



Fannie Mae

Freddie Mac



COFI Transition Playbook

March 2022



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Summary of Changes

The table below details the list of changes since the February 2022 version of the COFI Playbook published on the Fannie Mae and Freddie Mac websites.

Section	Summary of Changes
All sections	▪ Updated table formatting
3. Collateralized Mortgage Obligations	▪ Updated Footnote 13 to indicate the LIBOR tenor used as a fallback by Collateralized Mortgage Obligations indexed to COFI is one-year LIBOR rather than one-month LIBOR



Legal information and disclaimer

Information related to the transition away from the 11th District Monthly Weighted Average Cost of Funds Index (“COFI”) produced by the Federal Home Loan Bank of San Francisco (“FHLB SF”)¹ is contained in this COFI Transition Playbook. The information in this document pertains specifically and only to the transition away from COFI. Nothing in this document should be interpreted as having any bearing on or implications for transitions away from other reference rates such as LIBOR. This material is subject to revision and updates as deemed necessary or appropriate. The analyses, views and opinions expressed herein are based on certain assumptions that also are subject to change. Readers should rely on the information contained in the loan documentation, securities offering documents, and operative documents to evaluate the rights and obligations for each such loan or security. As a reminder, Fannie Mae and Freddie Mac (each, a “GSE” and collectively, the “GSEs”) are in separate conservatorships and their conservator, Federal Housing Finance Agency (“FHFA”), has the authority to direct either or both GSEs to take whatever actions it deems appropriate in respect of any COFI transition and product or contract.

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¹ See <https://www.fhlbsf.com/resources/cofi>



1. Overview

1.1 Introduction

❖ Playbook purpose and scope

The GSEs have published this COFI Transition Playbook as a reference for transitioning the following COFI-indexed products to a replacement index:

- Single-Family (“SF”) and Multifamily (“MF”) Adjustable-Rate Mortgages (“ARMs”)
- Collateralized Mortgage Obligations (“CMOs”)

This playbook describes key transition milestones and recommended actions for stakeholders to consider as they manage the transition from COFI. This document serves as a tool to help adapt business policies, procedures, and processes for discontinuation of COFI as an index for existing COFI mortgages.

GSEs have been working together on several aspects of the COFI transition. Where appropriate, the GSEs have aligned policies and milestones.

FAQs on each GSE’s COFI transition are published on Fannie Mae and Freddie Mac webpages.

Please direct any additional questions to your Fannie Mae or Freddie Mac account management teams.

❖ Why is there a need to transition from COFI?

The administrator of COFI, the FHLB SF, announced it would cease publishing COFI after January 31, 2022 due to a significant decline in the number of financial institutions eligible to provide data for the calculation of COFI. When the monthly COFI was originally developed in 1981, there were over two hundred COFI reporting members. The number of panel banks has decreased substantially since the 2008 financial crisis and was reported at nine panel banks as of May 2020.²

1.2 COFI transition timelines

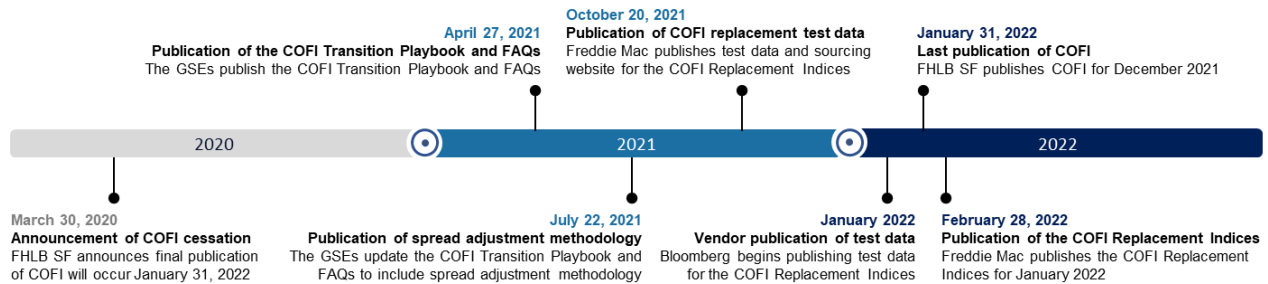
The FHLB SF ceased publication of COFI after the publication of the December 2021 COFI on January 31, 2022. As described in greater detail in Section 2, Freddie Mac began publishing replacement indices for most COFI-indexed SF and MF ARMs³, Freddie Mac PCs, Fannie Mae MBS and Freddie Mac CMOs⁴ on a monthly basis, starting with the January 2022 indices on February 28, 2022. Changes to COFI affects legacy transactions only. Fannie Mae and Freddie Mac no longer purchase COFI-indexed ARMs, nor issue COFI-indexed CMOs.

