments in ASU 2018-13 are effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019 (January 1, 2020 for the Bank). The new disclosure requirements and the narrative description of measurement uncertainty are to be applied prospectively for only the most recent interim or annual period presented in the initial fiscal year of adoption. All other amendments are to be applied retrospectively to all periods presented upon their effective date. Early adoption is permitted. In addition, an entity is permitted to early adopt any removed or modified disclosures and delay adoption of the additional disclosures until their effective date. The adoption of ASU 2018-13 on January 1, 2020 did not have any impact on the Bank's results of operations or financial condition.

Implementation Costs Associated with Cloud Computing Arrangements. On August 29, 2018, the FASB issued ASU 2018-15, *"Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract"* ("ASU 2018-15"), which clarifies the accounting for implementation costs associated with a hosting arrangement that is a service contract. ASU 2018-15 aligns the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software (and hosting arrangements that include an internal-use software license). ASU 2018-15 also addresses the term over which these capitalized implementation costs should be expensed. ASU 2018-15 does not affect the accounting for the service element of a hosting arrangement that is a service contract.

For public business entities, ASU 2018-15 is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019 (January 1, 2020 for the Bank). Early adoption is permitted, including adoption in any interim period. The guidance is to be applied either retrospectively or prospectively to all implementation costs incurred after the date of adoption. The adoption of this guidance on January 1, 2020 did not have a material impact on the Bank's results of operations or financial condition.

Guidance Not Yet Adopted

Defined Benefit Plan Disclosures. On August 28, 2018, the FASB issued ASU 2018-14, *"Disclosure Framework - Changes to the Disclosure Requirements for Defined Benefit Plans"* ("ASU 2018-14"), which modifies the disclosure requirements for defined benefit pension and other postretirement benefit plans in an effort to improve disclosure effectiveness. ASU 2018-14 removes specified disclosures that no longer are considered cost beneficial, clarifies the specific requirements of certain other disclosures, and requires new disclosures regarding (i) the weighted-average interest crediting rates for cash balance plans and other plans with promised interest crediting rates and (ii) an explanation of the reasons for significant gains and losses related to changes in the benefit obligation for the period.

For public business entities, ASU 2018-14 is effective for fiscal years ending after December 15, 2020. Early adoption is permitted. The guidance is to be applied on a retrospective basis to all periods presented. The adoption of ASU 2018-14 is not expected to significantly impact the Bank's disclosures and it will not have any impact on the Bank's results of operations or financial condition.

Reference Rate Reform. On March 12, 2020, the FASB issued ASU 2020-04, *"Facilitation of the Effects of Reference Rate Reform on Financial Reporting"* ("ASU 2020-04"), which provides optional guidance for a limited period of time to ease the potential burden in accounting for (or recognizing the effects of) reference rate reform on financial reporting. ASU 2020-04 provides optional expedients and exceptions for applying U.S. GAAP to transactions affected by reference rate reform if certain criteria are met. These transactions include: (i) contract modifications, (ii) hedging relationships, and (iii) sales or transfers of debt securities classified as held-to-maturity.

ASU 2020-04 is effective from March 12, 2020 through December 31, 2022. An entity may elect to adopt the amendments for contract modifications as of any date from the beginning of an interim period that includes or is subsequent to March 12, 2020, or prospectively from a date within an interim period that includes or is subsequent to March 12, 2020, up to the date that the financial statements are available to be issued. An entity may elect to apply the amendments in ASU 2020-04 to eligible hedging relationships existing as of the beginning of the interim period that includes March 12, 2020 and to new eligible hedging relationships entered into after the beginning of the interim period that includes March 12, 2020. The one-time election to sell, transfer, or both sell and transfer debt securities classified as held-to-maturity may be made at any time after March 12, 2020 but no later than December 31, 2022.

The Bank expects that it will elect to apply some of the expedients and exceptions provided in ASU 2020-04; however, the Bank is still evaluating the guidance and therefore the impact of the adoption of ASU 2020-04 on the Bank's financial condition and results of operations has not yet been determined.

Note 3—Trading Securities

Major Security Types. Trading securities as of December 31, 2019 and 2018 were as follows (in thousands):

	December 31, 2019	December 31, 2018
U.S. Treasury Notes	$ 4,532,126	$ 1,818,178
U.S. Treasury Bills	928,010	—
Total	$ 5,460,136	$ 1,818,178

Net gains (losses) on trading securities during the years ended December 31, 2019, 2018 and 2017 included changes in net unrealized holding gain (loss) of $11,528,000, $(1,160,000) and $1,822,000 for securities that were held on December 31, 2019, 2018 and 2017, respectively.

Note 4—Available-for-Sale Securities

Major Security Types. Available-for-sale securities as of December 31, 2019 were as follows (in thousands):

	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Debentures				
U.S. government-guaranteed obligations	$ 447,072	$ 6,124	$ —	$ 453,196
GSE obligations	5,501,456	84,911	1,986	5,584,381
Other	45,217	342	—	45,559
	5,993,745	91,377	1,986	6,083,136
GSE commercial MBS	10,627,922	79,875	24,433	10,683,364
Total	$ 16,621,667	$ 171,252	$ 26,419	$ 16,766,500

Available-for-sale securities as of December 31, 2018 were as follows (in thousands):

	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Debentures				
U.S. government-guaranteed obligations	$ 447,365	$ 5,652	$ 21	$ 452,996
GSE obligations	5,610,796	77,868	1,831	5,686,833
Other	170,367	461	—	170,828
	6,228,528	83,981	1,852	6,310,657
GSE commercial MBS	9,477,647	73,052	36,201	9,514,498
Total	$ 15,706,175	$ 157,033	$ 38,053	$ 15,825,155

Included in the table above are GSE commercial MBS ("CMBS") that were purchased in 2018 but which did not settle until 2019. The aggregate amount due of $125,927,000 as of December 31, 2018 is included in other liabilities on the statement of condition at that date.

Other debentures are comprised of securities issued by the Private Export Funding Corporation ("PEFCO"). These debentures are fully secured by U.S. government-guaranteed obligations and the payment of interest on the debentures is guaranteed by an agency of the U.S. government. The amortized cost of the Bank's available-for-sale securities includes hedging adjustments.

The following table summarizes (dollars in thousands) the available-for-sale securities with unrealized losses as of December 31, 2019. The unrealized losses are aggregated by major security type and length of time that individual securities have been in a continuous loss position.

	Less than 12 Months			12 Months or More			Total		
	Number of Positions	Estimated Fair Value	Gross Unrealized Losses	Number of Positions	Estimated Fair Value	Gross Unrealized Losses	Number of Positions	Estimated Fair Value	Gross Unrealized Losses
GSE debentures	—	$ —	$ —	3	$ 128,794	$ 1,986	3	$ 128,794	$ 1,986
GSE commercial MBS	34	1,031,193	3,331	67	2,222,955	21,102	101	3,254,148	24,433
Total	34	$ 1,031,193	$ 3,331	70	$ 2,351,749	$ 23,088	104	$ 3,382,942	$ 26,419

Table of Contents

The following table summarizes (dollars in thousands) the available-for-sale securities with unrealized losses as of December 31, 2018. The unrealized losses are aggregated by major security type and length of time that individual securities have been in a continuous loss position.

	Less than 12 Months			12 Months or More			Total		
	Number of Positions	Estimated Fair Value	Gross Unrealized Losses	Number of Positions	Estimated Fair Value	Gross Unrealized Losses	Number of Positions	Estimated Fair Value	Gross Unrealized Losses
Debentures									
U.S. government-guaranteed obligations	2	$ 59,050	$ 21	—	$ —	$ —	2	$ 59,050	$ 21
GSE debentures	4	224,072	1,831	—	—	—	4	224,072	1,831
GSE commercial MBS	105	3,523,623	35,435	7	38,844	766	112	3,562,467	36,201
Total	111	$ 3,806,745	$ 37,287	7	$ 38,844	$ 766	118	$ 3,845,589	$ 38,053

At December 31, 2019, the gross unrealized losses on the Bank's available-for-sale securities were $26,419,000. All of the Bank's available-for-sale securities are either guaranteed by the U.S. government, issued by GSEs, or fully secured by collateral that is guaranteed by the U.S. government. As of December 31, 2019, the U.S. government and the issuers of the Bank's holdings of GSE debentures and GSE CMBS were rated triple-A by Moody's Investors Service ("Moody's") and AA+ by S&P Global Ratings ("S&P"). The Bank's holdings of PEFCO debentures were rated triple-A by Moody's and were not rated by S&P at that date. Based upon the Bank's assessment of the creditworthiness of the issuers of the GSE debentures that were in an unrealized loss position at December 31, 2019 and the credit ratings assigned by Moody's and S&P, the Bank expects that these debentures would not be settled at an amount less than the Bank's amortized cost bases in these investments. In addition, based upon the Bank's assessment of the strength of the GSEs' guarantees of the Bank's holdings of GSE CMBS and the credit ratings assigned by Moody's and S&P, the Bank expects that its holdings of GSE CMBS that were in an unrealized loss position at December 31, 2019 would not be settled at an amount less than the Bank's amortized cost bases in these investments. Because the current market value deficits associated with the Bank's available-for-sale securities are not attributable to credit quality, and because the Bank does not intend to sell the investments and it is not more likely than not that the Bank will be required to sell the investments before recovery of their amortized cost bases, the Bank did not consider any of these investments to be other-than-temporarily impaired at December 31, 2019.

Redemption Terms. The amortized cost and estimated fair value of available-for-sale securities by contractual maturity at December 31, 2019 and 2018 are presented below (in thousands).

	December 31, 2019		December 31, 2018	
Maturity	Amortized Cost	Estimated Fair Value	Amortized Cost	Estimated Fair Value
Debentures				
Due in one year or less	$ 298,084	$ 299,005	$ 445,731	$ 446,227
Due after one year through five years	3,465,898	3,504,780	2,398,495	2,420,763
Due after five years through ten years	2,183,310	2,231,183	3,256,389	3,312,322
Due after ten years	46,453	48,168	127,913	131,345
	5,993,745	6,083,136	6,228,528	6,310,657
GSE commercial MBS	10,627,922	10,683,364	9,477,647	9,514,498
Total	$ 16,621,667	$ 16,766,500	$ 15,706,175	$ 15,825,155

Interest Rate Payment Terms. At December 31, 2019 and 2018, all of the Bank's available-for-sale securities were fixed rate securities that were swapped to a variable rate.

Sales of Securities. During the year ended December 31, 2019, the Bank sold available-for-sale securities with an amortized cost (determined by the specific identification method) of $510,342,000. Proceeds from the sales totaled $511,194,000, resulting in realized gains of $852,000. There were no sales of available-for-sale securities during the year ended December 31, 2018. During the year ended December 31, 2017, the Bank sold available-for-sale securities with an amortized cost (determined by the specific identification method) of $374,069,000. Proceeds from the sales totaled $375,468,000, resulting in net realized gains of $1,399,000.

Note 5—Held-to-Maturity Securities

Major Security Types. Held-to-maturity securities as of December 31, 2019 were as follows (in thousands):

	Amortized Cost	OTTI Recorded in AOCI	Carrying Value	Gross Unrecognized Holding Gains	Gross Unrecognized Holding Losses	Estimated Fair Value
Debentures						
U.S. government-guaranteed obligations	$ 5,862	$ —	$ 5,862	$ 12	$ —	$ 5,874
State housing agency obligations	109,478	—	109,478	—	908	108,570
	115,340	—	115,340	12	908	114,444
Mortgage-backed securities						
GSE residential MBS	1,036,585	—	1,036,585	2,581	3,435	1,035,731
Non-agency residential MBS	62,885	8,640	54,245	11,641	481	65,405
	1,099,470	8,640	1,090,830	14,222	3,916	1,101,136
Total	$ 1,214,810	$ 8,640	$ 1,206,170	$ 14,234	$ 4,824	$ 1,215,580

Held-to-maturity securities as of December 31, 2018 were as follows (in thousands):

	Amortized Cost	OTTI Recorded in AOCI	Carrying Value	Gross Unrecognized Holding Gains	Gross Unrecognized Holding Losses	Estimated Fair Value
Debentures						
U.S. government-guaranteed obligations	$ 7,604	$ —	$ 7,604	$ 11	$ —	$ 7,615
State housing agency obligations	135,000	—	135,000	10	1,043	133,967
	142,604	—	142,604	21	1,043	141,582
Mortgage-backed securities						
U.S. government-guaranteed residential MBS	475	—	475	1	—	476
GSE residential MBS	1,253,573	—	1,253,573	6,022	1,117	1,258,478
Non-agency residential MBS	76,294	10,667	65,627	13,222	694	78,155
	1,330,342	10,667	1,319,675	19,245	1,811	1,337,109
Total	$ 1,472,946	$ 10,667	$ 1,462,279	$ 19,266	$ 2,854	$ 1,478,691

The following table summarizes (dollars in thousands) the held-to-maturity securities with unrealized losses as of December 31, 2019. The unrealized losses include other-than-temporary impairments recorded in AOCI and gross unrecognized holding losses (or, in the case of the Bank's holdings of non-agency residential MBS, gross unrecognized holding gains) and are aggregated by major security type and length of time that individual securities have been in a continuous loss position.

	Less than 12 Months			12 Months or More			Total		
	Number of Positions	Estimated Fair Value	Gross Unrealized Losses	Number of Positions	Estimated Fair Value	Gross Unrealized Losses	Number of Positions	Estimated Fair Value	Gross Unrealized Losses
Debentures									
State housing agency obligations	1	$ 74,033	$ 446	1	$ 34,538	$ 462	2	$ 108,571	$ 908
Mortgage-backed securities									
GSE residential MBS	41	412,701	975	32	414,818	2,460	73	827,519	3,435
Non-agency residential MBS	—	—	—	13	34,563	1,329	13	34,563	1,329
Total	42	$ 486,734	$ 1,421	46	$ 483,919	$ 4,251	88	$ 970,653	$ 5,672

The following table summarizes (dollars in thousands) the held-to-maturity securities with unrealized losses as of December 31, 2018. The unrealized losses include other-than-temporary impairments recorded in AOCI and gross unrecognized holding losses (or, in the case of the Bank's holdings of non-agency residential MBS, gross unrecognized holding gains) and are aggregated by major security type and length of time that individual securities have been in a continuous loss position.

	Less than 12 Months			12 Months or More			Total		
	Number of Positions	Estimated Fair Value	Gross Unrealized Losses	Number of Positions	Estimated Fair Value	Gross Unrealized Losses	Number of Positions	Estimated Fair Value	Gross Unrealized Losses
Debentures									
State housing agency obligations	—	$ —	$ —	1	$ 33,957	$ 1,043	1	$ 33,957	$ 1,043
Mortgage-backed securities									
GSE residential MBS	32	467,427	1,000	4	31,220	117	36	498,647	1,117
Non-agency residential MBS	3	12,346	295	10	29,070	1,487	13	41,416	1,782
Total	35	$ 479,773	$ 1,295	15	$ 94,247	$ 2,647	50	$ 574,020	$ 3,942

At December 31, 2019, the gross unrealized losses on the Bank's held-to-maturity securities were $5,672,000, of which $1,329,000 were attributable to its holdings of non-agency (i.e., private label) residential MBS, $3,435,000 were attributable to securities that are issued and guaranteed by GSEs and $908,000 were attributable to securities issued by a state housing agency.

As of December 31, 2019, the U.S. government and the issuers of the Bank's holdings of GSE residential MBS ("RMBS") were rated triple-A by Moody's and AA+ by S&P. Based upon the Bank's assessment of the strength of the GSEs' guarantees and the credit ratings assigned by Moody's and S&P, the Bank expects that its holdings of GSE RMBS that were in an unrealized loss position at December 31, 2019 would not be settled at an amount less than the Bank's amortized cost bases in these investments. In addition, based upon the Bank's assessment of the creditworthiness of the state housing agency and the triple-A credit ratings assigned by Moody's and S&P, the Bank expects that the state housing agency debentures that were in an unrealized loss position at December 31, 2019 would not be settled at an amount less than the Bank's amortized cost basis in these investments. Because the current market value deficits associated with these securities are not attributable to credit quality, and because the Bank does not intend to sell the investments and it is not more likely than not that the Bank will be required to sell the investments before recovery of their amortized cost bases, the Bank did not consider any of these investments to be other-than-temporarily impaired at December 31, 2019.

The deterioration in the U.S. housing markets that occurred primarily during the period from 2007 through 2011, as reflected during that period by declines in the values of residential real estate and higher levels of delinquencies, defaults and losses on residential mortgages, including the mortgages underlying the Bank's non-agency RMBS, generally increased the risk that the Bank may not ultimately recover the entire cost bases of some of its non-agency RMBS. However, based upon its analysis of the securities in this portfolio, the Bank believes that the unrealized losses as of December 31, 2019 were principally the result of liquidity risk related discounts in the non-agency RMBS market and do not accurately reflect the currently likely future credit performance of the securities.

Because the ultimate receipt of contractual payments on the Bank's non-agency RMBS will depend upon the credit and prepayment performance of the underlying loans and the credit enhancements for the senior securities owned by the Bank, the Bank monitors these investments in an effort to determine whether the credit enhancement associated with each security is sufficient to protect against potential losses of principal and interest on the underlying mortgage loans. The credit enhancement for each of the Bank's non-agency RMBS is provided by a senior/subordinate structure, and none of the securities owned by the Bank are insured by third-party bond insurers. More specifically, each of the Bank's non-agency RMBS represents a single security class within a securitization that has multiple classes of securities. Each security class has a distinct claim on the cash flows from the underlying mortgage loans, with the subordinate securities having a junior claim relative to the more senior securities. The Bank's non-agency RMBS have a senior claim on the cash flows from the underlying mortgage loans.

To assess whether the entire amortized cost bases of its 22 non-agency RMBS holdings are likely to be recovered, the Bank performed a cash flow analysis for each security as of the end of each calendar quarter in 2019 using two third-party models. The first model considers borrower characteristics and the particular attributes of the loans underlying the Bank's securities, in conjunction with assumptions about future changes in home prices and interest rates, to project prepayments, defaults and loss severities. A significant input to the first model is the forecast of future housing price changes for the relevant states and core based statistical areas ("CBSAs"), which are based upon an assessment of the individual housing markets. (The term "CBSA" refers collectively to metropolitan and micropolitan statistical areas as defined by the U.S. Office of Management and Budget; as currently defined, a CBSA must contain at least one urban area of 10,000 or more people.) The Bank's housing price forecast as of December 31, 2019 assumed changes in home prices ranging from declines of 4 percent to increases of 8 percent over the 12-month period beginning October 1, 2019. For the vast majority of markets, the changes were projected to range from increases of 2 percent to 6 percent. Thereafter, home price changes for each market were projected to return (at varying rates and over varying transition periods based on historical housing price patterns) to their long-term historical equilibrium levels. Following these transition periods, the constant long-term annual rates of appreciation for the vast majority of markets were projected to range between 2 percent and 5 percent.

The month-by-month projections of future loan performance derived from the first model, which reflect projected prepayments, defaults and loss severities, were then input into a second model that allocated the projected loan level cash flows and losses to the various security classes in the securitization structure in accordance with its prescribed cash flow and loss allocation rules. In a securitization in which the credit enhancement for the senior securities is derived from the presence of subordinate securities, losses are generally allocated first to the subordinate securities until their principal balance is reduced to zero.

Based on the results of its cash flow analyses, the Bank determined it is likely that it will fully recover the remaining amortized cost bases of all of its non-agency RMBS. Because the Bank does not intend to sell the investments and it is not more likely than not that the Bank will be required to sell the investments before recovery of their remaining amortized cost bases, none of the Bank's non-agency RMBS were deemed to be other-than-temporarily impaired in 2019.

During the year ended December 31, 2016, one of the Bank's non-agency RMBS was determined to be other-than-temporarily impaired. In addition, 14 of the Bank's holdings of non-agency RMBS were determined to be other-than-temporarily impaired in periods prior to 2013.

The following table presents a rollforward for the years ended December 31, 2019, 2018 and 2017 of the amount related to credit losses on the Bank’s non-agency RMBS holdings for which a portion of an other-than-temporary impairment was recognized in other comprehensive income (loss) (in thousands).

	Year Ended December 31,		
	2019	2018	2017
Balance of credit losses, beginning of year	$ 8,551	$ 9,443	$ 10,515
Increases in cash flows expected to be collected (accreted as interest income over the remaining lives of the applicable securities)	(714)	(892)	(1,072)
Balance of credit losses, end of year	7,837	8,551	9,443
Cumulative principal shortfalls on securities held at end of year	(2,085)	(2,084)	(2,067)
Cumulative amortization of the time value of credit losses at end of year	1,013	802	590
Credit losses included in the amortized cost bases of other-than-temporarily impaired securities at end of year	$ 6,765	$ 7,269	$ 7,966

Redemption Terms. The amortized cost, carrying value and estimated fair value of held-to-maturity securities by contractual maturity at December 31, 2019 and 2018 are presented below (in thousands). The expected maturities of some debentures could differ from the contractual maturities presented because issuers may have the right to call such debentures prior to their final stated maturities.

	December 31, 2019			December 31, 2018		
Maturity	Amortized Cost	Carrying Value	Estimated Fair Value	Amortized Cost	Carrying Value	Estimated Fair Value
Debentures						
Due after one year through five years	$ 5,862	$ 5,862	$ 5,874	$ 3,497	$ 3,497	$ 3,499
Due after five years through ten years	—	—	—	4,107	4,107	4,116
Due after ten years	109,478	109,478	108,570	135,000	135,000	133,967
	115,340	115,340	114,444	142,604	142,604	141,582
Mortgage-backed securities	1,099,470	1,090,830	1,101,136	1,330,342	1,319,675	1,337,109
Total	$ 1,214,810	$ 1,206,170	$ 1,215,580	$ 1,472,946	$ 1,462,279	$ 1,478,691

The amortized cost of the Bank’s mortgage-backed securities classified as held-to-maturity includes net purchase discounts of $1,952,000 and $2,457,000 at December 31, 2019 and 2018, respectively.

Interest Rate Payment Terms. The following table provides interest rate payment terms for investment securities classified as held-to-maturity at December 31, 2019 and 2018 (in thousands):

	2019	2018
Amortized cost of variable-rate held-to-maturity securities other than MBS	$ 115,340	$ 142,604
Amortized cost of held-to-maturity MBS		
Fixed-rate pass-through securities	36	57
Collateralized mortgage obligations		
Fixed-rate	57	135
Variable-rate	1,099,377	1,330,150
	1,099,470	1,330,342
Total	$ 1,214,810	$ 1,472,946

All of the Bank's variable-rate collateralized mortgage obligations classified as held-to-maturity securities have coupon rates that are subject to interest rate caps, none of which were reached during the years ended December 31, 2019 or 2018.

Sales of Securities. The Bank did not sell any held-to-maturity securities during the year ended December 31, 2019. During the year ended December 31, 2018, the Bank sold held-to-maturity securities with an amortized cost (determined by the specific identification method) of $97,596,000. Proceeds from the sales totaled $99,267,000, resulting in realized gains of $1,671,000. During the year ended December 31, 2017 the Bank sold held-to-maturity securities with an amortized cost (determined by the specific identification method) of $158,806,000. Proceeds from the sales totaled $162,789,000, resulting in realized gains of $3,983,000. For each of these securities, the Bank had previously collected at least 85 percent of the principal outstanding at the time of acquisition. As such, the sales were considered maturities for purposes of security classification.

Note 6—Advances

Redemption Terms. At December 31, 2019 and 2018, the Bank had advances outstanding at interest rates ranging from 0.48 percent to 8.27 percent and from 0.88 percent to 8.27 percent, respectively, as summarized below (dollars in thousands).

	2019		2018	
Contractual Maturity	**Amount**	**Weighted Average Interest Rate**	**Amount**	**Weighted Average Interest Rate**
Overdrawn demand deposit accounts	$ 613	1.45%	$ —	—%
Due in one year or less	16,683,401	1.72	21,718,709	2.49
Due after one year through two years	1,491,736	2.35	2,986,350	2.48
Due after two years through three years	1,125,342	2.38	1,272,214	2.42
Due after three years through four years	742,698	2.67	951,787	2.49
Due after four years through five years	1,435,402	2.11	632,862	2.84
Due after five years	15,464,698	1.69	13,230,406	2.42
Total par value	36,943,890	1.79%	40,792,328	2.47%
Premiums	—		12	
Deferred net prepayment fees	(6,657)		(8,683)	
Commitment fees	(99)		(108)	
Hedging adjustments	180,321		10,264	
Total	$ 37,117,455		$ 40,793,813	

The Bank offers advances to members that may be prepaid on specified dates without the member incurring prepayment or termination fees (prepayable and callable advances). The prepayment of other advances requires the payment of a fee to the Bank (prepayment fee) if necessary to make the Bank financially indifferent to the prepayment of the advance. At December 31, 2019 and 2018, the Bank had aggregate prepayable and callable advances totaling $10,428,894,000 and $10,446,628,000, respectively.

The following table summarizes advances outstanding at December 31, 2019 and 2018, by the earlier of contractual maturity or next call date, or the first date on which prepayable advances can be repaid without a prepayment fee (in thousands):

Contractual Maturity or Next Call Date	2019	2018
Overdrawn demand deposit accounts	$ 613	$ —
Due in one year or less	26,716,128	32,024,714
Due after one year through two years	1,408,317	2,434,821
Due after two years through three years	1,018,388	1,178,054
Due after three years through four years	691,905	848,047
Due after four years through five years	1,030,243	565,334
Due after five years	6,078,296	3,741,358
Total par value	$ 36,943,890	$ 40,792,328

The Bank also offers putable advances. With a putable advance, the Bank purchases a put option from the member that allows the Bank to terminate the fixed-rate advance on specified dates and offer, subject to certain conditions, replacement funding at prevailing market rates. At December 31, 2019 and 2018, the Bank had putable advances outstanding totaling $6,796,500,000 and $3,094,300,000, respectively.

The following table summarizes advances at December 31, 2019 and 2018, by the earlier of contractual maturity or next possible put date (in thousands):

Contractual Maturity or Next Put Date	2019	2018
Overdrawn demand deposit accounts	$ 613	$ —
Due in one year or less	21,999,901	24,612,509
Due after one year through two years	1,851,736	3,136,850
Due after two years through three years	1,195,342	1,312,214
Due after three years through four years	791,498	951,787
Due after four years through five years	1,191,402	611,662
Due after five years	9,913,398	10,167,306
Total par value	$ 36,943,890	$ 40,792,328

Credit Concentrations. Due to the composition of its shareholders, the Bank’s potential credit risk from advances is concentrated in commercial banks, insurance companies, savings institutions and credit unions. At December 31, 2019, the Bank had advances of $3,800,000,000 outstanding to its largest borrower, Comerica Bank, which represented approximately 10.3 percent of advances outstanding at that date. Interest income from advances to Comerica Bank totaled $96,367,000 for the year ended December 31, 2019. No other borrowers represented more than 10 percent of the Bank's outstanding advances at December 31, 2019 or more than 10 percent of interest income on advances for the year ended December 31, 2019. No borrower represented more than 10 percent of advances outstanding at December 31, 2018 or 2017 or more than 10 percent of interest income on advances for the years ended December 31, 2018 or 2017.

Interest Rate Payment Terms. The following table provides interest rate payment terms for advances outstanding at December 31, 2019 and 2018 (in thousands):

	2019	2018
Fixed-rate		
Due in one year or less	$ 16,054,501	$ 21,558,023
Due after one year	9,911,487	8,503,772
Total fixed-rate	25,965,988	30,061,795
Variable-rate		
Due in one year or less	629,513	160,686
Due after one year	10,348,389	10,569,847
Total variable-rate	10,977,902	10,730,533
Total par value	$ 36,943,890	$ 40,792,328

At December 31, 2019 and 2018, 39 percent and 24 percent, respectively, of the Bank's fixed-rate advances were swapped to a variable rate.

Prepayment Fees. When a member/borrower prepays an advance, the Bank could suffer lower future income if the principal portion of the prepaid advance is reinvested in lower-yielding assets. To protect against this risk, the Bank generally charges a prepayment fee that makes it financially indifferent to a borrower's decision to prepay an advance. As discussed in Note 1, the Bank records prepayment fees received from members/borrowers on prepaid advances net of any associated hedging adjustments on those advances. Gross advance prepayment fees received from members/borrowers during the years ended December 31, 2019, 2018 and 2017 were $2,130,000, $1,807,000 and $2,158,000, respectively. None of the gross advance prepayment fees received during the years ended December 31, 2019 and 2018 were deferred. During the year ended December 31, 2017, the Bank deferred $884,000 of the gross advance prepayment fees received during the year.

The Bank also offers advances that include a symmetrical prepayment feature which allows a member to prepay an advance at the lower of par value or fair value plus a make-whole amount payable to the Bank. During the years ended December 31, 2019 and 2017, symmetrical prepayment advances with aggregate par values of $5,000,000 and $17,000,000, respectively, were prepaid. The differences by which the par values of these advances exceeded their fair values, less the make-whole amounts, totaled $68,000 and $194,000, respectively, and were recorded in prepayment fees on advances, net of the associated hedging adjustments on the advances. There were no prepayments of symmetrical prepayment advances during the year ended December 31, 2018.

Note 7—Mortgage Loans Held for Portfolio

Mortgage loans held for portfolio represent held-for-investment loans acquired through the MPF program (see Note 1). The following table presents information as of December 31, 2019 and 2018 for mortgage loans held for portfolio (in thousands):

	2019	2018
Fixed-rate medium-term* single-family mortgages	$ 33,954	$ 10,885
Fixed-rate long-term single-family mortgages	3,960,393	2,127,142
Premiums	78,643	45,259
Discounts	(1,821)	(1,757)
Deferred net derivative gains associated with mortgage delivery commitments	5,444	4,467
Total mortgage loans held for portfolio	4,076,613	2,185,996
Less: allowance for credit losses	(1,149)	(493)
Total mortgage loans held for portfolio, net of allowance for credit losses	$ 4,075,464	$ 2,185,503

*Medium-term is defined as an original term of 15 years or less.

The unpaid principal balance of mortgage loans held for portfolio at December 31, 2019 and 2018 was comprised of government-guaranteed/insured loans totaling $13,377,000 and $15,880,000, respectively, and conventional loans totaling $3,980,970,000 and $2,122,147,000, respectively.

PFIs are paid a credit enhancement fee ("CE fee") as an incentive to minimize credit losses, to share in the risk of loss on MPF loans and to pay for supplemental mortgage insurance, rather than paying a guaranty fee to other secondary market purchasers. CE fees are paid monthly and are determined based on the remaining unpaid principal balance of the MPF loans. The required credit enhancement obligation varies depending upon the MPF product type. CE fees, payable to a PFI as compensation for assuming credit risk, are recorded as a reduction to mortgage loan interest income when paid by the Bank. During the years ended December 31, 2019, 2018 and 2017, mortgage loan interest income was reduced by CE fees totaling $2,134,000, $1,306,000 and $345,000, respectively. The Bank also pays performance-based CE fees that are based on the actual performance of the pool of MPF loans under each individual master commitment. To the extent that losses in the current month exceed accrued performance-based CE fees, the remaining losses may be recovered from future performance-based CE fees payable to the PFI. During the years ended December 31, 2019, 2018 and 2017, performance-based CE fees that were forgone and not paid to the Bank's PFIs totaled $6,000, $8,000 and $10,000, respectively.

Note 8—Allowance for Credit Losses

For its financing receivables and other off-balance sheet credit exposures, the Bank has established an allowance methodology for each of its portfolio segments: advances and other extensions of credit to members/borrowers, collectively referred to as "extensions of credit to members"; government-guaranteed/insured mortgage loans held for portfolio; and conventional mortgage loans held for portfolio.

Advances and Other Extensions of Credit to Members. In accordance with federal statutes, including the FHLB Act, the Bank lends to financial institutions within its five-state district that are involved in housing finance. The FHLB Act requires the Bank to obtain and maintain sufficient collateral for advances and other extensions of credit to protect against losses. The Bank makes advances and otherwise extends credit only against eligible collateral, as defined by regulation. Eligible collateral includes whole first mortgages on improved residential real property (not more than 90 days delinquent), or securities representing a whole interest in such mortgages; securities issued, insured, or guaranteed by the U.S. government or any of its agencies, including mortgage-backed and other debt securities issued or guaranteed by the Federal National Mortgage Association ("Fannie Mae"), the Federal Home Loan Mortgage Corporation ("Freddie Mac"), or the Government National Mortgage Association ("Ginnie Mae"); term deposits in the Bank; and other real estate-related collateral acceptable to the Bank, provided that such collateral has a readily ascertainable value and the Bank can perfect a security interest in such property. In the case of Community Financial Institutions (which for 2019 included all FDIC-insured institutions with average total assets as of December 31, 2018, 2017 and 2016 of less than $1.199 billion), the Bank may also accept as eligible collateral secured small business, small farm and small agribusiness loans, securities representing a whole interest in such loans, and secured loans for community development activities. To ensure the value of collateral pledged to the Bank is sufficient to secure its advances and other extensions of credit, the Bank applies various haircuts, or discounts, to the collateral to determine the value against which borrowers may borrow. As additional security, the Bank has a statutory lien on each borrower's capital stock in the Bank.

Each member/borrower of the Bank executes a security agreement pursuant to which such member/borrower grants a security interest in favor of the Bank in certain assets of such member/borrower. The agreements under which a member grants a security interest fall into one of two general structures. In the first structure, the member grants a security interest in all of its assets that are included in the eligible collateral categories, as described in the preceding paragraph, which the Bank refers to as a "blanket lien." A member may request that its blanket lien be modified, such that the member grants in favor of the Bank a security interest limited to certain of the eligible collateral categories (i.e., whole first residential mortgages, securities, term deposits in the Bank and other real estate-related collateral). In the second structure, the member grants a security interest in specifically identified assets rather than in the broad categories of eligible collateral covered by the blanket lien and the Bank identifies such members as being on "specific collateral only status."

The basis upon which the Bank will lend to a member that has granted the Bank a blanket lien depends on numerous factors, including, among others, that member's financial condition and general creditworthiness. Generally, and subject to certain limitations, a member that has granted the Bank a blanket lien may borrow up to a specified percentage of the value of eligible collateral categories, as determined from such member's financial reports filed with its federal regulator, without specifically identifying each item of collateral or delivering the collateral to the Bank. Under certain circumstances, including, among others, a deterioration of a member's financial condition or general creditworthiness, the amount a member may borrow is determined on the basis of only that portion of the collateral subject to the blanket lien that such member delivers to the Bank. Under these circumstances, the Bank places the member on "custody status." In addition, members on blanket lien status may choose to deliver some or all of the collateral to the Bank.

The members/borrowers that are granted specific collateral only status by the Bank are typically either insurance companies or members/borrowers with an investment grade credit rating from at least two nationally recognized statistical rating organizations ("NRSROs") that have requested this type of structure. Insurance companies are permitted to borrow only against the eligible collateral that is delivered to the Bank or a third-party custodian approved by the Bank, and insurance companies generally grant a security interest only in collateral they have delivered. Members/borrowers with an investment grade credit rating from at least two NRSROs may grant a security interest in, and would only be permitted to borrow against, delivered eligible securities and specifically identified, eligible first-lien mortgage loans. Such loans must be delivered to the Bank or a third-party custodian approved by the Bank, or the Bank and such member/borrower must otherwise take actions that ensure the priority of the Bank's security interest in such loans. Investment grade rated members/borrowers that choose this option are subject to fewer provisions that allow the Bank to demand additional collateral or exercise other remedies based on the Bank's discretion; however, the collateral they pledge is generally subject to larger haircuts (depending on the credit rating of the member/borrower from time to time) than are applied to similar types of collateral pledged by members under a blanket lien arrangement.