² [Cost of Funds Indices, FHLB SF.](#)

³ Certain agreements held by Fannie Mae specify a replacement index if COFI is no longer available; in those cases, the specified replacement index will be the fallback rather than a replacement index published by Freddie Mac.

⁴ The replacement index for Fannie Mae COFI-indexed CMOs will be based on the fallback language in the governing prospectuses.

Figure 1-1: COFI transition timeline



1.3 Actions market participants should consider

As of February 28, 2022, new values of COFI are not available for any products. Lenders, servicers, investors and other relevant parties should have taken the necessary steps from a systems, process and training perspective to transition products from COFI to a replacement index.

❖ Accounting and tax considerations

The transition may have an impact on the accounting treatment for existing contracts, hedge accounting relationships or other transactions that reference COFI. All stakeholders should have addressed identified impacts due to the transition from COFI.

❖ Compliance considerations

The transition of legacy COFI-indexed transactions may involve compliance risk related to disclosure. Both GSEs maintain processes which provide reasonable assurance that they comply with applicable disclosure laws and regulations.



2. Single-Family and Multifamily ARMs

2.1 Introduction

COFI-indexed ARMs are impacted by FHLB SF's decision to cease publication of COFI after January 31, 2022.

On April 27, 2021, the GSEs announced their selection of the Enterprise 11th District COFI Replacement Index ("Ent 11th COFI Repl") as the replacement index for their COFI-indexed SF ARMs following the cessation of COFI.⁵ Ent 11th COFI Repl, which is comprised of the Federal Cost of Funds Index ("Federal COFI") plus a spread adjustment, gradually transitions to the five-year historical median spread between COFI and Federal COFI over a one-year phase-in period. The GSEs made this announcement in April to allow market participants adequate time for operational readiness, borrower notices and education, and compliance with the notes and applicable law, among other reasons. The GSEs believe Ent 11th COFI Repl is a comparable replacement rate for and successor to COFI for SF ARMs.

The replacement index for MF ARMs, the Enterprise 11th District COFI Institutional Replacement Index ("Ent 11th COFI Inst Repl"), does not include a one-year phase-in period; rather, the spread adjustment is immediately and invariably equal to the five-year historical median spread between COFI and Federal COFI.

The purpose of the spread adjustment is to minimize or eliminate any value transfer for investors or borrowers that may result from a transition from COFI to a replacement index based on Federal COFI. The COFI spread adjustment methodology, which includes a one-year phase-in period for consumer products and an immediate transition for institutional products, is similar to that recommended by the Alternative Reference Rates Committee ("ARRC") for consumer and institutional products in the LIBOR transition.⁶

Freddie Mac began publishing Ent 11th COFI Repl and Ent 11th COFI Inst Repl (collectively, the "Replacement Indices")⁷ containing the respective spread adjustments on its website on February 28, 2022.

2.2 Spread adjustment methodology for the Enterprise 11th District COFI Replacement Index

The spread adjustment for SF ARMs is based on the historical median of the differences between Federal COFI and COFI over a five-year lookback period spanning February 1, 2017 through January 31, 2022. A one-year transition period is applied under this spread adjustment methodology for Single-Family loans indexed to COFI. This methodology is consistent with the ARRC announcement on spread adjustment methodology published in June 2020. The steps for calculating the spread

⁵ Certain COFI-indexed ARM notes held by Fannie Mae specify a replacement index if COFI is no longer available; in those cases, the specified replacement index will be the fallback index specified in those notes rather than Ent 11th COFI Repl

⁶ [ARRC spread adjustment methodology](#)

⁷ The Enterprise 11th District COFI Replacement Index and the Enterprise 11th District COFI Institutional Replacement Index are not created, calculated, or published by or at the direction of, nor are the Enterprise 11th District COFI Replacement Index and the Enterprise 11th District COFI Institutional Replacement Index or is the decision that such indices are appropriate for use in any financial instrument in any way associated or affiliated with the Federal Home Loan Bank of San Francisco. The Replacement Indices may not be used on any new financial instrument created or entered into on or after February 28, 2022.



adjustment are noted below. For a specific example of how the spread adjustment and Ent 11th COFI Repl are calculated, please see Sections 4.1, “Appendix A: Example of the Enterprise 11th District COFI Replacement Index one-year transition period” and 4.2, “Appendix B: Spread adjustment scenarios.”

1. Determine Initial Spot Spread

As part of the spread adjustment methodology, an initial spot spread (“initial spread”) was calculated in early February 2022 (the “spread calculation date”, t_1) as the spot difference between Federal COFI and COFI (each as published in January 2022):

Equation: $Initial\ spread_{t_1} = Federal\ COFI_{t_1} - COFI_{t_1}$

Inputs: $Federal\ COFI_{t_1} = 0.736\%$; $COFI_{t_1} = 0.223\%$

Calculation: $Initial\ spread_{t_1} = 0.513\% = 0.736\% - 0.223\%$

2. Calculate the monthly linear adjustment (“monthly adjustment”) to the spread adjustment

The monthly adjustment to the spread adjustment is one-twelfth⁸ of the difference between the five-year median spread and the initial spread.

Equation: $Monthly\ adjustment = \frac{1}{12} * (Five\text{-}year\ median\ spread - Initial\ spread_{t_1})$

Inputs: $Five\text{-}year\ median\ spread = 0.729\%$; $Initial\ spread_{t_1} = 0.513\%$

Calculation: $Monthly\ adjustment = 0.018\% = \frac{1}{12} * (0.729\% - 0.513\%)$

3. Calculate the replacement index at initial publication

On the initial publication date after the spread calculation date $_{t_1}$ (t_2), Ent 11th COFI Repl is calculated by subtracting the initial spread and the monthly linear adjustment from Federal COFI.

Equation: $Ent\ 11th\ COFI\ Repl_{t_2} = Federal\ COFI_{t_2} - Initial\ spread_{t_1} - Monthly\ adjustment$

Inputs: $Federal\ COFI_{t_2} = 0.750\%$; $Initial\ spread_{t_1} = 0.513\%$; $Monthly\ adjustment = 0.018\%$

Calculation: $Ent\ 11th\ COFI\ Repl_{t_2} = 0.219\% = 0.750\% - 0.513\% - 0.018\%$

4. Continue spread adjustments in successive months

During the one-year transition period, the spread adjustment values for each month are linearly interpolated to reach the five-year median spread between Federal COFI and COFI by the end of the one-year transition period. The following illustrates each subsequent spread adjustment over the one-year transition period:

- Spread adjustment calculation one month after the initial publication date $_{t_2}$ (t_3):

$$Ent\ 11th\ COFI\ Repl_{t_3} = Federal\ COFI_{t_3} - Initial\ spread_{t_1} - 2 * (Monthly\ adjustment)$$

- Spread adjustment calculation two months after the initial publication date $_{t_2}$ (t_4):

$$Ent\ 11th\ COFI\ Repl_{t_4} = Federal\ COFI_{t_4} - Initial\ spread_{t_1} - 3 * (Monthly\ adjustment)$$

- Spread adjustment calculation eleven months after the initial publication date $_{t_2}$ (t_{13}):

$$Ent\ 11th\ COFI\ Repl_{t_{13}} = Federal\ COFI_{t_{13}} - Initial\ spread_{t_1} - 12 * (Monthly\ adjustment)$$

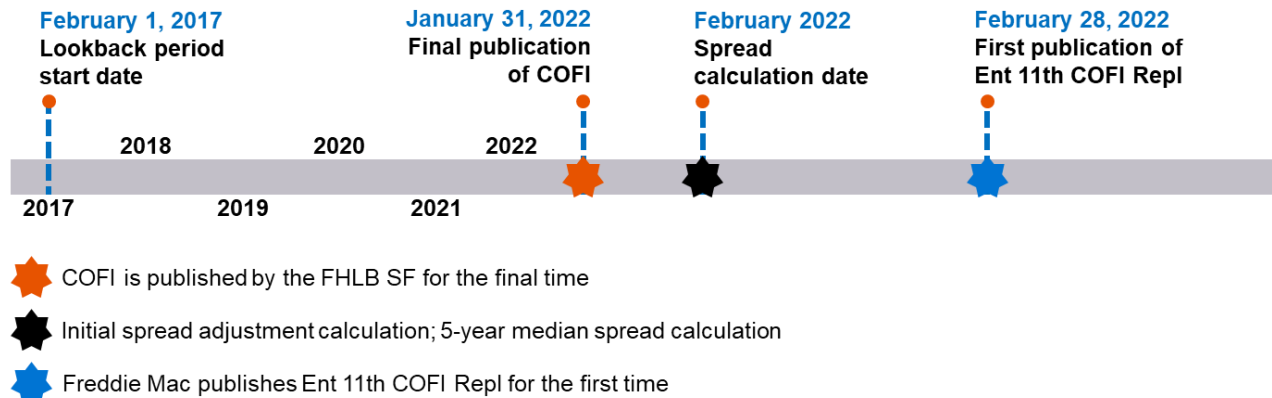
⁸ We are using a 30/360 calculation for the monthly linear adjustment because COFI and Federal COFI are calculated and published monthly



- After the one-year transition period, the spread adjustment value is equal to the five-year median spread:

$$Ent\ 11th\ COFI\ Repl_{t1.4\ onward} = Federal\ COFI_{t1.4\ onward} - Five\text{-}year\ median\ spread$$

Figure 2-1: Timeline for spread calculation of the Enterprise 11th District COFI Replacement Index



2.3 Spread adjustment methodology for the Enterprise 11th District COFI Institutional Replacement Index

The spread adjustment for MF ARMs is based on the historical median of the differences between Federal COFI and COFI over a five-year lookback period spanning February 1, 2017 through January 31, 2022. This methodology is consistent with the ARRC consultation on spread adjustment methodologies published in June 2020. The steps for calculating the spread adjustment are noted below. For a specific example of how the spread adjustment could affect future calculations of Ent 11th COFI Inst Repl, please see Section 4.3, “Appendix C: Example of the Enterprise 11th District COFI Institutional Replacement Index.”