The Bank perfects its security interests in borrowers' collateral in a number of ways. The Bank usually perfects its security interest in collateral by filing a Uniform Commercial Code financing statement against the borrower. In the case of certain borrowers, the Bank perfects its security interest by taking possession or control of the collateral, which may be in addition to the filing of a financing statement. In these cases, the Bank also generally takes assignments of most of the mortgages and deeds of trust that are designated as collateral. Instead of requiring delivery of the collateral to the Bank, the Bank may allow certain borrowers to deliver specific collateral to a third-party custodian approved by the Bank or otherwise take actions that ensure the priority of the Bank’s security interest in such collateral.

With certain exceptions set forth below, Section 10(e) of the FHLB Act affords any security interest granted to the Bank by any member/borrower of the Bank, or any affiliate of any such member/borrower, priority over the claims and rights of any party, including any receiver, conservator, trustee, or similar party having rights of a lien creditor. However, the Bank’s security interest is not entitled to priority over the claims and rights of a party that (i) would be entitled to priority under otherwise applicable law and (ii) is an actual bona fide purchaser for value or is a secured party who has a perfected security interest in such collateral in accordance with applicable law (e.g., a prior perfected security interest under the Uniform Commercial Code or other applicable law). For example, in a case in which the Bank has perfected its security interest in collateral by filing a Uniform Commercial Code financing statement against the borrower, another secured party’s security interest in that same collateral that was perfected by possession and without prior knowledge of the Bank's lien may be entitled to priority over the Bank’s security interest that was perfected by filing a Uniform Commercial Code financing statement.

From time to time, the Bank agrees to subordinate its security interest in certain assets or categories of assets granted by a member/borrower of the Bank to the security interest of another creditor (typically, a Federal Reserve Bank or another FHLBank). If the Bank agrees to subordinate its security interest in certain assets or categories of assets granted by a member/borrower of the Bank to the security interest of another creditor, the Bank will not extend credit against those assets or categories of assets.

On at least a quarterly basis, the Bank evaluates all outstanding extensions of credit to members/borrowers for potential credit losses. These evaluations include a review of: (1) the amount, type and performance of collateral available to secure the outstanding obligations; (2) metrics that may be indicative of changes in the financial condition and general creditworthiness of the member/borrower; and (3) the payment status of the obligations. Any outstanding extensions of credit that exhibit a potential credit weakness that could jeopardize the full collection of the outstanding obligations would be classified as substandard, doubtful or loss. The Bank did not have any advances or other extensions of credit to members/borrowers that were classified as substandard, doubtful or loss at December 31, 2019 or 2018.

The Bank considers the amount, type and performance of collateral to be the primary indicator of credit quality with respect to its extensions of credit to members/borrowers. At December 31, 2019 and 2018, the Bank had rights to collateral on a borrower-by-borrower basis with an estimated value in excess of each borrower’s outstanding extensions of credit.

The Bank continues to evaluate and, as necessary, modify its credit extension and collateral policies based on market conditions. At December 31, 2019 and 2018, the Bank did not have any advances that were past due, on nonaccrual status, or considered impaired. There have been no troubled debt restructurings related to advances.

The Bank has never experienced a credit loss on an advance or any other extension of credit to a member/borrower and, based on its credit extension and collateral policies, management currently does not anticipate any credit losses on its extensions of credit to members/borrowers. Accordingly, the Bank has not provided any allowance for credit losses on advances, nor has it recorded any liabilities to reflect an allowance for credit losses related to its off-balance sheet credit exposures.

Mortgage Loans — Government-guaranteed/Insured. The Bank’s government-guaranteed or government-insured fixed-rate mortgage loans are guaranteed or insured by the FHA or the DVA. Any losses from these loans are expected to be recovered from those entities. Any losses from these loans that are not recovered from those entities are absorbed by the servicers. Therefore, the Bank has not established an allowance for credit losses on government-guaranteed or government-insured mortgage loans.

Mortgage Loans — Conventional Mortgage Loans. The allowance for losses on conventional mortgage loans was determined by an analysis that includes consideration of various data such as past performance, current performance, loan portfolio characteristics, collateral-related characteristics and prevailing economic conditions. The allowance for losses on conventional mortgage loans also factors in the credit enhancement under the MPF program. Any incurred losses that were expected to be recovered from the credit enhancements were not reserved as part of the Bank’s allowance for loan losses.

The Bank considers the key credit quality indicator for conventional mortgage loans to be the payment status of each loan. The table below summarizes the recorded investment (including accrued interest) by payment status for mortgage loans at December 31, 2019 and 2018 (dollars in thousands).

	December 31, 2019			December 31, 2018		
	Conventional Loans	Government-Guaranteed/ Insured Loans	Total	Conventional Loans	Government-Guaranteed/ Insured Loans	Total
Mortgage loans:						
30-59 days delinquent	$ 37,632	$ 464	$ 38,096	$ 11,241	$ 614	$ 11,855
60-89 days delinquent	2,728	189	2,917	1,816	135	1,951
90 days or more delinquent	6,106	80	6,186	1,410	156	1,566
Total past due	46,466	733	47,199	14,467	905	15,372
Total current loans	4,038,455	12,822	4,051,277	2,166,660	15,139	2,181,799
Total mortgage loans	$ 4,084,921	$ 13,555	$ 4,098,476	$ 2,181,127	$ 16,044	$ 2,197,171
Other delinquency statistics:						
In process of foreclosure(1)	$ 1,752	$ 36	$ 1,788	$ 481	$ 77	$ 558
Serious delinquency rate (2)	0.2%	0.6%	0.2%	0.1%	1.0%	0.1%
Past due 90 days or more and still accruing interest (3)	$ —	$ 80	$ 80	$ —	$ 156	$ 156
Nonaccrual loans	$ 7,304	$ —	$ 7,304	$ 1,410	$ —	$ 1,410
Troubled debt restructurings	$ —	$ —	$ —	$ —	$ —	$ —

(1) Includes loans where the decision of foreclosure or similar alternative such as pursuit of deed-in-lieu has been made.

(2) Loans that are 90 days or more past due or in the process of foreclosure expressed as a percentage of the loan portfolio.

(3) Only government-guaranteed/insured mortgage loans continue to accrue interest after they become 90 days or more past due.

At December 31, 2019 and 2018, the Bank's other assets included $15,000 and $7,000, respectively, of real estate owned.

Mortgage loans are considered impaired when, based upon current information and events, it is probable that the Bank will be unable to collect all principal and interest amounts due according to the contractual terms of the mortgage loan agreement. Each seriously delinquent mortgage loan and each troubled debt restructuring is specifically reviewed for impairment. At December 31, 2019 and 2018, the Bank did not have any troubled debt restructurings related to mortgage loans. At these dates, the estimated value of the collateral securing each seriously delinquent loan, plus the estimated amount that can be recovered through credit enhancements and mortgage insurance, if any, exceeded the outstanding loan amount. Therefore, no specific reserve was established for any of the seriously delinquent mortgage loans. The remaining conventional mortgage loans were evaluated for impairment on a pool basis. Based upon the current and past performance of these loans and current economic conditions, the Bank determined that an allowance for loan losses of $1,149,000 was adequate to reserve for credit losses in its conventional mortgage loan portfolio at December 31, 2019.

The following table presents the activity in the allowance for credit losses on conventional mortgage loans held for portfolio during the years ended December 31, 2019, 2018 and 2017 (in thousands):

	Year Ended December 31,		
	2019	2018	2017
Balance, beginning of year	$ 493	$ 271	$ 141
Provision for credit losses	656	222	130
Balance, end of year	$ 1,149	$ 493	$ 271

The following table presents information regarding the balances of the Bank's conventional mortgage loans held for portfolio that were individually or collectively evaluated for impairment as well as information regarding the ending balance of the allowance for credit losses as of December 31, 2019 and 2018 (in thousands).

	December 31,	
	2019	2018
Ending balance of allowance for credit losses related to loans collectively evaluated for impairment	$ 1,149	$ 493
Recorded investment		
Individually evaluated for impairment	$ 6,106	$ 1,410
Collectively evaluated for impairment	4,078,815	2,179,717
	$ 4,084,921	$ 2,181,127

Note 9—Deposits

The Bank offers demand and overnight deposits for members and qualifying non-members. In addition, the Bank offers short-term interest-bearing deposit programs to members and qualifying non-members. Interest-bearing deposits classified as demand and overnight pay interest based on a daily interest rate. Term deposits pay interest based on a fixed rate, or a stepped fixed rate schedule, that is determined on the issuance date of the deposit. The weighted average interest rates paid on average outstanding deposits were 2.05 percent, 1.75 percent and 0.89 percent during 2019, 2018 and 2017, respectively. None of the deposits are federally insured. For additional information regarding other interest-bearing deposits, see Note 13.

The following table details interest-bearing and non-interest bearing deposits as of December 31, 2019 and 2018 (in thousands):

	2019	2018
Interest-bearing		
Demand and overnight	$ 1,190,967	$ 816,322
Term	95,232	147,650
Non-interest bearing (other)	20	20
Total deposits	$ 1,286,219	$ 963,992

Note 10—Consolidated Obligations

Consolidated obligations are the joint and several obligations of the FHLBanks and consist of consolidated obligation bonds and discount notes. Consolidated obligations are backed only by the financial resources of the 11 FHLBanks. Consolidated obligations are not obligations of, nor are they guaranteed by, the U.S. government. The FHLBanks issue consolidated obligations through the Office of Finance as their agent. In connection with each debt issuance, one or more of the FHLBanks specifies the amount of debt it wants issued on its behalf; the Bank receives the proceeds of only the debt issued on its behalf and records on its statements of condition only that portion of the consolidated obligations for which it has received the proceeds. The Finance Agency and the U.S. Secretary of the Treasury have oversight over the issuance of FHLBank debt through the Office of Finance. Consolidated obligation bonds are issued primarily to raise intermediate- and long-term funds for the FHLBanks and are not subject to any statutory or regulatory limits on maturity. Consolidated obligation discount notes are issued to raise short-term funds and have maturities of one year or less. These notes are issued at a price that is less than their face amount and are redeemed at par value when they mature. For additional information regarding the FHLBanks' joint and several liability on consolidated obligations, see Note 17.

The par amounts of the FHLBanks' outstanding consolidated obligations, including consolidated obligations held as investments by other FHLBanks, were approximately $1.026 trillion and $1.032 trillion at December 31, 2019 and 2018, respectively. The Bank was the primary obligor on approximately $70.1 billion and $68.0 billion (at par value), respectively, of these consolidated obligations. Regulations require each of the FHLBanks to maintain unpledged qualifying assets equal to its participation in the consolidated obligations outstanding. Qualifying assets are defined as cash; secured advances; obligations of or fully guaranteed by the U.S. government; obligations, participations, mortgages, or other instruments of or issued by Fannie Mae or Ginnie Mae; mortgages, obligations or other securities which are or have ever been sold by Freddie Mac under the FHLB Act; and such securities as fiduciary and trust funds may invest in under the laws of the state in which the FHLBank is located. Any assets subject to a lien or pledge for the benefit of holders of any issue of consolidated obligations are treated as if they were free from lien or pledge for purposes of compliance with these regulations.

General Terms. Consolidated obligation bonds are issued with either fixed-rate coupon payment terms or variable-rate coupon payment terms that use a variety of indices for interest rate resets such as LIBOR, SOFR or the federal funds rate. To meet the specific needs of certain investors in consolidated obligations, both fixed-rate bonds and variable-rate bonds may contain complex coupon payment terms and call options. When such consolidated obligations are issued, the Bank generally enters into interest rate exchange agreements containing offsetting features that effectively convert the terms of the bond to those of a simple variable-rate bond.

The consolidated obligation bonds typically issued by the Bank, beyond having fixed-rate or simple variable-rate coupon payment terms, may also have the following broad terms regarding either principal repayment or coupon payment terms:

Optional principal redemption bonds (callable bonds) may be redeemed in whole or in part at the Bank's discretion on predetermined call dates according to the terms of the bond offerings;

Step-up bonds pay interest at increasing fixed rates for specified intervals over the life of the bond. These bonds generally contain provisions that enable the Bank to call the bonds at its option on predetermined call dates;

Step-down bonds pay interest at decreasing fixed rates for specified intervals over the life of the bond. These bonds generally contain provisions that enable the Bank to call the bonds at its option on predetermined call dates.

Interest Rate Payment Terms. The following table summarizes the Bank's consolidated obligation bonds outstanding by interest rate payment terms at December 31, 2019 and 2018 (in thousands, at par value).

	2019	2018
Fixed-rate	$ 21,529,815	$ 15,606,555
Variable-rate	12,642,000	10,029,850
Step-up	1,337,500	6,202,500
Step-down	175,000	275,000
Total par value	$ 35,684,315	$ 32,113,905

At December 31, 2019 and 2018, 86 percent and 90 percent, respectively, of the Bank's fixed-rate consolidated obligation bonds were swapped to a variable rate.

Redemption Terms. The following is a summary of the Bank's consolidated obligation bonds outstanding at December 31, 2019 and 2018, by contractual maturity (dollars in thousands):

	2019		2018	
Contractual Maturity	**Amount**	**Weighted Average Interest Rate**	**Amount**	**Weighted Average Interest Rate**
Due in one year or less	$ 16,900,625	1.75%	$ 14,798,025	2.11%
Due after one year through two years	7,849,605	1.76	4,943,910	2.07
Due after two years through three years	2,269,005	2.21	4,093,605	2.12
Due after three years through four years	1,912,490	2.42	2,686,995	2.24
Due after four years through five years	3,811,615	2.16	2,641,210	2.92
Due after five years	2,940,975	2.52	2,950,160	2.58
Total par value	35,684,315	1.93%	32,113,905	2.22%
Premiums	1,091		2,241	
Discounts	(781)		(1,295)	
Debt issuance costs	(4,479)		(3,295)	
Hedging adjustments	65,681		(179,627)	
Total	$ 35,745,827		$ 31,931,929	

At December 31, 2019 and 2018, the Bank's consolidated obligation bonds outstanding included the following (in thousands, at par value):

	2019	2018
Non-callable bonds	$ 22,188,915	$ 20,662,505
Callable bonds	13,495,400	11,451,400
Total par value	$ 35,684,315	$ 32,113,905

The following table summarizes the Bank's consolidated obligation bonds outstanding at December 31, 2019 and 2018, by the earlier of contractual maturity or next possible call date (in thousands, at par value):

Contractual Maturity or Next Call Date	2019	2018
Due in one year or less	$ 25,936,025	$ 23,532,425
Due after one year through two years	6,397,605	3,804,410
Due after two years through three years	1,649,005	1,931,605
Due after three years through four years	1,193,590	1,618,095
Due after four years through five years	409,615	971,210
Due after five years	98,475	256,160
Total par value	$ 35,684,315	$ 32,113,905

Discount Notes. At December 31, 2019 and 2018, the Bank's consolidated obligation discount notes, all of which are due within one year, were as follows (dollars in thousands):

	Book Value	Par Value	Weighted Average Implied Interest Rate
December 31, 2019	$ 34,327,886	$ 34,405,724	1.57%
December 31, 2018	$ 35,731,713	$ 35,882,027	2.30%

Note 11—Affordable Housing Program

Section 10(j) of the FHLB Act requires each FHLBank to establish an AHP. Each FHLBank provides subsidies in the form of direct grants and/or below market interest rate advances to members who use the funds to assist with the purchase, construction, or rehabilitation of housing for very low-, low-, and moderate-income households. The Bank provides subsidies under its AHP solely in the form of direct grants. Annually, each FHLBank must set aside for the AHP 10 percent of its current year's income before charges for AHP (as adjusted for interest expense on mandatorily redeemable capital stock), subject to a collective minimum contribution for all 11 FHLBanks of $100 million. The exclusion of interest expense on mandatorily redeemable capital stock is required pursuant to a Finance Agency regulatory interpretation. If the result of the aggregate 10 percent calculation is less than $100 million for all 11 FHLBanks, then the FHLB Act requires the shortfall to be allocated among the FHLBanks based on the ratio of each FHLBank's income before AHP to the sum of the income before AHP of all of the FHLBanks provided, however, that each FHLBank's required annual AHP contribution is limited to its annual net earnings before the contribution. There was no shortfall during the years ended December 31, 2019, 2018 or 2017. If a FHLBank determines that its required contributions are contributing to its financial instability, it may apply to the Finance Agency for a temporary suspension of its AHP contributions. No FHLBank applied for a suspension of its AHP contributions in 2019, 2018 or 2017.

The Bank's AHP assessment is derived by adding interest expense on mandatorily redeemable capital stock (see Note 14) to reported income before assessments; the result of this calculation is then multiplied by 10 percent. The Bank charges the amount set aside for AHP to income and recognizes it as a liability. The Bank relieves the AHP liability as members receive AHP grants. If the Bank experiences a loss during a calendar quarter but still has income for the calendar year, the Bank's obligation to the AHP is based upon its year-to-date/annual income. In years where the Bank's income before assessments (as adjusted for interest expense on mandatorily redeemable capital stock) is zero or less, the amount of the AHP assessment is typically equal to zero, and the Bank would not typically be entitled to a credit that could be used to reduce required contributions in future years.

The following table summarizes the changes in the Bank's AHP liability during the years ended December 31, 2019, 2018 and 2017 (in thousands):

	2019	2018	2017
Balance, beginning of year	$ 44,358	$ 31,246	$ 22,871
AHP assessment	25,272	22,097	16,710
Grants funded, net of recaptured amounts	(12,383)	(8,985)	(8,335)
Balance, end of year	$ 57,247	$ 44,358	$ 31,246

Note 12—Assets and Liabilities Subject to Offsetting

The Bank has derivatives and securities purchased under agreements to resell that are subject to enforceable master netting agreements or similar arrangements. For purposes of reporting derivative assets and derivative liabilities, the Bank offsets the fair value amounts recognized for derivative instruments (including the right to reclaim cash collateral and the obligation to return cash collateral) where a legally enforceable right of setoff exists. The Bank did not have any liabilities that were eligible to offset its securities purchased under agreements to resell (i.e., securities sold under agreements to repurchase) as of December 31, 2019 or 2018.