1. Calculate the spread adjustment

Calculate the spread adjustment based on the five-year historical median difference between Federal COFI and COFI with the five-year lookback period ending on the calculation date. The spread adjustment remains constant and there is no transition period.

Equation: $Spread\ Adjustment = Five\text{-}year\ median\ spread$

Inputs: $Five\text{-}year\ median\ spread = 0.729\%$

Calculation: $Spread\ Adjustment = 0.729\%$

2. Calculate the replacement index

Subtract the fixed spread adjustment from Federal COFI to arrive at Ent 11th COFI Inst Repl. The following calculation of Ent 11th COFI Inst Repl is for the first month of publication:

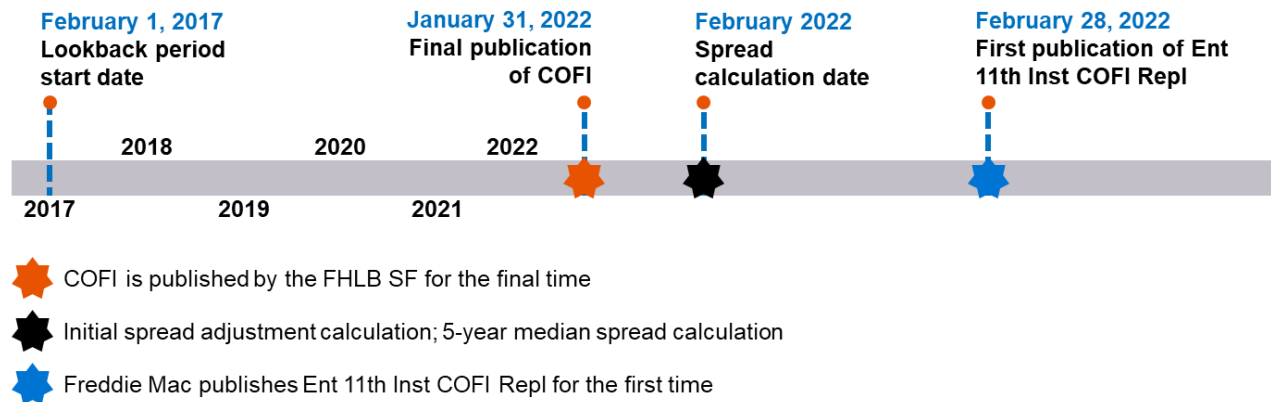
Equation: $Ent\ 11th\ COFI\ Inst\ Repl_{t2} = Federal\ COFI_{t2} - Spread\ Adjustment$

Inputs: $Federal\ COFI_{t2} = 0.750\%;\ Spread\ Adjustment = 0.729\%$

Calculation: $Ent\ 11th\ COFI\ Inst\ Repl_{t2} = 0.021\% = 0.750\% - 0.729\%$



Figure 2-2: Timeline for spread calculation of the Enterprise 11th District COFI Institutional Replacement Index



2.4 Scenarios for COFI-indexed ARMs transition

The transition date of each legacy COFI-indexed ARM depends on the characteristics of the ARM, such as the next interest rate reset date and loan interest rate lookback period. If the date calculated by applying the loan interest rate lookback period occurs on or after February 28, 2022, COFI-indexed SF ARMs transition to Ent 11th COFI Repl and COFI-indexed MF ARMs transition to Ent 11th COFI Inst Repl.⁹

The scenarios included below provide the expected payments and interest rate reset mechanics for COFI-indexed ARMs with different characteristics. The scenarios are not intended to be exhaustive but are intended to provide the reader with representative examples, such that they are able to anticipate changes to ARMs which do conform to the examples included below. The examples should be used as a guide to help readers understand when the interest rate and payment calculations of COFI-indexed ARMs switch to reference the Replacement Indices for the first time. The examples consider ARMs with interest rate and payments resetting at the same time (Scenarios A and B) and cases in which the interest rate and payment reset frequencies differ (Scenarios C and D).