The Bank's derivative transactions are executed either bilaterally or, if required, cleared through a third-party central clearinghouse. The Bank has entered into master agreements with each of its bilateral derivative counterparties that provide for the netting of all transactions with each of these counterparties. Under its master agreements with its non-member bilateral derivative counterparties, collateral is delivered (or returned) daily when certain thresholds (ranging from $50,000 to $500,000) are met. The Bank offsets the fair value amounts recognized for bilaterally traded derivatives executed with the same counterparty, including any cash collateral remitted to or received from the counterparty. When entering into derivative transactions with its members, the Bank requires the member to post eligible collateral in an amount equal to the sum of the net market value of the member's derivative transactions with the Bank (if the value is positive to the Bank) plus a percentage of the notional amount of any interest rate swaps, with market values determined on at least a monthly basis. Eligible collateral for derivative transactions with members consists of collateral that is eligible to secure advances and other obligations under the member's Advances and Security Agreement with the Bank. The Bank is not required to pledge collateral to its members to secure derivative positions.

For cleared derivatives, all transactions with each clearing member of each clearinghouse are netted pursuant to legally enforceable setoff rights. Cleared derivatives are subject to initial and variation margin requirements established by the clearinghouse and its clearing members. Effective January 3, 2017, one of the Bank's two clearinghouse counterparties made certain amendments to its rulebook that changed the legal characterization of variation margin payments on cleared derivatives to settlements on the contracts. Effective January 16, 2018, the Bank's other clearinghouse counterparty made similar amendments to its rulebook. Prior to the dates upon which these amendments became effective, the variation margin payments were in each case characterized as collateral pledged to secure outstanding credit exposure on the derivative contracts. Initial and variation margin (regardless of whether it is characterized as collateral or settlements) is typically delivered/paid (or returned/received) daily and is not subject to any maximum unsecured thresholds. The Bank offsets the fair value amounts recognized for cleared derivatives transacted with each clearing member of each clearinghouse (which fair value amounts include variation margin paid or received on daily settled contracts) and any cash collateral pledged or received.

The following table presents derivative instruments and securities purchased under agreements to resell with the legal right of offset, including the related collateral received from or pledged to counterparties as of December 31, 2019 and 2018 (in thousands). For daily settled derivative contracts, the variation margin payments/receipts are included in the gross amounts of derivative assets and liabilities.

	Gross Amounts of Recognized Financial Instruments	Gross Amounts Offset in the Statement of Condition	Net Amounts Presented in the Statement of Condition	Collateral Not Offset in the Statement of Condition [(1)]	Net Unsecured Amount
December 31, 2019					
Assets					
Derivatives					
Bilateral derivatives	$ 22,721	$ (10,978)	$ 11,743	$ (5,313) [(2)]	$ 6,430
Cleared derivatives	33,618	(4,090)	29,528	—	29,528
Total derivatives	56,339	(15,068)	41,271	(5,313)	35,958
Securities purchased under agreements to resell	4,310,000	—	4,310,000	(4,310,000)	—
Total assets	$ 4,366,339	$ (15,068)	$ 4,351,271	$ (4,315,313)	$ 35,958
Liabilities					
Derivatives					
Bilateral derivatives	$ 168,297	$ (164,442)	$ 3,855	$ —	$ 3,855
Cleared derivatives	4,138	(4,138)	—	— [(3)]	—
Total liabilities	$ 172,435	$ (168,580)	$ 3,855	$ —	$ 3,855
December 31, 2018					
Assets					
Derivatives					
Bilateral derivatives	$ 35,923	$ (26,074)	$ 9,849	$ (3,380) [(2)]	$ 6,469
Cleared derivatives	7,773	(7,744)	29	—	29
Total derivatives	43,696	(33,818)	9,878	(3,380)	6,498
Securities purchased under agreements to resell	6,215,000	—	6,215,000	(6,215,000)	—
Total assets	$ 6,258,696	$ (33,818)	$ 6,224,878	$ (6,218,380)	$ 6,498
Liabilities					
Derivatives					
Bilateral derivatives	$ 189,654	$ (181,022)	$ 8,632	$ —	$ 8,632
Cleared derivatives	45,025	(7,666)	37,359	(37,359) [(4)]	—
Total liabilities	$ 234,679	$ (188,688)	$ 45,991	$ (37,359)	$ 8,632

(1) Any overcollateralization at an individual clearinghouse/clearing member or bilateral counterparty level is not included in the determination of the net unsecured amount.

(2) Consists of collateral pledged by member counterparties.

(3) The Bank had pledged securities with an aggregate fair value of $842,256,000 at December 31, 2019 to further secure its cleared derivatives, which is a result of the initial margin requirements imposed upon the Bank.

(4) Consists of securities pledged by the Bank. In addition to the amount needed to secure the counterparties' exposure to the Bank, the Bank had pledged other securities with an aggregate fair value of $675,188,000 at December 31, 2018 to further secure its cleared derivatives, which is a result of the initial margin requirements imposed upon the Bank.

Note 13—Derivatives and Hedging Activities

Hedging Activities. As a financial intermediary, the Bank is exposed to interest rate risk. This risk arises from a variety of financial instruments that the Bank enters into on a regular basis in the normal course of its business. The Bank enters into interest rate swap, swaption, cap and forward rate agreements (collectively, interest rate exchange agreements) to manage its exposure to changes in interest rates. The Bank may use these instruments to adjust the effective maturity, repricing frequency, or option characteristics of financial instruments to achieve risk management objectives. In addition, the Bank may use these instruments to hedge the variable cash flows associated with forecasted transactions. The Bank has not entered into any credit default swaps or foreign exchange-related derivatives and, as of December 31, 2019, it was not a party to any forward rate agreements.

The Bank uses interest rate exchange agreements in three ways: (1) by designating the agreement as a fair value hedge of a specific financial instrument or firm commitment; (2) by designating the agreement as a cash flow hedge of a forecasted transaction; or (3) by designating the agreement as a hedge of some other defined risk (referred to as an "economic hedge"). For example, the Bank uses interest rate exchange agreements in its overall interest rate risk management activities to adjust the interest rate sensitivity of consolidated obligations to approximate more closely the interest rate sensitivity of its assets (both advances and investments), and/or to adjust the interest rate sensitivity of advances or investments to approximate more closely the interest rate sensitivity of its liabilities. In addition to using interest rate exchange agreements to manage mismatches between the coupon features of its assets and liabilities, the Bank also uses interest rate exchange agreements to, among other things, manage embedded options in assets and liabilities, to preserve the market value of existing assets and liabilities, to hedge the duration risk of prepayable instruments, to hedge the variable cash flows associated with forecasted transactions, to offset interest rate exchange agreements entered into with members (the Bank serves as an intermediary in these transactions), and to reduce funding costs.

The Bank, consistent with Finance Agency regulations, enters into interest rate exchange agreements only to reduce potential market risk exposures inherent in otherwise unhedged assets and liabilities or anticipated transactions, or to act as an intermediary between its members and the Bank's non-member derivative counterparties. The Bank is not a derivatives dealer and it does not trade derivatives for short-term profit.

At inception, the Bank formally documents the relationships between derivatives designated as hedging instruments and their hedged items, its risk management objectives and strategies for undertaking the hedge transactions, and its method for assessing the effectiveness of the hedging relationships. For fair value hedges, this process includes linking the derivatives to: (1) specific assets and liabilities on the statements of condition or (2) firm commitments. For cash flow hedges, this process includes linking the derivatives to forecasted transactions. The Bank also formally assesses (both at the inception of the hedging relationship and on a monthly basis thereafter) whether the derivatives that are used in hedging transactions have been effective in offsetting changes in the fair value of hedged items or the cash flows associated with forecasted transactions and whether those derivatives may be expected to remain effective in future periods. The Bank uses regression analyses to assess the effectiveness of its hedges.

Investment Securities and Mortgage Loans Held for Portfolio — The Bank has invested in agency and non-agency MBS and residential mortgage loans. The interest rate and prepayment risk associated with these investments is managed through consolidated obligations and/or derivatives. The Bank may manage prepayment and duration risk presented by some of these investments with either callable and/or non-callable consolidated obligations and/or interest rate exchange agreements, including interest rate swaps, swaptions and caps.

A substantial portion of the Bank's held-to-maturity securities are variable-rate MBS that include caps that would limit the variable-rate coupons if short-term interest rates rise dramatically. To hedge a portion of the potential cap risk embedded in these securities, the Bank has entered into interest rate cap agreements, only one of which remained outstanding at December 31, 2019. These derivatives are treated as economic hedges.

All of the Bank's available-for-sale securities are fixed-rate agency and other highly rated debentures and agency CMBS. To hedge the interest rate risk associated with these fixed-rate investment securities, the Bank has entered into fixed-for-floating interest rate exchange agreements, which are designated as fair value hedges.

The majority of the Bank's trading securities are fixed-rate U.S. Treasury Notes. To convert most of these fixed-rate investment securities to a short-term floating rate, the Bank entered into fixed-for-floating interest rate exchange agreements that are indexed to the OIS rate. These derivatives are treated as economic hedges.

The interest rate swaps and swaptions that are used by the Bank to hedge the risks associated with its mortgage loan portfolio are treated as economic hedges.

Advances — The Bank issues both fixed-rate and variable-rate advances. When appropriate, the Bank uses interest rate exchange agreements to adjust the interest rate sensitivity of its fixed-rate advances to approximate more closely the interest rate sensitivity of its liabilities. With issuances of putable advances, the Bank purchases from the member a put option that enables the Bank to terminate a fixed-rate advance on specified future dates. This embedded option is clearly and closely related to the host advance contract. The Bank typically hedges a putable advance by entering into a cancelable interest rate exchange agreement where the Bank pays a fixed-rate coupon and receives a variable-rate coupon, and sells an option to cancel the swap to the swap counterparty. This type of hedge is treated as a fair value hedge. The swap counterparty can cancel the interest rate exchange agreement on the call date and the Bank can cancel the putable advance and offer, subject to certain conditions, replacement funding at prevailing market rates.

From time to time, a small portion of the Bank's variable-rate advances may be subject to interest rate caps that would limit the variable-rate coupons if short-term interest rates rise above a predetermined level. To hedge the cap risk embedded in these advances, the Bank will generally enter into interest rate cap agreements. This type of hedge is treated as a fair value hedge.

The Bank may hedge a firm commitment for a forward-starting advance through the use of an interest rate swap. In this case, the swap will function as the hedging instrument for both the firm commitment and the subsequent advance. The carrying value of the firm commitment will be included in the basis of the advance at the time the commitment is terminated and the advance is issued. The basis adjustment will then be amortized into interest income over the life of the advance.

The Bank enters into optional advance commitments with its members. In an optional advance commitment, the Bank sells an option to the member that provides the member with the right to increase the amount of an existing advance at a specified fixed rate and term on a specified future date, provided the member has satisfied all of the customary requirements for such advance. This embedded option is clearly and closely related to the host contract. The Bank may hedge an optional advance commitment through the use of an interest rate swaption. In this case, the swaption will function as the hedging instrument for both the commitment and, if the option is exercised by the member, the subsequent advance. These swaptions are treated as fair value hedges.

Consolidated Obligations — While consolidated obligations are the joint and several obligations of the FHLBanks, each FHLBank is the primary obligor for the consolidated obligations it has issued or assumed from another FHLBank. The Bank generally enters into derivative contracts to hedge the interest rate risk associated with its specific debt issuances.

To manage the interest rate risk of certain of its consolidated obligations, the Bank will match the cash outflow on a consolidated obligation with the cash inflow of an interest rate exchange agreement. With issuances of fixed-rate consolidated obligation bonds, the Bank typically enters into a matching interest rate exchange agreement in which the counterparty pays fixed cash flows to the Bank that are designed to mirror in timing and amount the cash outflows the Bank pays on the consolidated obligation. In this transaction, the Bank pays a variable cash flow that closely matches the interest payments it receives on short-term or variable-rate assets, typically one-month or three-month LIBOR. These transactions are treated as fair value hedges. On occasion, the Bank may enter into fixed-for-floating interest rate exchange agreements to hedge the interest rate risk associated with certain of its consolidated obligation discount notes. The derivatives associated with the Bank's fair value discount note hedging are indexed to the OIS rate and are treated as economic hedges. The Bank may also use interest rate exchange agreements to convert variable-rate consolidated obligation bonds from one index rate (e.g., the daily effective federal funds rate) to another index rate (e.g., one-month or three-month LIBOR). These transactions are treated as economic hedges.

The Bank has not issued consolidated obligations denominated in currencies other than U.S. dollars.

Forecasted Issuances of Consolidated Obligations — The Bank uses derivatives to hedge the variability of cash flows over a specified period of time as a result of the forecasted issuances and maturities of short-term, fixed-rate instruments, such as three-month consolidated obligation discount notes. Although each short-term consolidated obligation discount note has a fixed rate of interest, a portfolio of rolling consolidated obligation discount notes effectively has a variable interest rate. The variable cash flows associated with these liabilities are converted to fixed-rate cash flows by entering into receive-variable, pay-fixed interest rate swaps. The maturity dates of the cash flow streams are closely matched to the interest rate reset dates of the derivatives. These derivatives are treated as cash flow hedges.

Balance Sheet Management — From time to time, the Bank may enter into interest rate basis swaps to reduce its exposure to changing spreads between one-month and three-month LIBOR. In addition, to reduce its exposure to reset risk, the Bank may occasionally enter into forward rate agreements. These derivatives are treated as economic hedges.

Intermediation — The Bank offers interest rate swaps, caps and floors to its members to assist them in meeting their hedging needs. In these transactions, the Bank acts as an intermediary for its members by entering into an interest rate exchange agreement with a member and then entering into an offsetting interest rate exchange agreement with one of the Bank's approved derivative counterparties. All interest rate exchange agreements related to the Bank's intermediary activities with its members are accounted for as economic hedges.

Other — From time to time, the Bank may enter into derivatives to hedge risks to its earnings that are not directly linked to specific assets, liabilities or forecasted transactions. These derivatives are treated as economic hedges.

Impact of Derivatives and Hedging Activities. The following table summarizes the notional balances and estimated fair values of the Bank's outstanding derivatives (inclusive of variation margin on daily settled contracts) and the amounts offset against those values in the statement of condition at December 31, 2019 and 2018 (in thousands).

	December 31, 2019			December 31, 2018		
	Notional Amount of Derivatives	Estimated Fair Value: Derivative Assets	Estimated Fair Value: Derivative Liabilities	Notional Amount of Derivatives	Estimated Fair Value: Derivative Assets	Estimated Fair Value: Derivative Liabilities
Derivatives designated as hedging instruments under ASC 815						
Interest rate swaps						
Advances [1]	$ 10,102,510	$ 5,117	$ 134,520	$ 7,171,033	$ 4,273	$ 36,521
Available-for-sale securities [1]	16,114,507	28,049	19,718	15,981,523	8,501	55,202
Consolidated obligation bonds [1]	19,861,615	14,000	13,619	19,824,055	21,112	130,806
Consolidated obligation discount notes [2]	1,043,000	2,503	—	865,000	—	2,480
Total derivatives designated as hedging instruments under ASC 815	47,121,632	49,669	167,857	43,841,611	33,886	225,009
Derivatives not designated as hedging instruments under ASC 815						
Interest rate swaps						
Advances	255,000	25	16	2,500	—	—
Available-for-sale securities	3,144	4	—	3,156	—	10
Mortgage loans held for portfolio	339,600	343	1,118	150,600	158	198
Consolidated obligation discount notes	1,000,000	—	—	—	—	—
Trading securities	3,700,000	171	8	1,713,000	5	39
Intermediary transactions	842,036	5,312	2,355	1,228,345	3,742	6,245
Other	925,000	328	1,069	425,000	1,425	—
Interest rate swaptions related to mortgage loans held for portfolio	145,000	381	—	185,000	1,234	—
Mortgage delivery commitments	31,765	94	—	11,687	62	—
Interest rate caps and floors						
Held-to-maturity securities	500,000	—	—	1,000,000	6	—
Intermediary transactions	80,000	12	12	541,000	3,178	3,178
Total derivatives not designated as hedging instruments under ASC 815	7,821,545	6,670	4,578	5,260,288	9,810	9,670
Total derivatives before collateral and netting adjustments	$ 54,943,177	56,339	172,435	$ 49,101,899	43,696	234,679
Cash collateral and related accrued interest		(3,440)	(156,903)		(9,287)	(164,237)
Cash received or remitted in excess of variation margin requirements		(5)	(54)		(93)	(13)
Netting adjustments		(11,623)	(11,623)		(24,438)	(24,438)
Total collateral and netting adjustments [3]		(15,068)	(168,580)		(33,818)	(188,688)
Net derivative balances reported in statements of condition		$ 41,271	$ 3,855		$ 9,878	$ 45,991

(1) Derivatives designated as fair value hedges.

(2) Derivatives designated as cash flow hedges.

(3) Amounts represent the effect of legally enforceable master netting agreements or other legally enforceable arrangements between the Bank and its derivative counterparties that allow the Bank to offset positive and negative positions as well as any cash collateral held or placed with those same counterparties.

The following table presents the components of net gains (losses) on qualifying fair value and cash flow hedging relationships for the years ended December 31, 2019, 2018 and 2017 (in thousands).