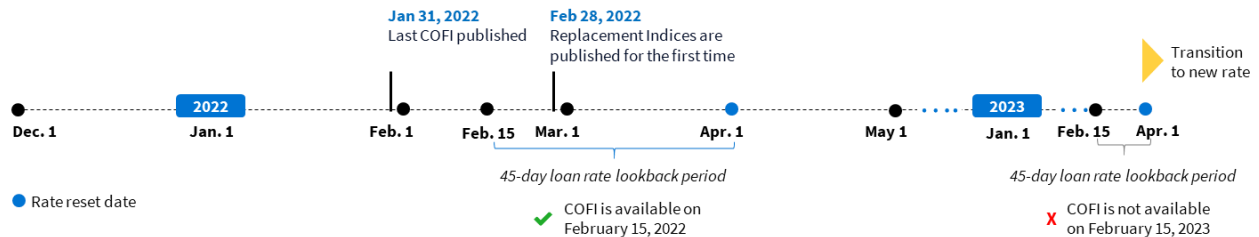
❖ Scenario A: COFI-indexed ARM, with annual interest rate reset frequency, re-setting on April 1, 2022 and a 45-day loan interest rate lookback period

- Loan A is a 10-year seasoned ARM loan indexed to COFI, with an annual interest rate reset frequency and next interest rate reset date on April 1, 2022. Loan A has a 45-day loan interest rate lookback period.
- Since COFI is still available forty-five days prior to the ARM’s interest rate reset date (i.e., February 15, 2022), the interest rate calculations (and the related payment calculation) use COFI published on January 31, 2022.
- The respective Replacement Index is used on the subsequent annual interest rate reset date

⁹ Certain COFI-indexed ARM notes held by Fannie Mae specify a replacement index if COFI is no longer available; in those cases, the specified replacement index will be the fallback rather than the Ent 11th COFI Repl.

on April 1, 2023 and each reset date thereafter to calculate interest and related payments.

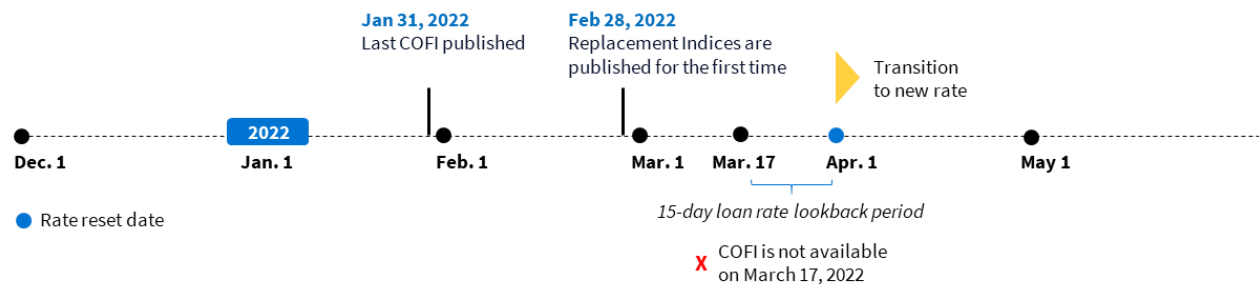
Figure 2-3: Scenario A



❖ **Scenario B: COFI-indexed ARM, with annual interest rate reset frequency, re-setting on April 1, 2022 and a 15-day loan interest rate lookback period**

- Loan B is a 10-year seasoned ARM loan indexed to COFI, with an annual interest rate reset frequency and next interest rate reset date on April 1, 2022. Loan B has a 15-day loan interest rate lookback period.
- Since COFI is no longer published after the end of January and is not available fifteen days prior to the ARM’s interest rate reset date (i.e., March 17, 2022), the respective Replacement Index published on February 28, 2022 is used to calculate the new interest rate and the related new payment.

Figure 2-4: Scenario B



❖ **Scenario C: Negative-amortizing¹⁰ COFI-indexed ARM, with annual payment reset frequency on April 1, 2022, monthly interest rate reset frequency, a 1-day loan payment lookback period and a 45-day loan interest rate lookback period.**

- In a negative-amortizing loan, the portion of the interest accrued each month that is not covered by the monthly payment is added to the unpaid principal balance.
- Loan C is a 10-year seasoned negative-amortizing ARM loan indexed to COFI, with the following characteristics:

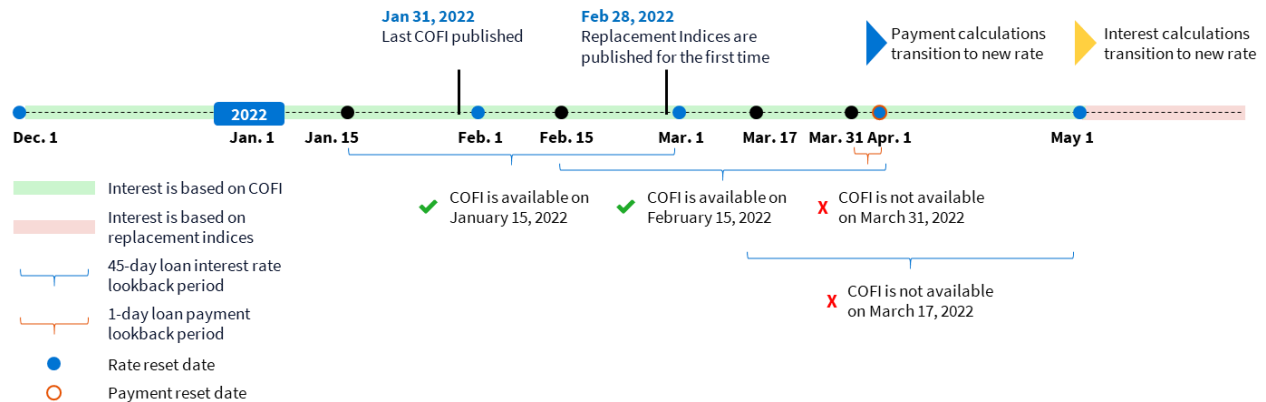
¹⁰ The GSEs no longer offer the negative-amortizing ARM product. However, there may be legacy negative-amortizing COFI-indexed ARM products that remain outstanding at the time of the transition.



Loan Features	Payment	Interest rate
Reset frequency	Annual	Monthly
Next reset date	April 1, 2022	March 1, 2022
Loan lookback period	1 day	45 days

- Since COFI is still available forty-five days prior to the ARM’s interest rate reset dates of March 1, 2022 and April 1, 2022 (i.e., January 15, 2022 and February 15, 2022, respectively), the interest rate calculations (and the related payment calculation) use COFI.
 - The respective Replacement Index is used on the subsequent monthly interest rate date on May 1, 2022 and each reset date thereafter to calculate interest and related payments.
- COFI is not available one day prior to the ARM’s payment reset date on April 1, 2022 (i.e., March 31, 2022), hence the respective Replacement Index is used to calculate the new payments.

Figure 2-5: Scenario C



❖ **Scenario D: Negative-amortizing COFI-indexed ARM, with annual payment reset frequency on February 1, 2022 monthly interest rate reset frequency, a 1-day loan payment lookback period and a 45-day loan interest rate lookback period**

- Loan D is a 10-year seasoned negative-amortizing ARM loan indexed to COFI, with the following characteristics:

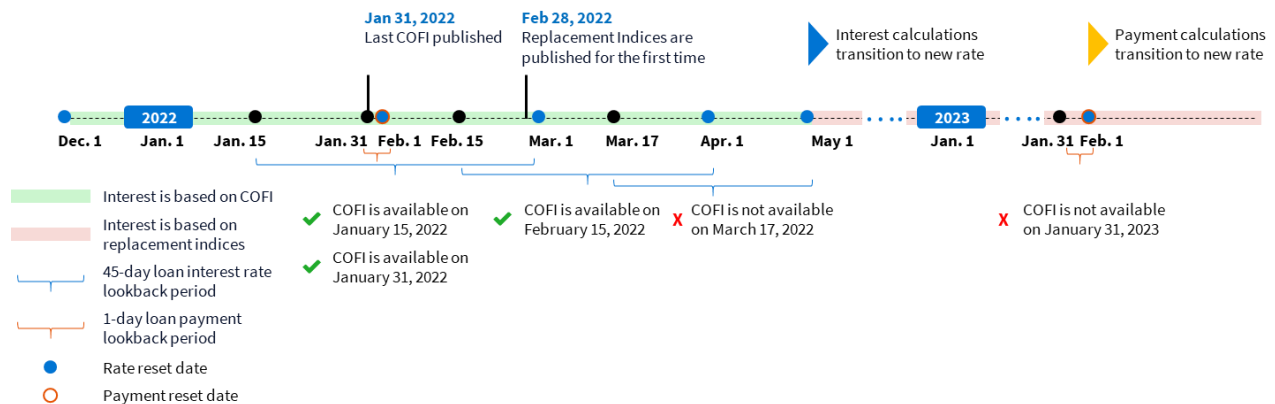
Loan Features	Payment	Interest rate
Reset frequency	Annual	Monthly
Next reset date	February 1, 2022	March 1, 2022
Loan lookback period	1 day	45 days

- Since COFI is still available forty-five days prior to the ARM’s interest rate reset dates of March 1, 2022 and April 1, 2022 (i.e., January 15, 2022 and February 15, 2022, respectively), the

interest rate calculations (and the related payment calculation) use COFI.

- The respective Replacement Index is used on the subsequent monthly interest rate date on May 1, 2022 and each reset date thereafter to calculate interest and the related payment.
- Since COFI is still available one day prior to the ARM’s payment reset date on February 1, 2022 (i.e., January 31, 2022), the payment calculation uses the COFI rate. The payment remains the same (reference the same COFI rate) until it resets on the subsequent annual payment reset date (i.e., February 1, 2023).
- COFI is not available one day prior to the ARM’s subsequent payment reset date of February 1, 2023, hence the respective Replacement Index is used to calculate the new payments.