	Interest Income (Expense)					
	Advances	Available-for-Sale Securities	Consolidated Obligation Bonds	Consolidated Obligation Discount Notes	Net Gains (Losses) on Derivatives and Hedging Activities	Other Comprehensive Income (Loss)
Year Ended December 31, 2019						
Total amount of the financial statement line item	$ 906,671	$ 465,023	$ (711,240)	$ (780,165)	$ 24,687	$ (28,952)
Gains (losses) on fair value hedging relationships included in the financial statement line item						
Interest rate contracts						
Derivatives	$ (122,094)	$ (760,621)	$ 212,198	$ —	$ —	$ —
Hedged items	170,055	796,381	(245,307)	—	—	—
Net gains (losses) on fair value hedging relationships	$ 47,961	$ 35,760	$ (33,109)	$ —	$ —	$ —
Gains (losses) on cash flow hedging relationships included in the financial statement line item						
Interest rate contracts						
Reclassified from AOCI into interest expense	$ —	$ —	$ —	$ 1,829	$ —	$ (1,829)
Recognized in OCI	—	—	—	—	—	(54,777)
Net gains (losses) on cash flow hedging relationships	$ —	$ —	$ —	$ 1,829	$ —	$ (56,606)
Year Ended December 31, 2018 (1)						
Total amount of the financial statement line item	$ 828,929	$ 417,793	$ (659,943)	$ (560,824)	$ (10,256)	$ (92,325)
Gains (losses) on fair value hedging relationships included in the financial statement line item						
Interest rate contracts						
Derivatives	$ 17,492	$ 22,474	$ (39,478)	$ —	$ 120,825	$ —
Hedged items (2)	—	—	—	—	(119,003)	—
Net gains (losses) on fair value hedging relationships	$ 17,492	$ 22,474	$ (39,478)	$ —	$ 1,822	$ —
Gains (losses) on cash flow hedging relationships included in the financial statement line item						
Interest rate contracts						
Reclassified from AOCI into interest expense	$ —	$ —	$ —	$ 950	$ —	$ (950)
Recognized in OCI	—	—	—	—	—	(823)
Net gains (losses) on cash flow hedging relationships	$ —	$ —	$ —	$ 950	$ —	$ (1,773)
Year Ended December 31, 2017 (1)						
Total amount of the financial statement line item	$ 421,588	$ 239,193	$ (327,644)	$ (233,698)	$ 4,668	$ 157,116
Gains (losses) on fair value hedging relationships included in the financial statement line item						
Interest rate contracts						
Derivatives	$ (31,950)	$ (104,042)	$ 39,831	$ —	$ 99,962	$ —
Hedged items (2)	—	—	—	—	(103,398)	—
Net gains (losses) on fair value hedging relationships	$ (31,950)	$ (104,042)	$ 39,831	$ —	$ (3,436)	$ —
Gains (losses) on cash flow hedging relationships included in the financial statement line item						
Interest rate contracts						
Reclassified from AOCI into interest expense	$ —	$ —	$ —	$ (2,375)	$ —	$ 2,375
Recognized in OCI	—	—	—	—	—	(2,570)
Net losses on cash flow hedging relationships	$ —	$ —	$ —	$ (2,375)	$ —	$ (195)

(1) Prior year amounts have not been reclassified to conform to the new hedge accounting presentation requirements which became effective on January 1, 2019.

(2) Excludes amortization/accretion on closed fair value relationships.

For the years ended December 31, 2019, 2018 and 2017, there were no amounts reclassified from AOCI into earnings as a result of the discontinuance of cash flow hedges because the original forecasted transactions occurred by the end of the originally specified time periods or within two-month periods thereafter. At December 31, 2019, $5,346,000 of deferred net losses on derivative instruments in AOCI are expected to be reclassified to earnings during the next 12 months. At December 31, 2019, the maximum length of time over which the Bank is hedging its exposure to the variability in future cash flows for forecasted transactions is 10 years.

The following table presents the cumulative basis adjustments on hedged items either designated or previously designated as fair value hedges and the related amortized cost of those items as of December 31, 2019 (in thousands).

Line Item in Statement of Condition of Hedged Item	Amortized Cost of Hedged Asset/ (Liability) (1)	Basis Adjustments for Active Hedging Relationships Included in Amortized Cost	Basis Adjustments for Discontinued Hedging Relationships Included in Amortized Cost	Total Fair Value Hedging Basis Adjustments (2)
Advances	$ 10,283,221	$ 175,343	$ 4,978	$ 180,321
Available-for-sale securities	16,621,667	346,741	(985)	345,756
Consolidated obligation bonds	(20,310,223)	(64,027)	(1,654)	(65,681)

(1) Reflects the amortized cost of hedged items in active or discontinued fair value hedging relationships, which includes fair value hedging basis adjustments.

(2) Reflects the cumulative life-to-date unamortized hedging gains (losses) on the hedged items.

The following table presents the components of net gains (losses) on derivatives and hedging activities that are reported in other income (loss) for the years ended December 31, 2019, 2018 and 2017 (in thousands).

	Gain (Loss) Recognized in Other Income (Loss) for the Year Ended December 31,		
	2019	2018	2017
Derivatives and hedged items in ASC 815 fair value hedging relationships(1)			
Interest rate swaps	$ —	$ 1,866	$ (3,414)
Interest rate swaptions	—	(44)	(22)
Total net gain (loss) related to fair value hedge ineffectiveness	—	1,822	(3,436)
Derivatives not designated as hedging instruments under ASC 815			
Net interest income (expense) on interest rate swaps	(3,414)	(1,389)	1,535
Interest rate swaps	28,408	(2,586)	3,730
Interest rate swaptions	(2,728)	(239)	—
Interest rate caps and floors	86	116	(255)
Mortgage delivery commitments	2,097	1,912	2,329
Total net gain (loss) related to derivatives not designated as hedging instruments under ASC 815	24,449	(2,186)	7,339
Price alignment amount on variation margin for daily settled derivative contracts(2)	238	(9,892)	765
Net gains (losses) on derivatives and hedging activities reported in other income (loss)	$ 24,687	$ (10,256)	$ 4,668

(1) For the year ended December 31, 2019, all of the effects of derivatives and associated hedged items in ASC 815 fair value hedging relationships are reported in net interest income.

(2) The amounts reported for the year ended December 31, 2019 reflect the price alignment amounts on variation margin for daily settled derivative contracts that are not designated as hedging instruments under ASC 815. The price alignment amounts on variation margin for daily settled derivative contracts that are designated as hedging instruments under ASC 815 are recorded in the same line item as the earnings effect of the hedged item. The amounts reported for the years ended December 31, 2018 and 2017 reflect the price alignment amounts on variation margin for all daily settled derivative contracts.

Credit Risk Related to Derivatives. The Bank is subject to credit risk due to the risk of nonperformance by counterparties to its derivative agreements. The Bank manages derivative counterparty credit risk through the use of master netting agreements or other similar collateral exchange arrangements, credit analysis, and adherence to the requirements set forth in the Bank’s Enterprise Market Risk Management Policy, Enterprise Credit Risk Management Policy and Finance Agency regulations. The majority of the Bank's derivative transactions have been cleared through third-party central clearinghouses (as of December 31, 2019, the notional balance of cleared transactions outstanding totaled $33.7 billion). With cleared transactions, the Bank is exposed to credit risk in the event that the clearinghouse or the clearing member fails to meet its obligations to the Bank. The remainder of the Bank's derivative contracts have been transacted bilaterally with large financial institutions under master netting agreements or, to a much lesser extent, with member institutions (as of December 31, 2019, the notional balance of outstanding transactions with non-member bilateral counterparties and member counterparties totaled $20.7 billion and $0.5 billion, respectively). Some of these institutions (or their affiliates) buy, sell, and distribute consolidated obligations.

The notional amount of the Bank's interest rate exchange agreements does not reflect its credit risk exposure, which is much less than the notional amount. The Bank's net credit risk exposure is based on the current estimated cost, on a present value basis, of replacing at current market rates all interest rate exchange agreements with individual counterparties, if those counterparties were to default, after taking into account the value of any cash and/or securities collateral held or remitted by the Bank. For counterparties with which the Bank is in a net gain position, the Bank has credit exposure when the collateral it is holding (if any) has a value less than the amount of the gain. For counterparties with which the Bank is in a net loss position, the Bank has credit exposure when it has delivered collateral with a value greater than the amount of the loss position. The net exposure on derivative agreements is presented in Note 12. Based on the netting provisions and collateral requirements associated with its derivative agreements and the creditworthiness of its derivative counterparties, Bank management does not currently anticipate any credit losses on its derivative agreements.

Note 14—Capital

Under the Gramm-Leach-Bliley Act of 1999 (the “GLB Act”) and the Finance Agency’s capital regulations, each FHLBank may issue Class A stock or Class B stock, or both, to its members. The Bank’s Capital Plan provides that it will issue only Class B capital stock. The Class B stock has a par value of $100 per share and is purchased, redeemed, repurchased and, with the prior approval of the Bank, transferred only at its par value. As required by statute and regulation, members may request the Bank to redeem excess Class B stock, or withdraw from membership and request the Bank to redeem all outstanding capital stock, with five years’ written notice to the Bank. The regulations also allow the Bank, in its sole discretion, to repurchase members’ excess stock at any time without regard for the five-year notification period as long as the Bank continues to meet its regulatory capital requirements following any stock repurchases, as described below.

Members are required to maintain an investment in Class B Stock equal to the sum of a membership investment requirement and an activity-based investment requirement. The membership investment requirement is currently 0.04 percent of each member’s total assets as of the previous calendar year-end, subject to a minimum of $1,000 and a maximum of $7,000,000. Except as described below, the activity-based investment requirement is (and has been) 4.1 percent of outstanding advances. Members and institutions that acquire members must comply with the activity-based investment requirements for as long as the relevant advances remain outstanding. The Bank’s Board of Directors has the authority to adjust these requirements periodically within ranges established in the Capital Plan, as amended from time to time, to ensure that the Bank remains adequately capitalized.

The Bank has two sub-classes of Class B Stock. Class B-1 Stock is used to meet the membership investment requirement and Class B-2 Stock is used to meet the activity-based investment requirement. Daily, subject to the limitations in the Capital Plan, the Bank converts shares of one sub-class of Class B Stock to the other sub-class of Class B Stock under the following circumstances: (i) shares of Class B-2 Stock held by a shareholder in excess of its activity-based investment requirement are converted into Class B-1 Stock, if necessary, to meet that shareholder’s membership investment requirement and (ii) shares of Class B-1 Stock held by a shareholder in excess of the amount required to meet its membership investment requirement are converted into Class B-2 Stock as needed in order to satisfy that shareholder’s activity-based investment requirement.

Under the Bank's Capital Plan, the permissible range for the activity-based investment requirement is a range of 2.0 percent to 5.0 percent of members’ advances outstanding. The Bank’s Board of Directors may establish one or more separate advances investment requirement percentages (each an "advance type specific percentage") within the range described above to be applied to a specific category of advances in lieu of the generally applicable advances-related investment requirement percentage in effect at the time. Such category of advances may be defined as a particular advances product offering, advances with particular maturities or other features, advances that represent an increase in member borrowing, or such other criteria as the Bank’s Board of Directors may determine. Any advance type specific percentage may be established for an indefinite period of time, or for a specific time period, at the discretion of the Bank’s Board of Directors. Any changes to the activity-based investment requirement require at least 30 days advance notice to the Bank’s members.

On September 21, 2015, the Bank announced a Board-authorized reduction in the activity-based stock investment requirement from 4.1 percent to 2.0 percent for certain advances that were funded during the period from October 21, 2015 through December 31, 2015. To be eligible for the reduced activity-based investment requirement, advances funded during this period had to have a minimum maturity of one year or greater, among other things. The standard activity-based stock investment requirement of 4.1 percent continued to apply to all other advances that were funded during the period from October 21, 2015 through December 31, 2015. All other minimum investment requirements also continued to apply.

Excess stock is defined as the amount of stock held by a member (or former member) in excess of that institution's minimum investment requirement (i.e., the amount of stock held in excess of its activity-based investment requirement and, in the case of a member, its membership investment requirement). All excess stock is held as Class B-1 Stock at all times. At any time, shareholders may request the Bank to repurchase excess capital stock. Although the Bank is not obligated to repurchase excess stock prior to the expiration of a five-year redemption or withdrawal notification period, it will typically endeavor to honor such requests within a reasonable period of time (generally not exceeding 30 days) so long as the Bank will continue to meet its regulatory capital requirements following the repurchase.

The Bank's Member Products and Credit Policy provides that the Bank may periodically repurchase a portion of members' excess capital stock. The Bank generally repurchases surplus stock quarterly. For the repurchases that occurred during 2019, 2018 and 2017, surplus stock was defined as the amount of stock held by a shareholder in excess of 125 percent of the shareholder's minimum investment requirement. For those repurchases, a shareholder's surplus stock was not repurchased if: (1) the amount of that shareholder's surplus stock was $2,500,000 or less, (2) the shareholder elected to opt out of the repurchase, or (3) the shareholder was on restricted collateral status (subject to certain exceptions). During the years ended December 31, 2019, 2018 and 2017, the Bank repurchased surplus stock totaling $739,733,000, $764,264,000 and $423,322,000, respectively, none of which was classified as mandatorily redeemable capital stock at the time of repurchase. From time to time, the Bank may modify the definition of surplus stock or the timing and/or frequency of surplus stock repurchases.

Concurrent with the quarterly repurchases of surplus stock that occurred in 2019 and 2018, the Bank also repurchased all excess stock held by non-member shareholders as of the repurchase dates. This excess stock, all of which was classified as mandatorily redeemable capital stock at those dates, totaled $2,296,000 and $5,501,000, respectively.

The following table presents total excess stock at December 31, 2019 and 2018 (in thousands).

	2019	2018
Excess stock		
Capital stock	$ 624,902	$ 575,205
Mandatorily redeemable capital stock	2,066	975
Total	$ 626,968	$ 576,180

Under the Finance Agency's regulations, the Bank is subject to three capital requirements. First, the Bank must maintain at all times permanent capital (defined under the Finance Agency's rules and regulations as retained earnings and all Class B stock regardless of its classification for financial reporting purposes) in an amount at least equal to its risk-based capital requirement, which is the sum of its credit risk capital requirement, its market risk capital requirement, and its operations risk capital requirement, calculated in accordance with the rules and regulations of the Finance Agency. The Finance Agency may require the Bank to maintain a greater amount of permanent capital than is required by the risk-based capital requirements as defined. Second, the Bank must, at all times, maintain total capital in an amount at least equal to 4.0 percent of its total assets (capital-to-assets ratio). For the Bank, total capital is defined by Finance Agency rules and regulations as the Bank's permanent capital and the amount of any general allowance for losses (i.e., those reserves that are not held against specific assets). Finally, the Bank is required to maintain at all times a minimum leverage capital-to-assets ratio in an amount at least equal to 5.0 percent of its total assets. In applying this requirement to the Bank, leverage capital includes the Bank's permanent capital multiplied by a factor of 1.5 plus the amount of any general allowance for losses. The Bank did not have any general reserves at December 31, 2019 or 2018. Under the regulatory definitions, total capital and permanent capital exclude AOCI. Additionally, mandatorily redeemable capital stock is considered capital for purposes of determining the Bank's compliance with its regulatory capital requirements.

At all times during the three years ended December 31, 2019, the Bank was in compliance with the aforementioned capital requirements. The following table summarizes the Bank's compliance with the Finance Agency's capital requirements as of December 31, 2019 and 2018 (dollars in thousands):

	December 31, 2019		December 31, 2018	
	Required	Actual	Required	Actual
Regulatory capital requirements:				
Risk-based capital	$ 881,970	$ 3,706,059	$ 1,159,443	$ 3,643,234
Total capital	$ 3,015,264	$ 3,706,059	$ 2,910,932	$ 3,643,234
Total capital-to-assets ratio	4.00%	4.92%	4.00%	5.01%
Leverage capital	$ 3,769,080	$ 5,559,088	$ 3,638,665	$ 5,464,851
Leverage capital-to-assets ratio	5.00%	7.37%	5.00%	7.51%

On August 4, 2009, the Finance Agency adopted a final rule establishing capital classifications and critical capital levels for the FHLBanks. The rule defines critical capital levels for the FHLBanks and establishes criteria for each of the following capital classifications identified in the Safety and Soundness Act, as amended by the Housing and Economic Recovery Act of 2008: adequately capitalized, undercapitalized, significantly undercapitalized and critically undercapitalized. An adequately capitalized FHLBank meets all existing risk-based and minimum capital requirements. An undercapitalized FHLBank does not meet one or more of its risk-based or minimum capital requirements, but nonetheless has total capital equal to or greater than 75 percent of all capital requirements. A significantly undercapitalized FHLBank does not have total capital equal to or greater than 75 percent of all capital requirements, but the FHLBank does have total capital greater than 2 percent of its total assets. A critically undercapitalized FHLBank has total capital that is less than or equal to 2 percent of its total assets. The Bank has been classified as adequately capitalized since the rule became effective.

In addition to restrictions on capital distributions by a FHLBank that does not meet all of its risk-based and minimum capital requirements, a FHLBank that is classified as undercapitalized, significantly undercapitalized or critically undercapitalized is required to take certain actions, such as submitting a capital restoration plan to the Director of the Finance Agency for approval. Additionally, with respect to a FHLBank that is less than adequately capitalized, the Director of the Finance Agency may take other actions that he or she determines will help ensure the safe and sound operation of the FHLBank and its compliance with its risk-based and minimum capital requirements in a reasonable period of time.

The GLB Act made membership voluntary for all members. Members that withdraw from membership may not be readmitted to membership in any FHLBank for at least five years following the date that their membership was terminated and all of their shares of stock were redeemed or repurchased.

Effective February 28, 2011, the Bank entered into a Joint Capital Enhancement Agreement (the "JCE Agreement") with the other FHLBanks. Effective August 5, 2011, the FHLBanks amended the JCE Agreement, and the Finance Agency approved an amendment to the Bank's capital plan to incorporate its provisions on that same date. The amended JCE Agreement provides that the Bank (and each of the other FHLBanks) will, on a quarterly basis, allocate at least 20 percent of its net income to a restricted retained earnings account ("RRE Account"). Pursuant to the provisions of the amended JCE Agreement, the Bank is required to build its RRE Account to an amount equal to one percent of its total outstanding consolidated obligations, which for this purpose is based on the most recent quarter's average carrying value of all outstanding consolidated obligations, excluding hedging adjustments. Amounts allocated to the Bank's RRE Account are not available to pay dividends.

The Bank's Board of Directors may declare dividends at the same rate for all shares of Class B Stock, or at different rates for Class B-1 Stock and Class B-2 Stock, provided that in no event can the dividend rate on Class B-2 Stock be lower than the dividend rate on Class B-1 Stock. Dividend payments may be made in the form of cash, additional shares of either, or both, sub-classes of Class B Stock, or a combination thereof as determined by the Bank's Board of Directors and can be paid only from unrestricted retained earnings or a portion of current earnings. The Bank's Board of Directors may not declare or pay a dividend if the Bank is not in compliance with its minimum capital requirements or if the Bank would fail to meet its minimum capital requirements after paying such dividend. In addition, the Bank's Board of Directors may not declare or pay a dividend based on projected or anticipated earnings; further, the Bank may not declare or pay any dividends in the form of capital stock if its excess stock is greater than 1 percent of its total assets or if, after the issuance of such shares, the Bank's outstanding excess stock would be greater than 1 percent of its total assets.

Mandatorily Redeemable Capital Stock. As discussed in Note 1, the Bank's capital stock is classified as equity (capital) for financial reporting purposes until either a written redemption or withdrawal notice is received from a member or a membership withdrawal or termination is otherwise initiated, at which time the capital stock is reclassified to liabilities. The Finance Agency has confirmed that the accounting classification of certain shares of its capital stock as liabilities does not affect the definition of capital for purposes of determining the Bank's compliance with its regulatory capital requirements.

At December 31, 2019, the Bank had $7,140,000 in outstanding capital stock subject to mandatory redemption held by 6 institutions. As of December 31, 2018, the Bank had $6,979,000 in outstanding capital stock subject to mandatory redemption held by 8 institutions. These amounts are classified as liabilities in the statements of condition. During the years ended December 31, 2019, 2018 and 2017, dividends on mandatorily redeemable capital stock in the amount of $189,000, $101,000 and $107,000, respectively, were recorded as interest expense in the statements of income.

The Bank is not required to redeem or repurchase activity-based stock until the later of the expiration of a notice of redemption or withdrawal or the date the activity no longer remains outstanding. If activity-based stock becomes excess stock as a result of reduced activity, the Bank, in its discretion and subject to certain regulatory restrictions, may repurchase excess stock prior to the expiration of the notice of redemption or withdrawal. The Bank will generally repurchase such excess stock as long as it expects to continue to meet its minimum capital requirements following the repurchase.

The following table summarizes the Bank's mandatorily redeemable capital stock at December 31, 2019 by year of earliest mandatory redemption (in thousands). The earliest mandatory redemption reflects the earliest time at which the Bank is required to redeem the shareholder's capital stock, and is based on the assumption that the activities associated with the activity-based stock have concluded by the time the notice of redemption or withdrawal expires.

2020	$ 214
2022	428
2023	6,228
2024	270
Total	$ 7,140

The following table summarizes the Bank's mandatorily redeemable capital stock activity during 2019, 2018 and 2017 (in thousands).

Balance, January 1, 2017	$ 3,417
Capital stock that became subject to mandatory redemption during the year	20,269
Mandatorily redeemable capital stock reclassified to equity during the year	(39)
Redemption/repurchase of mandatorily redeemable capital stock	(17,934)
Stock dividends classified as mandatorily redeemable	228
Balance, December 31, 2017	5,941
Capital stock that became subject to mandatory redemption during the year	6,688
Mandatorily redeemable capital stock reclassified to equity during the year	(112)
Redemption/repurchase of mandatorily redeemable capital stock	(5,675)
Stock dividends classified as mandatorily redeemable	137
Balance, December 31, 2018	6,979
Capital stock that became subject to mandatory redemption during the year	2,326
Redemption/repurchase of mandatorily redeemable capital stock	(2,391)
Stock dividends classified as mandatorily redeemable	226
Balance, December 31, 2019	$ 7,140

A member may cancel a previously submitted redemption or withdrawal notice by providing a written cancellation notice to the Bank prior to the expiration of the five-year redemption/withdrawal notice period. A member that cancels a stock redemption or withdrawal notice more than 30 days after it is received by the Bank and prior to its expiration is subject to a cancellation fee equal to a percentage of the par value of the capital stock subject to the cancellation notice.

The following table provides the number of institutions that held mandatorily redeemable capital stock and the number that submitted a withdrawal notice or otherwise initiated a termination of their membership and the number of terminations completed during 2019, 2018 and 2017:

	2019	2018	2017
Number of institutions, beginning of year	8	15	15
Due to mergers and acquisitions	2	1	2
Due to withdrawals	—	1	1
Due to liquidation	—	1	1
Recission of withdrawal notice	—	(1)	—
Terminations completed during the year	(4)	(9)	(4)
Number of institutions, end of year	6	8	15

The Bank did not receive any stock redemption notices in 2019, 2018 or 2017.

Limitations on Redemption or Repurchase of Capital Stock. The GLB Act imposes the following restrictions on the redemption or repurchase of the Bank's capital stock.

- In no event may the Bank redeem or repurchase capital stock if the Bank is not in compliance with its minimum capital requirements or if the redemption or repurchase would cause the Bank to be out of compliance with its minimum capital requirements, or if the redemption or repurchase would cause the member to be out of compliance with its minimum investment requirement. In addition, the Bank's Board of Directors may suspend redemption of capital stock if the Bank reasonably believes that continued redemption of capital stock would cause the Bank to fail to meet its minimum capital requirements in the future, would prevent the Bank from maintaining adequate capital against a potential risk that may not be adequately reflected in its minimum capital requirements, or would otherwise prevent the Bank from operating in a safe and sound manner.
- In no event may the Bank redeem or repurchase capital stock without the prior written approval of the Finance Agency if the Finance Agency or the Bank's Board of Directors has determined that the Bank has incurred, or is likely to incur, losses that result in, or are likely to result in, charges against the capital of the Bank. For this purpose, charges against the capital of the Bank means an other than temporary decline in the Bank's total equity that causes the value of total equity to fall below the Bank's aggregate capital stock amount. Such a determination may be made by the Finance Agency or the Board of Directors even if the Bank is in compliance with its minimum capital requirements.
- The Bank may not repurchase any capital stock without the written consent of the Finance Agency during any period in which the Bank has suspended redemptions of capital stock. The Bank is required to notify the Finance Agency if it suspends redemptions of capital stock and set forth its plan for addressing the conditions that led to the suspension. The Finance Agency may require the Bank to reinstate redemptions of capital stock.
- In no event may the Bank redeem or repurchase shares of capital stock if the principal and interest due on any FHLBank System consolidated obligations issued through the Office of Finance have not been paid in full or, under certain circumstances, if the Bank becomes a non-complying FHLBank under Finance Agency regulations as a result of its inability to comply with regulatory liquidity requirements or to satisfy its current obligations.
- If at any time the Bank determines that the total amount of capital stock subject to outstanding stock redemption or withdrawal notices with expiration dates within the following 12 months exceeds the amount of capital stock the Bank could redeem and still comply with its minimum capital requirements, the Bank will determine whether to suspend redemption and repurchase activities altogether, to fulfill requests for redemption sequentially in the order in which they were received, to fulfill the requests on a pro rata basis, or to take other action deemed appropriate by the Bank.

Note 15—Employee Retirement Plans

The Bank participates in the Pentegra Defined Benefit Plan for Financial Institutions ("Pentegra DB Plan"), a tax-qualified defined benefit pension plan. The Pentegra DB Plan covers substantially all officers and employees of the Bank who were hired prior to January 1, 2007, and any new employee of the Bank who was hired on or after January 1, 2007, provided that the employee had prior service with a financial services institution that participated in the Pentegra DB Plan, during which service the employee was covered by such plan. In addition, effective July 1, 2015, coverage was extended to include all of the Bank's non-highly compensated employees (as defined by Internal Revenue Service rules) who were hired on and after January 1, 2007 but before August 1, 2010. The Pentegra DB Plan is treated as a multiemployer plan for accounting purposes, but operates as a multiple-employer plan under the Employee Retirement Income Security Act of 1974 ("ERISA") and the Internal Revenue Code. As a result, certain multiemployer plan disclosures, including the certified zone status, are not applicable to the Pentegra

DB Plan. Under the Pentegra DB Plan, contributions made by a participating employer may be used to provide benefits to employees of other participating employers because assets contributed by an employer are not segregated in a separate account or restricted to provide benefits only to employees of that employer. In addition, in the event a participating employer is unable to meet its contribution requirements, the required contributions for the other participating employers could increase proportionately.

The Pentegra DB Plan operates on a fiscal year from July 1 through June 30. The Pentegra DB Plan files one Form 5500 on behalf of all employers who participate in the plan. The Employer Identification Number is 13-5645888 and the three-digit plan number is 333. There are no collective bargaining agreements in place at the Bank.

The Pentegra DB Plan's annual valuation process includes separate calculations of the plan's funded status as well as the funded status of each participating employer. Participating employers in an under-funded position are billed for their required contributions while those in an over-funded position can use their surplus to offset all or a portion of their contribution requirement. The funded status is defined as the market value of assets divided by the funding target (an amount equal to 100 percent of the present value of all benefit liabilities accrued at the valuation date) and is calculated as of the beginning of the Pentegra DB Plan year. As permitted by ERISA, the Pentegra DB Plan accepts contributions for a plan year up to eight and a half months after the end of that plan year and, as a result, the market value of assets at the valuation date (July 1) is increased by any subsequent contributions that are designated for the immediately preceding plan year ended June 30.

The most recent Form 5500 available for the Pentegra DB Plan is for the year ended June 30, 2018. For the plan years ended June 30, 2018 and 2017, the Bank's contributions did not represent more than 5 percent of the total contributions to the plan.

The following table presents the Bank's net pension cost and its funded status, as well as the funded status of the Pentegra DB Plan (dollars in thousands, including amounts presented in the footnotes to the table).

	2019	2018	2017
Net pension cost charged to compensation and benefit expense for the year ended December 31	$ 5,200	$ 5,200	$ 5,214
Pentegra DB Plan funded status as of July 1	108.6% [(a)]	111.0% [(b)]	111.8%
Bank's funded status as of July 1	94.8%	97.4%	97.7%

(a) The Pentegra DB Plan's funded status as of July 1, 2019 is preliminary and may increase because the plan's participants were permitted to make contributions for the plan year ended June 30, 2019 through March 15, 2020. Contributions made during the period from July 1, 2019 through March 15, 2020 and designated for the plan year ended June 30, 2019 will be included in the final valuation as of July 1, 2019. The final funded status as of July 1, 2019 will not be available until the Form 5500 for the plan year July 1, 2019 through June 30, 2020 is filed (this Form 5500 is due to be filed no later than April 2021).

(b) The Pentegra DB Plan's funded status as of July 1, 2018 is preliminary and may increase because the plan's participants were permitted to make contributions for the plan year ended June 30, 2018 through March 15, 2019. Contributions made during the period from July 1, 2018 through March 15, 2019 and designated for the plan year ended June 30, 2018 will be included in the final valuation as of July 1, 2018. The final funded status as of July 1, 2018 will not be available until the Form 5500 for the plan year July 1, 2018 through June 30, 2019 is filed (this Form 5500 is due to be filed no later than April 2020).

Prior to December 1, 2018, the Bank participated in the Pentegra Defined Contribution Plan for Financial Institutions (“Pentegra DC Plan”), a tax-qualified defined contribution plan. Effective December 1, 2018, the Bank established the FHLBank of Dallas 401(k) Retirement Plan (the "FHLB Dallas DC Plan"), a tax-qualified defined contribution plan which replaced the Pentegra DC Plan for all active employees. In connection with the establishment of the FHLB Dallas DC Plan, substantially all active employee account balances were transferred from the Pentegra DC Plan to the FHLB Dallas DC Plan. The Bank’s contributions to the FHLB Dallas DC Plan (and, previously, the Pentegra DC Plan) are (were) equal to a percentage of voluntary employee contributions, subject to certain limitations. During the years ended December 31, 2019, 2018 and 2017, the Bank contributed an aggregate amount of $1,651,000, $1,440,000 and $1,411,000, respectively, to these plans.

Additionally, the Bank maintains a non-qualified deferred compensation plan that is available to some employees, which is, in substance, an unfunded supplemental retirement plan. The Bank’s liability, which consists of the accumulated employee compensation deferrals, accrued earnings (or losses) on those deferrals and matching Bank contributions corresponding to the contribution percentages applicable to the defined contribution plan, was $6,998,000 and $5,528,000 at December 31, 2019 and 2018, respectively. Compensation and benefits expense includes accrued earnings (losses) on deferred employee compensation and Bank contributions totaling $1,136,000, $(268,000) and $585,000 for the years ended December 31, 2019, 2018 and 2017, respectively.

The Bank's non-qualified deferred compensation plan is also available to all of its directors. The Bank’s liability for directors' deferred compensation, which consists of the accumulated compensation deferrals (representing directors’ fees) and the accrued earnings (losses) on those deferrals, was $3,338,000 and $2,671,000 at December 31, 2019 and 2018, respectively.

Other operating expense includes accrued earnings (losses) on deferred director compensation totaling $343,000, $(113,000) and $192,000 for the years ended December 31, 2019, 2018 and 2017, respectively.

The Bank maintains a Special Non-Qualified Deferred Compensation Plan (the “SERP”), a defined contribution plan that was established primarily to provide supplemental retirement benefits to those employees who were serving as the Bank’s executive officers at the time the SERP was established. Each participant’s benefit under the SERP consists of contributions that were made by the Bank on the participant’s behalf, plus an allocation of the investment gains or losses on the assets used to fund the SERP. Contributions to the SERP are determined solely at the discretion of the Bank’s Board of Directors; the Bank has no obligation or current intention to make future contributions to the SERP. The Bank’s accrued liability under this plan was $3,809,000 and $4,062,000 at December 31, 2019 and 2018, respectively. The Bank did not make any contributions to the SERP during the years ended December 31, 2019, 2018 or 2017.

The Bank sponsors a retirement benefits program that includes health care and life insurance benefits for eligible retirees. The health care portion of the program is contributory while the life insurance benefits, which are available to retirees with at least 20 years of service, are offered on a noncontributory basis. Prior to January 1, 2005, retirees were eligible to remain enrolled in the Bank’s health care benefits plan if age 50 or older with at least 10 years of service at the time of retirement. In December 2004, the Bank modified the eligibility requirements relating to retiree health care continuation benefits. Effective January 1, 2005, retirees are eligible to remain enrolled in the Bank’s health care benefits plan if age 55 or older with at least 15 years of service at the time of retirement. Employees who were age 50 or older with 10 years of service and those who had 20 years of service as of December 31, 2004 were not subject to the revised eligibility requirements. Additionally, then current retiree benefits were unaffected by these modifications. In October 2005, the Bank modified the participant contribution requirements relating to its retirement benefits program. Effective December 31, 2005, retirees who are age 55 or older with at least 15 years of service at the time of retirement can remain enrolled in the Bank’s health care benefits program by paying 100% of the expected plan cost. Previously, participant contributions were subsidized by the Bank; this subsidy was based upon the Bank’s COBRA premium rate and the employee’s age and length of service with the Bank. Then current retirees, employees who were hired prior to January 1, 1991 and those who, as of December 31, 2004, had at least 20 years of service or were age 50 or older with 10 years of service are not subject to these revised contribution requirements prior to age 65. Under the revised plan, at age 65, all plan participants are required to pay 100% of the expected plan cost. The Bank does not have any plan assets set aside for the retirement benefits program.

The Bank uses a December 31 measurement date for its retirement benefits program. A reconciliation of the accumulated postretirement benefit obligation (“APBO”) and funding status of the retirement benefits program for the years ended December 31, 2019 and 2018 is as follows (in thousands):

	Year Ended December 31,	
	2019	**2018**
Change in APBO		
APBO at beginning of year	$ 566	$ 550
Service cost	27	28
Interest cost	23	25
Actuarial loss	152	161
Participant contributions	174	180
Benefits paid	(306)	(378)
APBO at end of year	636	566
Change in plan assets		
Fair value of plan assets at beginning of year	—	—
Benefits paid by the Bank	132	198
Participant contributions	174	180
Benefits paid	(306)	(378)
Fair value of plan assets at end of year	—	—
Funded status recognized in other liabilities at end of year	$ (636)	$ (566)

Amounts recognized in AOCI at December 31, 2019 and 2018 consist of the following (in thousands):

	December 31,	
	2019	2018
Net actuarial gain	$ 1,139	$ 1,385
Prior service cost	(89)	(109)
	$ 1,050	$ 1,276

The amounts in AOCI include $20,000 of prior service cost and $80,000 of net actuarial gains that are expected to be recognized as components of net periodic benefit credit in 2020.

The actuarial assumptions used in the measurement of the Bank's benefit obligation included a gross health care cost trend rate of 5.2 percent for 2020. For 2019, 2018 and 2017, gross health care cost trend rates of 5.5 percent, 6.6 percent and 7.6 percent, respectively, were used. The gross health care cost trend rate is assumed to decline by 0.03 percent per year to a final rate of 3.8 percent in 2075 and thereafter. To compute the APBO at December 31, 2019 and 2018, weighted average discount rates of 3.34 percent and 4.10 percent were used. Weighted average discount rates of 4.10 percent, 3.74 percent and 3.12 percent were used to compute the net periodic benefit cost (credit) for 2019, 2018 and 2017, respectively.

Components of net periodic benefit cost (credit) for the years ended December 31, 2019, 2018 and 2017 were as follows (in thousands):

	Year Ended December 31,		
	2019	2018	2017
Service cost	$ 27	$ 28	$ 25
Interest cost	23	25	19
Amortization of prior service cost	20	20	20
Amortization of net actuarial gain	(94)	(100)	(107)
Net periodic benefit credit	$ (24)	$ (27)	$ (43)

The Bank reports the service cost component of its net periodic postretirement benefit cost (credit) in compensation and benefits expense and the other components of net periodic postretirement benefit cost (credit) in "other, net" in the other income (loss) section of the statement of income.

Under U.S. GAAP, the Bank is required to recognize the overfunded or underfunded status of its retirement benefits program as an asset or liability in its statement of condition and to recognize changes in that funded status in the year in which the changes occur through other comprehensive income. Changes in benefit obligations recognized in other comprehensive income during the years ended December 31, 2019, 2018 and 2017 were as follows (in thousands):

	Year Ended December 31,		
	2019	2018	2017
Amortization of prior service cost included in net periodic benefit cost	$ 20	$ 20	$ 20
Actuarial gain (loss)	(152)	(161)	204
Amortization of net actuarial gain included in net periodic benefit cost	(94)	(100)	(107)
Total changes in benefit obligations recognized in other comprehensive income	$ (226)	$ (241)	$ 117

A 1 percent increase or decrease in the health care cost trend rate would have had an insignificant effect on the APBO at December 31, 2019 and the aggregate of the service and interest cost components of the net periodic benefit cost for the year ended December 31, 2019.