Figure 2-6: Scenario D



2.5 Servicing SF and MF ARMs

As SF and MF ARMs indexed to COFI transition to the respective Replacement Indices, servicers must communicate with borrowers and update payment calculations.

❖ Key concepts

Servicers need to incorporate the Replacement Indices into calculations and reconciliations for borrower payments. The calculations need to be updated on an individual loan basis based on the terms of the ARM, which include:

- Payment adjustment frequency
- Rate adjustment frequency
- Loan payment lookback period
- Loan rate lookback period
- Next payment reset date
- Next interest rate reset date

As of February 28, 2022, new values of COFI are not available for the GSEs’ SF and MF ARMs and the appropriate Replacement Index must be used. Servicers and other relevant parties should have considered and, if necessary, taken the actions listed in Figure 2-7 for their COFI-indexed SF and MF ARMs.



Figure 2-7: Actions to consider when servicing SF and MF ARMs

Focus areas	Actions to consider
Borrower Communications	<ul style="list-style-type: none"> ▪ Provide timely notice of the change in the index to borrowers consistent with loan documents, applicable law and regulations, including those governing payment change notices under Regulation Z for SF ARMs ▪ Retain a copy of the notice in the servicing file
Document custodian	<ul style="list-style-type: none"> ▪ For SF loans, send a copy of the borrower notice to the document custodian with an instruction to maintain the copy with the original SF COFI note ▪ For MF loans, maintain the borrower notice in the loan servicing file, subject to review as requested
Legal documentation	<ul style="list-style-type: none"> ▪ For SF loans, provide a copy of the note to the appropriate GSE if there are any variations to the Uniform ARM note’s fallback index replacement language that was used just prior to recent revisions and request instructions on how to proceed ▪ For MF loans, provide a copy of the note to the appropriate GSE if the fallback index replacement language is not to be determined at the discretion of the Note Holder and request instructions on how to proceed
Use of a new index in rate and payment calculations	<ul style="list-style-type: none"> ▪ Update and test systems, reporting and other processes or activities related to interest rate adjustment calculations to incorporate the Replacement Indices' product parameters ▪ Adjust interest accrual calculations for changes in the underlying index
Transfer of servicing	<ul style="list-style-type: none"> ▪ Ensure that servicing transferees have the capability to service loans indexed to the Replacement Indices

❖ Helpful links

For more information on COFI transition impacts on servicing of COFI-indexed ARMs, refer to:

- [Fannie Mae’s Single-Family Servicing Guide](#)
- [Fannie Mae’s Multifamily Selling and Servicing Guide](#)
- [Freddie Mac’s Seller/Servicer Guide](#)



2.6 Administration of SF and MF MBS/PC

❖ MBS/PC features

The COFI transition impacts COFI-indexed ARMs pooled into MBS/PC. Unless terminated at or prior to the time of the COFI transition¹¹, those outstanding MBS/PC also transition to the Replacement Indices.¹² Freddie Mac MF no longer has MF PCs outstanding. Descriptions for index codes and Fannie Mae sub-types have been updated to reflect the transition to the Replacement Indices.

Investors and other relevant parties should have considered and, if necessary, taken the actions listed in Figure 2-8 for their SF and MF MBS/PC containing COFI-indexed ARMs.

Figure 2-8: Actions to consider when administering SF and MF MBS/PC

Focus areas	Actions to consider
Investor awareness	<ul style="list-style-type: none"> ▪ Maintain awareness of the updates to impacted pools
Use of a new index in rate and payment calculations	<ul style="list-style-type: none"> ▪ Update and test systems, reporting and other processes or activities related to interest rate adjustment calculations to incorporate the Replacement Indices’ product parameters

❖ Helpful links

For more information on COFI transition impacts on administration of COFI-indexed MBS/PCs, refer to:

- [Fannie Mae’s updated MBS Prospectus language](#)
- [Freddie Mac’s updated SF PC Offering Circular language](#)
- [Publication site of the Replacement Indices](#)

¹¹ See Section 1.2, “[COFI transition timelines](#)”

¹² As mentioned previously, certain agreements held by Fannie Mae specify a replacement index if COFI is no longer available; in those cases, the specified replacement index will be the fallback rather than a replacement index published by Freddie Mac.



3. Collateralized Mortgage Obligations

3.1 Introduction

COFI-indexed CMOs are impacted by FHLB SF’s decision to cease publication of COFI after January 31, 2022.