The following net postretirement benefit payments, which reflect expected future service, as appropriate, are expected to be paid (in thousands):

Year Ended December 31,	Expected Benefits Payments, Net of Participant Contributions
2020	$ 101
2021	93
2022	80
2023	53
2024	32
2025-2029	66
	$ 425

Note 16—Estimated Fair Values

Fair value is defined under U.S. GAAP as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. A fair value measurement assumes that the transaction to sell the asset or transfer the liability occurs in the principal market for the asset or liability or, in the absence of a principal market, the most advantageous market for the asset or liability. U.S. GAAP establishes a fair value hierarchy and requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. U.S. GAAP also requires an entity to disclose the level within the fair value hierarchy in which each measurement is classified. The fair value hierarchy prioritizes the inputs used to measure fair value into three broad levels:

Level 1 Inputs — Quoted prices (unadjusted) in active markets for identical assets or liabilities that the reporting entity can access at the measurement date.

Level 2 Inputs — Inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly. If the asset or liability has a specified (contractual) term, a Level 2 input must be observable for substantially the full term of the asset or liability. Level 2 inputs include the following: (1) quoted prices for similar assets or liabilities in active markets; (2) quoted prices for identical or similar assets or liabilities in markets that are not active or in which little information is released publicly; (3) inputs other than quoted prices that are observable for the asset or liability (e.g., interest rates and yield curves that are observable at commonly quoted intervals and implied volatilities); and (4) inputs that are derived principally from or corroborated by observable market data (e.g., implied spreads).

Level 3 Inputs — Unobservable inputs for the asset or liability that are supported by little or no market activity. None of the Bank's assets or liabilities that are recorded at fair value on a recurring basis were measured using significant Level 3 inputs.

For financial instruments carried at fair value, the Bank reviews the fair value hierarchy classifications on a quarterly basis. Changes in the observability of the valuation inputs may result in a reclassification of certain assets or liabilities. Reclassifications, if any, would be reported as transfers as of the beginning of the quarter in which the changes occurred. For the years ended December 31, 2019 and 2018, the Bank did not reclassify any fair value measurements.

The following estimated fair value amounts have been determined by the Bank using available market information and management's best judgment of appropriate valuation methods. These estimates are based on pertinent information available to the Bank as of December 31, 2019 and 2018. Although management uses its best judgment in estimating the fair value of these financial instruments, there are inherent limitations in any estimation technique or valuation methodology. For example, because an active secondary market does not exist for many of the Bank's financial instruments (e.g., advances, non-agency RMBS and mortgage loans held for portfolio), in certain cases their fair values are not subject to precise quantification or verification. Therefore, the estimated fair values presented below in the Fair Value Summary Tables may not be indicative of the amounts that would have been realized in market transactions at the reporting dates. Further, the fair values do not represent an estimate of the overall market value of the Bank as a going concern, which would take into account future business opportunities.

The valuation techniques used to measure the fair values of the Bank's financial instruments that are measured at fair value on the statement of condition are described below.

Trading and available-for-sale securities. To value its U.S. Treasury Notes and U.S. Treasury Bills classified as trading securities and all of its available-for-sale securities, the Bank obtains prices from three designated third-party pricing vendors when available.

The pricing vendors use various proprietary models to price these securities. The inputs to those models are derived from various sources including, but not limited to, benchmark yields, reported trades, dealer estimates, issuer spreads, benchmark securities, bids, offers and other market-related data. Because many securities do not trade on a daily basis, the pricing vendors use available information as applicable such as benchmark curves, benchmarking of like securities, sector groupings and matrix pricing to determine the prices for individual securities. Each pricing vendor has an established challenge process in place for all security valuations, which facilitates resolution of potentially erroneous prices identified by the Bank.

Recently, the Bank conducted reviews of the three pricing vendors to reconfirm its understanding of the vendors' pricing processes, methodologies and control procedures and was satisfied that those processes, methodologies and control procedures were adequate and appropriate.

A "median" price is first established for each security using a formula that is based upon the number of prices received. If three prices are received, the middle price is the median price; if two prices are received, the average of the two prices is the median price; and if one price is received, it is the median price (and also the final price) subject to some type of validation similar to the evaluation of outliers described below. All prices that are within a specified tolerance threshold of the median price are included in the "cluster" of prices that are averaged to compute a "default" price. All prices that are outside the threshold ("outliers") are subject to further analysis (including, but not limited to, comparison to prices provided by an additional third-party valuation service, prices for similar securities, and/or non-binding dealer estimates) to determine if an outlier is a better estimate of fair value. If an outlier (or some other price identified in the analysis) is determined to be a better estimate of fair value, then the outlier (or the other price, as appropriate) is used as the final price rather than the default price. If, on the other hand, the analysis confirms that an outlier (or outliers) is (are) in fact not representative of fair value and the default price is the best estimate, then the default price is used as the final price. In all cases, the final price is used to determine the fair value of the security.

If all prices received for a security are outside the tolerance threshold level of the median price, then there is no default price, and the final price is determined by an evaluation of all outlier prices as described above.

As of December 31, 2019 and 2018, three vendor prices were received for substantially all of the Bank's trading and available-for-sale securities and the final prices for substantially all of those securities were computed by averaging the three prices. Based on the Bank's understanding of the pricing methods employed by the third-party pricing vendors and the relative lack of dispersion among the vendor prices (or, in those instances in which there were outliers, the Bank's additional analyses), the Bank believes its final prices result in reasonable estimates of the fair values and that the fair value measurements are classified appropriately in the fair value hierarchy.

Derivative assets/liabilities. The fair values of the Bank's interest rate swap and swaption agreements are estimated using a pricing model with inputs that are observable in the market (e.g., the relevant interest rate curves (that is, the relevant LIBOR swap curve or the OIS curve and, for purposes of discounting, the OIS curve) and, for agreements containing options, swaption volatility). The fair values of the Bank's interest rate caps and floors are also estimated using a pricing model with inputs that are observable in the market (that is, cap/floor volatility, the relevant LIBOR swap curve and, for purposes of discounting, the OIS curve).

As the collateral (or variation margin in the case of daily settled contracts) and netting provisions of the Bank's arrangements with its derivative counterparties significantly reduce the risk from nonperformance (see Note 12), the Bank does not consider its own nonperformance risk or the nonperformance risk associated with each of its counterparties to be a significant factor in the valuation of its derivative assets and liabilities. The Bank compares the fair values obtained from its pricing model to clearinghouse valuations (in the case of cleared derivatives) and non-binding dealer estimates (in the case of bilateral derivatives) and may also compare its fair values to those of similar instruments to ensure that the fair values are reasonable.

The fair values of the Bank's derivative assets and liabilities include accrued interest receivable/payable and cash collateral remitted to/received from counterparties; the estimated fair values of the accrued interest receivable/payable and cash collateral approximate their carrying values due to their short-term nature. The fair values of the Bank's bilateral derivatives are netted by counterparty pursuant to the provisions of the credit support annexes to the Bank's master netting agreements with its non-member bilateral derivative counterparties. The Bank's cleared derivative transactions with each clearing member of each clearinghouse are netted pursuant to the Bank's arrangements with those parties. In each case, if the netted amounts are positive, they are classified as an asset and, if negative, as a liability.

The Bank estimates the fair values of mortgage delivery commitments based upon the prices for to-be-announced ("TBA") securities, which represent quoted market prices for forward-settling agency MBS. The prices are adjusted for differences in coupon, cost to carry, vintage, remittance type and product type between the Bank's mortgage loan commitments and the referenced TBA MBS.

Other assets held at fair value. To value its mutual fund investments included in other assets, the Bank obtains quoted prices for the mutual funds.

The following table presents the carrying values and estimated fair values of the Bank's financial instruments at December 31, 2019 (in thousands), as well as the level within the fair value hierarchy in which the measurements are classified. Financial assets and liabilities are classified in their entirety based on the lowest level input that is significant to the fair value estimate.

FAIR VALUE SUMMARY TABLE

		Estimated Fair Value				
Financial Instruments	**Carrying Value**	**Total**	**Level 1**	**Level 2**	**Level 3**	**Netting Adjustment[4]**
Assets:						
Cash and due from banks	$ 20,551	$ 20,551	$ 20,551	$ —	$ —	$ —
Interest-bearing deposits	1,670,249	1,670,249	—	1,670,249	—	—
Securities purchased under agreements to resell	4,310,000	4,310,000	—	4,310,000	—	—
Federal funds sold	4,505,000	4,505,000	—	4,505,000	—	—
Trading securities [1]	5,460,136	5,460,136	—	5,460,136	—	—
Available-for-sale securities [1]	16,766,500	16,766,500	—	16,766,500	—	—
Held-to-maturity securities	1,206,170	1,215,580	—	1,150,175 [2]	65,405 [3]	—
Advances	37,117,455	37,092,230	—	37,092,230	—	—
Mortgage loans held for portfolio, net	4,075,464	4,109,758	—	4,109,758	—	—
Accrued interest receivable	154,218	154,218	—	154,218	—	—
Derivative assets [1]	41,271	41,271	—	56,339	—	(15,068)
Other assets held at fair value [1]	14,222	14,222	14,222	—	—	—
Liabilities:						
Deposits	1,286,219	1,286,258	—	1,286,258	—	—
Consolidated obligations						
Discount notes	34,327,886	34,325,476	—	34,325,476	—	—
Bonds	35,745,827	35,757,691	—	35,757,691	—	—
Mandatorily redeemable capital stock	7,140	7,140	7,140	—	—	—
Accrued interest payable	115,350	115,350	—	115,350	—	—
Derivative liabilities [1]	3,855	3,855	—	172,435	—	(168,580)

(1) Financial instruments measured at fair value on a recurring basis as of December 31, 2019.

(2) Consists of the Bank's holdings of U.S. government-guaranteed debentures, state housing agency obligations and GSE RMBS.

(3) Consists of the Bank's holdings of non-agency RMBS.

(4) Amounts represent the impact of legally enforceable master netting agreements or other legally enforceable arrangements between the Bank and its derivative counterparties that allow the Bank to offset positive and negative positions (inclusive of variation margin for daily settled contracts) as well as any cash collateral held or placed with those same counterparties.

The following table presents the carrying values and estimated fair values of the Bank's financial instruments at December 31, 2018 (in thousands), as well as the level within the fair value hierarchy in which the measurements are classified. Financial assets and liabilities are classified in their entirety based on the lowest level input that is significant to the fair value estimate.

FAIR VALUE SUMMARY TABLE

		Estimated Fair Value				
Financial Instruments	**Carrying Value**	**Total**	**Level 1**	**Level 2**	**Level 3**	**Netting Adjustment[4]**
Assets:						
Cash and due from banks	$ 35,157	$ 35,157	$ 35,157	$ —	$ —	$ —
Interest-bearing deposits	2,500,317	2,500,317	—	2,500,317	—	—
Securities purchased under agreements to resell	6,215,000	6,215,000	—	6,215,000	—	—
Federal funds sold	1,731,000	1,731,000	—	1,731,000	—	—
Trading securities [1]	1,818,178	1,818,178	—	1,818,178	—	—
Available-for-sale securities [1]	15,825,155	15,825,155	—	15,825,155	—	—
Held-to-maturity securities	1,462,279	1,478,691	—	1,400,536 [2]	78,155 [3]	—
Advances	40,793,813	40,720,636	—	40,720,636	—	—
Mortgage loans held for portfolio, net	2,185,503	2,161,720	—	2,161,720	—	—
Accrued interest receivable	152,670	152,670	—	152,670	—	—
Derivative assets [1]	9,878	9,878	—	43,696	—	(33,818)
Other assets held at fair value [1]	12,376	12,376	12,376	—	—	—
Liabilities:						
Deposits	963,992	964,017	—	964,017	—	—
Consolidated obligations						
Discount notes	35,731,713	35,723,208	—	35,723,208	—	—
Bonds	31,931,929	31,850,858	—	31,850,858	—	—
Mandatorily redeemable capital stock	6,979	6,979	6,979	—	—	—
Accrued interest payable	122,938	122,938	—	122,938	—	—
Derivative liabilities [1]	45,991	45,991	—	234,679	—	(188,688)

(1) Financial instruments measured at fair value on a recurring basis as of December 31, 2018.

(2) Consists of the Bank's holdings of U.S. government-guaranteed debentures, state housing agency obligations, U.S. government-guaranteed RMBS and GSE RMBS.

(3) Consists of the Bank's holdings of non-agency RMBS.

(4) Amounts represent the impact of legally enforceable master netting agreements or other legally enforceable arrangements between the Bank and its derivative counterparties that allow the Bank to offset positive and negative positions (inclusive of variation margin for daily settled contracts) as well as any cash collateral held or placed with those same counterparties.

Note 17—Commitments and Contingencies

Joint and several liability. As described in Note 10, the Bank is jointly and severally liable with the other 10 FHLBanks for the payment of principal and interest on all of the consolidated obligations issued by the FHLBanks. At December 31, 2019 and 2018, the par amounts of the other 10 FHLBanks' outstanding consolidated obligations totaled $956 billion and $964 billion, respectively. The Finance Agency, in its discretion, may require any FHLBank to make principal or interest payments due on any consolidated obligation, regardless of whether there has been a default by a FHLBank having primary liability. To the extent that a FHLBank makes any consolidated obligation payment on behalf of another FHLBank, the paying FHLBank is entitled to reimbursement from the FHLBank with primary liability. However, if the Finance Agency determines that the primary obligor is unable to satisfy its obligations, then the Finance Agency may allocate the outstanding liability among the remaining FHLBanks on a pro rata basis in proportion to each FHLBank's participation in all consolidated obligations outstanding, or on any other basis that the Finance Agency may determine. No FHLBank has ever failed to make any payment on a consolidated obligation for which it was the primary obligor; as a result, the regulatory provisions for directing other FHLBanks to make payments on behalf of another FHLBank or allocating the liability among other FHLBanks have never been invoked.

The joint and several obligations are mandated by Finance Agency regulations and are not the result of arms-length transactions among the FHLBanks. As described above, the FHLBanks have no control over the amount of the guaranty or the determination of how each FHLBank would perform under the joint and several liability. If the Bank expected that it would be required to pay any amounts on behalf of its co-obligors under its joint and several liability, the Bank would charge to income the amount of the expected payment. Based upon the creditworthiness of the other FHLBanks, the Bank currently believes that the likelihood that it would have to pay any amounts beyond those for which it is primarily liable is remote.

Other commitments and contingencies. At December 31, 2019 and 2018, the Bank had commitments to make additional advances totaling approximately $19,397,000 and $124,223,000, respectively. At December 31, 2019, $18,722,000 of the outstanding commitments to make additional advances expire in 2020 and the remainder expire in 2021.

The Bank issues standby letters of credit for a fee on behalf of its members. Standby letters of credit serve as performance guarantees. If the Bank is required to make payment for a beneficiary's draw on the letter of credit, the amount funded is converted into a collateralized advance to the member. Letters of credit are fully collateralized in the same manner as advances (see Note 6). Outstanding standby letters of credit totaled $21,781,829,000 and $18,538,265,000 at December 31, 2019 and 2018, respectively. At December 31, 2019, outstanding letters of credit had original terms of up to 8 years with a final expiration in 2026. Unearned fees on standby letters of credit are recorded in other liabilities and totaled $5,518,000 and $4,801,000 at December 31, 2019 and 2018, respectively. Based on management's credit analyses and collateral requirements, the Bank does not deem it necessary to have any provision for credit losses on these letters of credit (see Note 8).

In late 2017, June 2018 and December 2019, the Bank entered into standby bond purchase agreements with a state housing finance agency within its district whereby, for a fee, the Bank agrees to serve as a standby liquidity provider. If required, the Bank will purchase and hold the housing finance agency's bonds until the designated marketing agent can find a suitable investor or the housing finance agency repurchases the bonds according to a schedule established by the agreement. Each standby bond purchase agreement includes the provisions under which the Bank would be required to purchase the bonds. At December 31, 2019 and 2018, the Bank had outstanding standby bond purchase agreements totaling $484,872,000 and $449,890,000, respectively. At December 31, 2019, standby bond purchase agreements totaling $185,882,000, $246,162,000 and $52,828,000 expire in 2022, 2023 and 2024, respectively. The Bank was not required to purchase any bonds under these agreements during the years ended December 31, 2019 or 2018.

At December 31, 2019 and 2018, the Bank had commitments to purchase conventional mortgage loans totaling $31,765,000 and $11,687,000, respectively, from certain of its PFIs.

At December 31, 2019 and 2018, the Bank had commitments to issue $115,000,000 and $20,000,000 (par value), respectively, of consolidated obligation bonds, all of which were hedged with interest rate swaps. In addition, at December 31, 2019 and 2018, the Bank had commitments to issue $679,510,000 and $323,652,000 (par value), respectively, of consolidated obligation discount notes, none of which were hedged.

The Bank has transacted interest rate exchange agreements with large financial institutions and third-party clearinghouses that are subject to collateral exchange arrangements. As of December 31, 2019 and 2018, the Bank had pledged cash collateral of $156,676,000 and $163,887,000, respectively, to those parties that had credit risk exposure to the Bank related to interest rate exchange agreements. The pledged cash collateral (i.e., interest-bearing deposit asset) is netted against derivative assets and liabilities in the statements of condition. In addition, as of December 31, 2019 and 2018, the Bank had pledged securities with carrying values (and fair values) of $842,256,000 and $712,547,000, respectively, to parties that had credit risk exposure to the Bank related to interest rate exchange agreements. The pledged securities may be rehypothecated and are not netted against derivative assets and liabilities in the statement of condition.

During the years ended December 31, 2019, 2018 and 2017, the Bank charged to operating expenses net rental costs of approximately $360,000, $329,000, and $370,000, respectively. Future minimum rentals at December 31, 2019 were as follows (in thousands):

Year	Premises	Equipment	Total
2020	$ 444	$ 48	$ 492
2021	408	32	440
2022	420	—	420
2023	432	—	432
2024	293	—	293
Thereafter	1,438	—	1,438
Total	$ 3,435	$ 80	$ 3,515

Lease agreements for Bank premises generally provide for increases in the base rentals resulting from increases in property taxes and maintenance expenses. These increases are not expected to have a material effect on the Bank.

The Bank has entered into certain lease agreements to rent space to outside parties in its building. Future minimum rentals under these operating leases at December 31, 2019 were as follows (in thousands):

Year	Total
2020	$ 1,482
2021	1,009
2022	236
2023	106
2024	5
Total	$ 2,838

In the ordinary course of its business, the Bank is subject to the risk that litigation may arise. Currently, the Bank is not a party to any material pending legal proceedings.

For a discussion of other commitments and contingencies, see Notes 11, 12 and 15.

Note 18 — Transactions with Shareholders

As a cooperative, the Bank's capital stock is owned by its members, by former members that retain the stock as provided in the Bank's Capital Plan or by non-member institutions that have acquired members and must retain the stock to support advances or other activities with the Bank. No shareholder owns more than 10% of the voting interests of the Bank due to statutory limits on members' voting rights. As of December 31, 2019, nine of the Bank's directors were member directors. By law, member directors must be officers or directors of a member of the Bank.

Substantially all of the Bank's advances are made to its shareholders (while eligible to borrow from the Bank, housing associates are not required or allowed to hold capital stock). In addition, substantially all of its mortgage loans held for portfolio were purchased from certain of its shareholders. The Bank maintains demand deposit accounts for shareholders primarily as an investment alternative for their excess cash and to facilitate settlement activities that are directly related to advances. As an additional service to members, the Bank also offers term deposit accounts. Further, the Bank offers interest rate swaps, caps and floors to its members. Periodically, the Bank may sell (or purchase) federal funds to (or from) shareholders and/or their affiliates. These transactions are executed on terms that are the same as those with other eligible third-party market participants, except that the Bank's underwriting guidelines specify a lower minimum threshold for the amount of capital that members must have to be an eligible federal funds counterparty than non-members. The Bank has never held any direct equity investments in its shareholders or their affiliates.

Affiliates of two of the Bank's derivative counterparties (Citigroup and Wells Fargo) acquired member institutions on March 31, 2005 and October 1, 2006, respectively. Since the acquisitions were completed, the Bank has continued to enter into interest rate exchange agreements with Citigroup and Wells Fargo in the normal course of business and under the same terms and conditions as before. In addition, the Bank maintains interest-bearing deposits with affiliates of Citigroup and Wells Fargo. Effective October 1, 2006, Citigroup terminated the Ninth District charter of the affiliate that acquired the member institution and, as a result, an affiliate of Citigroup became a non-member shareholder of the Bank. The Bank repurchased all of the affiliate's outstanding capital stock in 2019; accordingly, the affiliate of Citigroup is no longer a shareholder of the Bank.

The Bank did not purchase any debt or equity securities issued by any of its shareholders or their affiliates during the years ended December 31, 2019, 2018 or 2017.

All transactions with shareholders are entered into in the ordinary course of business. The Bank provides the same pricing for advances and other services to all similarly situated members regardless of asset or transaction size, charter type, or geographic location.

The Bank provides, in the ordinary course of its business, products and services to members whose officers or directors may serve as directors of the Bank ("Directors' Financial Institutions"). Finance Agency regulations require that transactions with Directors' Financial Institutions be made on the same terms as those with any other member. As of December 31, 2019 and 2018, advances outstanding to Directors' Financial Institutions aggregated $1,044,633,000 and $792,946,000, respectively, representing 2.8 percent and 1.9 percent, respectively, of the Bank's total outstanding advances as of those dates. The Bank did not acquire any mortgage loans from Directors' Financial Institutions during the years ended December 31, 2019, 2018 or 2017. As of December 31, 2019 and 2018, capital stock outstanding to Directors' Financial Institutions aggregated $72,789,000 and $54,440,000, respectively, representing 2.9 percent and 2.1 percent of the Bank's outstanding capital stock at each of those dates. For purposes of this determination, the Bank's outstanding capital stock includes those shares that are classified as mandatorily redeemable.

Note 19 — Transactions with Other FHLBanks

Occasionally, the Bank loans (or borrows) short-term federal funds to (from) other FHLBanks. The Bank did not loan any short-term federal funds to other FLHBanks during the year ended December 31, 2018. During the years ended December 31, 2019 and 2017, interest income on loans to other FHLBanks totaled $20,000 and $13,000, respectively; these amounts are reported as interest income from federal funds sold in the statements of income. The following table summarizes the Bank's loans to other FHLBanks during the years ended December 31, 2019 and 2017 (in thousands).

	Year Ended December 31,	
	2019	2017
Balance at January 1,	$ —	$ 290,000
Loans made to:		
FHLBank of Boston	300,000	225,000
Collections from:		
FHLBank of San Francisco	—	(290,000)
FHLBank of Boston	(300,000)	(225,000)
Balance at December 31,	$ —	$ —

During the years ended December 31, 2019, 2018 and 2017, interest expense on borrowings from other FHLBanks totaled $109,000, $76,000 and $23,000, respectively. The following table summarizes the Bank's borrowings from other FHLBanks during the years ended December 31, 2019, 2018 and 2017 (in thousands).

	Year Ended December 31,		
	2019	2018	2017
Balance at January 1,	$ —	$ —	$ —
Borrowings from:			
FHLBank of Topeka	—	—	10,000
FHLBank of Boston	150,000	175,000	—
FHLBank of San Francisco	400,000	45,000	—
FHLBank of Cincinnati	—	500,000	—
FHLBank of Atlanta	—	—	250,000
FHLBank of Des Moines	—	500,000	—
FHLBank of Indianapolis	40,000	620,000	30,000
FHLBank of New York	250,000	—	—
Repayments to:			
FHLBank of Topeka	—	—	(10,000)
FHLBank of Boston	(150,000)	(175,000)	—
FHLBank of San Francisco	(400,000)	(45,000)	—
FHLBank of Cincinnati	—	(500,000)	—
FHLBank of Atlanta	—	—	(250,000)
FHLBank of Des Moines	—	(500,000)	—
FHLBank of Indianapolis	(40,000)	(620,000)	(30,000)
FHLBank of New York	(250,000)	—	—
Balance at December 31,	$ —	$ —	$ —

The Bank has, from time to time, assumed the outstanding debt of another FHLBank rather than issue new debt. In connection with these transactions, the Bank becomes the primary obligor for the transferred debt. The Bank did not assume any debt from other FHLBanks during the years ended December 31, 2019, 2018 or 2017. When they occur, the Bank accounts for these transfers in the same manner as it accounts for new debt issuances (see Note 1).

Occasionally, the Bank transfers debt that it no longer needs to other FHLBanks. In connection with these transactions, the assuming FHLBanks become the primary obligors for the transferred debt. The Bank did not transfer any debt to other FHLBanks during the years ended December 31, 2019, 2018 or 2017.

Note 20 — Accumulated Other Comprehensive Income (Loss)

The following table presents the changes in the components of AOCI for the years ended December 31, 2019, 2018 and 2017 (in thousands).

	Net Unrealized Gains (Losses) on Available-for-Sale Securities [(1)]	Net Unrealized Gains (Losses) on Cash Flow Hedges	Non-Credit Portion of Other-than-Temporary Impairment Losses on Held-to-Maturity Securities	Postretirement Benefits	Total AOCI
Year ended December 31, 2019					
Balance at January 1, 2019	$ 118,980	$ 18,412	$ (10,667)	$ 1,276	$ 128,001
Reclassifications from AOCI to net income					
Realized gains on sales of available-for-sale securities included in net income	(852)	—	—	—	(852)
Gains on cash flow hedges included in interest expense	—	(1,829)	—	—	(1,829)
Amortization of prior service costs and net actuarial gains recognized in other income (loss)	—	—	—	(74)	(74)
Other amounts of other comprehensive income (loss)					
Net unrealized gains on available-for-sale securities	26,705	—	—	—	26,705
Unrealized losses on cash flow hedges	—	(54,777)	—	—	(54,777)
Accretion of non-credit portion of other-than-temporary impairment losses to the carrying value of held-to-maturity securities	—	—	2,027	—	2,027
Actuarial loss	—	—	—	(152)	(152)
Total other comprehensive income (loss)	25,853	(56,606)	2,027	(226)	(28,952)
Balance at December 31, 2019	$ 144,833	$ (38,194)	$ (8,640)	$ 1,050	$ 99,049
Year ended December 31, 2018					
Balance at January 1, 2018	$ 212,225	$ 20,185	$ (13,601)	$ 1,517	$ 220,326
Reclassifications from AOCI to net income					
Gains on cash flow hedges included in interest expense	—	(950)	—	—	(950)
Amortization of prior service costs and net actuarial gains recognized in other income (loss)	—	—	—	(80)	(80)
Other amounts of other comprehensive income (loss)					
Net unrealized losses on available-for-sale securities	(93,245)	—	—	—	(93,245)
Unrealized losses on cash flow hedges	—	(823)	—	—	(823)
Accretion of non-credit portion of other-than-temporary impairment losses to the carrying value of held-to-maturity securities	—	—	2,934	—	2,934
Actuarial loss	—	—	—	(161)	(161)
Total other comprehensive income (loss)	(93,245)	(1,773)	2,934	(241)	(92,325)
Balance at December 31, 2018	$ 118,980	$ 18,412	$ (10,667)	$ 1,276	$ 128,001

	Net Unrealized Gains (Losses) on Available-for-Sale Securities [1]	Net Unrealized Gains (Losses) on Cash Flow Hedges	Non-Credit Portion of Other-than-Temporary Impairment Losses on Held-to-Maturity Securities	Postretirement Benefits	Total AOCI
Year ended December 31, 2017					
Balance at January 1, 2017	$ 58,587	$ 20,380	$ (17,157)	$ 1,400	$ 63,210
Reclassifications from AOCI to net income					
Net realized gains on sales of available-for-sale securities included in net income	(1,399)	—	—	—	(1,399)
Losses on cash flow hedges included in interest expense	—	2,375	—	—	2,375
Amortization of prior service costs and net actuarial gains recognized in compensation and benefits expense	—	—	—	(87)	(87)
Other amounts of other comprehensive income (loss)					
Net unrealized gains on available-for-sale securities	155,037	—	—	—	155,037
Unrealized losses on cash flow hedges	—	(2,570)	—	—	(2,570)
Accretion of non-credit portion of other-than-temporary impairment losses to the carrying value of held-to-maturity securities	—	—	3,556	—	3,556
Actuarial gain	—	—	—	204	204
Total other comprehensive income (loss)	153,638	(195)	3,556	117	157,116
Balance at December 31, 2017	$ 212,225	$ 20,185	$ (13,601)	$ 1,517	$ 220,326

[1] Net unrealized gains (losses) on available-for-sale securities are net of unrealized gains and losses relating to hedged interest rate risk included in net income.

Table of Contents

EXHIBIT INDEX

Exhibit	
3.1	Organization Certificate of the Registrant (incorporated by reference to Exhibit 3.1 to the Bank's Registration Statement on Form 10 filed February 15, 2006).
3.2	Bylaws of the Registrant (incorporated by reference to Exhibit 3.2 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2015, filed on March 22, 2016).*
4.1	Capital Plan of the Registrant, as amended and revised on December 3, 2014 and approved by the Federal Housing Finance Agency on June 1, 2015 and for which notice of implementation was given to shareholders on August 31, 2015 (filed as Exhibit 4.1 to the Bank's Current Report on Form 8-K dated August 31, 2015 and filed with the SEC on August 31, 2015, which exhibit is incorporated herein by reference).*
10.1	Deferred Compensation Plan of the Registrant, effective July 24, 2004 (governs deferrals made prior to January 1, 2005) (incorporated by reference to Exhibit 10.1 to the Bank's Registration Statement on Form 10 filed February 15, 2006).
10.2	2011 Amendment to Deferred Compensation Plan of the Registrant for Deferrals Prior to January 1, 2005, effective March 31, 2011 (incorporated by reference to Exhibit 10.2 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2011, filed on March 23, 2012). *
10.3	Deferred Compensation Plan of the Registrant for Deferrals Effective January 1, 2005 (incorporated by reference to Exhibit 10.2 to the Bank's Registration Statement on Form 10 filed February 15, 2006).
10.4	2008 Amendment to Deferred Compensation Plan of the Registrant for Deferrals Effective January 1, 2005, dated December 10, 2008 (incorporated by reference to Exhibit 10.3 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2008, filed on March 27, 2009). *
10.5	2010 Amendment to Deferred Compensation Plan of the Registrant for Deferrals Effective January 1, 2005, dated July 22, 2010 (incorporated by reference to Exhibit 10.1 to the Bank's Quarterly Report on Form 10-Q for the fiscal quarter ended September 30, 2010, filed on November 12, 2010). *
10.6	Non-Qualified Deferred Compensation Plan for the Board of Directors of the Registrant, effective July 24, 2004 (governs deferrals made prior to January 1, 2005) (incorporated by reference to Exhibit 10.3 to the Bank's Registration Statement on Form 10 filed February 15, 2006).
10.7	2011 Amendment to Non-Qualified Deferred Compensation Plan for the Board of Directors of the Registrant for deferrals prior to January 1, 2005, effective March 31, 2011 (incorporated by reference to Exhibit 10.7 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2011, filed on March 23, 2012). *
10.8	Non-Qualified Deferred Compensation Plan for the Board of Directors of the Registrant for Deferrals Effective January 1, 2005 (incorporated by reference to Exhibit 10.4 to the Bank's Registration Statement on Form 10 filed February 15, 2006).
10.9	2008 Amendment to Non-Qualified Deferred Compensation Plan for the Board of Directors of the Registrant for Deferrals Effective January 1, 2005, dated December 10, 2008 (incorporated by reference to Exhibit 10.6 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2008, filed on March 27, 2009). *
10.10	2010 Amendment to Non-Qualified Deferred Compensation Plan for the Board of Directors of the Registrant for Deferrals Effective January 1, 2005, dated July 22, 2010 (incorporated by reference to Exhibit 10.2 to the Bank's Quarterly Report on Form 10-Q for the fiscal quarter ended September 30, 2010, filed on November 12, 2010). *
10.11	Consolidated Deferred Compensation Plan of the Registrant for deferrals made on or after January 1, 2011, as adopted by the Bank's Board of Directors on December 29, 2010 (incorporated by reference to Exhibit 10.9 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2010, filed on March 25, 2011). *

Exhibit	
10.12	2017 Deferred Compensation Plan of the Registrant for deferrals made on or after January 1, 2017, as adopted by the Bank's Board of Directors on July 21, 2016 (incorporated by reference to Exhibit 10.12 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2016, filed on March 24, 2017).*
10.13	Form of Special Non-Qualified Deferred Compensation Plan of the Registrant, as amended and restated effective December 31, 2010 (filed as Exhibit 10.1 to the Bank's Current Report on Form 8-K dated May 25 2011 and filed with the SEC on June 1, 2011, which exhibit is incorporated herein by reference). *
10.14	Amended and Restated Federal Home Loan Banks P&I Funding and Contingency Plan Agreement entered into effective January 1, 2017, by and among the Office of Finance and each of the Federal Home Loan Banks (incorporated by reference to Exhibit 10.14 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2016, filed on March 24, 2017).*
10.15	Form of Employment Agreement between the Registrant and each of Brehan Chapman and Gustavo Molina, entered into effective January 1, 2014 (incorporated by reference to Exhibit 10.15 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2013, filed on March 24, 2014).*
10.16	Employment Agreement between the Registrant and Sandra Damholt, entered into effective January 1, 2014 (incorporated by reference to Exhibit 10.16 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2013, filed on March 24, 2014).*
10.17	Employment Agreement between the Registrant and Sanjay Bhasin, entered into effective March 24, 2015 (incorporated by reference to Exhibit 10.2 to the Bank's Quarterly Report on Form 10-Q for the fiscal quarter ended March 31, 2015, filed on May 13, 2015).*
10.18	2017 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.22 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2016, filed on March 24, 2017).*
10.19	2018 Executive Incentive Plan (incorporated by reference to Exhibit 10.22 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2017, filed on March 22, 2018).*
10.20	2019 Executive Incentive Plan (incorporated by reference to Exhibit 10.22 to the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2018, filed on March 25, 2019).*
10.21	Form of Indemnification Agreement between the Registrant and each of its executive officers, entered into on November 9, 2018 (incorporated by reference to Exhibit 10.1 to the Bank's Quarterly Report on Form 10-Q for the fiscal quarter ended September 30, 2018, filed on November 13, 2018). *
10.22	Form of Indemnification Agreement between the Registrant and each of its directors, entered into on November 9, 2018 (incorporated by reference to Exhibit 10.2 to the Bank's Quarterly Report on Form 10-Q for the fiscal quarter ended September 30, 2018, filed on November 13, 2018). *
10.23	Joint Capital Enhancement Agreement, as amended effective August 5, 2011 (filed as Exhibit 10.1 to the Bank's Current Report on Form 8-K dated August 5, 2011 and filed with the SEC on August 5, 2011, which exhibit is incorporated herein by reference). *
14.1	Code of Ethics for Financial Professionals.
31.1	Certification of principal executive officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification of principal financial officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.

Exhibit

32.1	Certification of principal executive officer and principal financial officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
99.1	Charter of the Audit Committee of the Board of Directors.
99.2	Report of the Audit Committee of the Board of Directors.
101	The following materials from the Bank's Annual Report on Form 10-K for the fiscal year ended December 31, 2019, formatted in eXtensible Business Reporting Language ("XBRL"): (i) Statements of Condition as of December 31, 2019 and 2018, (ii) Statements of Income for the Years Ended December 31, 2019, 2018 and 2017, (iii) Statements of Comprehensive Income for the Years Ended December 31, 2019, 2018 and 2017, (iv) Statements of Capital for the Years Ended December 31, 2019, 2018 and 2017, (v) Statements of Cash Flows for the Years Ended December 31, 2019, 2018 and 2017, and (vi) Notes to the Financial Statements for the fiscal year ended December 31, 2019.

* Commission File No. 000-51405