❖ Fannie Mae CMOs

All outstanding Fannie Mae COFI-indexed CMOs contain waterfall fallback language in the governing prospectuses identifying the fallback index for interest accruals as 1) the National Median Cost of Funds Index published by the Office of Thrift Supervision and then 2) LIBOR. Since the National Median Cost of Funds Index was discontinued in February 2012, the fallback index for all outstanding COFI-indexed CMOs is LIBOR.¹³

❖ Freddie Mac CMOs

The fallback language in the Freddie Mac COFI-indexed CMOs indicates that, if FHLB SF fails to publish COFI for a period of 65 days and does not publish or designate a replacement index, then Freddie Mac is required to select an index that performs in a manner substantially similar to COFI.

Freddie Mac has selected Ent 11th COFI Inst Repl as the replacement index for CMOs. Ent 11th COFI Inst Repl, which is comprised of Federal COFI plus a spread adjustment, transitions immediately to the five-year historical median spread between COFI and Federal COFI. Freddie Mac believes Ent 11th COFI Inst Repl is a comparable replacement rate for and successor to COFI for Freddie Mac CMOs.

Freddie Mac began publishing the Ent 11th COFI Inst Repl on its website on February 28, 2022. For a specific example of how the spread adjustment and Ent 11th COFI Inst Rep is calculated, please see Section 4.3, “Appendix C: Example of the Enterprise 11th District COFI Institutional Replacement Index.”

3.2 Administration

❖ Key concepts

Investors and trustees should maintain awareness of potential impacts of the COFI transition.

Figure 3-1: Actions to consider when administering CMOs

Focus areas	Actions to consider
Investor awareness	▪ Investors should maintain awareness of the updates to impacted CMOs
Use of a new index in rate and payment calculations	▪ Upon evaluation, update, and test systems, reporting and other processes or activities related to interest rate adjustment calculations to incorporate the Enterprise 11th District COFI Institutional Replacement Index as necessary

¹³ Since the anticipated index cessation date for one-year LIBOR is June 30, 2023, it is currently anticipated that these COFI-indexed CMOs would switch from COFI to LIBOR after COFI is no longer published. Subsequently those CMOs would switch to a replacement index for LIBOR after June 30, 2023. In that event, we currently anticipate providing more information on the replacement index for LIBOR no later than December 31, 2022.



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❖ **Helpful links**

For more information on the COFI transition impacts on administration of COFI-indexed CMOs, refer to:

- [Fannie Mae's Omnibus Supplement for certain LIBOR securities](#)
- [Fannie Mae/Freddie Mac LIBOR Transition Playbook](#)
- [Freddie Mac's disclosure applicable to Freddie Mac-issued CMOs](#)



4. Appendix

4.1 Appendix A: Example of the Enterprise 11th District COFI Replacement Index one-year transition period

Below is an example of how Ent 11th COFI Repl is calculated using finalized spread adjustments. This example is not indicative of future Federal COFI rates after the transition; rather, it serves as an illustrative example of the methodology that is used.

❖ Key dates

- First publication date: February 28, 2022
- Spread calculation date: February 2022

❖ Calculations

1. **Equation:** $Initial\ spread_{t1} = Federal\ COFI_{t1} - COFI_{t1}$
 - **Inputs:** $Federal\ COFI_{t1} = 0.736\%$; $COFI_{t1} = 0.223\%$
 - **Calculation:** $Initial\ spread_{t1} = 0.513\% = 0.736\% - 0.223\%$
2. The five-year median spread_{t1} is equal to the median spot spread between Federal COFI and COFI during the last five years (publications dates ranging from February 2017 through January 2022)
 - **Calculation:** $Five\text{-}year\ median\ spread_{t1} = 0.729\%$
3. **Equation:** $Monthly\ adjustment = \frac{1}{12} * (Five\text{-}year\ median\ spread_{t1} - Initial\ spread_{t1})$
 - **Inputs:** $Five\text{-}year\ median\ spread_{t1} = 0.729\%$; $Initial\ spread_{t1} = 0.513\%$
 - **Calculation:** $Monthly\ adjustment = 0.018\% = \frac{1}{12} * (0.729\% - 0.513\%)$
4. **Equation:** $Spread\ adjustment_{t1} = Initial\ spread_{t1} + n * (Monthly\ adjustment)$ where n is equal to the number of months since January 31, 2022, but remains equal to 12 after January 31, 2023
 - **Inputs:** $Initial\ spread_{t1} = 0.513\%$; $Monthly\ adjustment = 0.018\%$
 - **Calculation:** $Spread\ adjustment_{t1} = 0.531\% = 0.513\% + 1 * (0.018\%)$
 - **Calculation:** $Spread\ adjustment_{t2} = 0.549\% = 0.513\% + 2 * (0.018\%)$
5. **Equation:** $Ent\ 11th\ COFI\ Repl_{t2} = Federal\ COFI_{t2} - Spread\ adjustment_{t1}$
 - **Inputs:** $Federal\ COFI_{t2} = 0.750\%$; $Spread\ adjustment_{t1} = 0.531\%$
 - **Calculation:** $Ent\ 11th\ COFI\ Repl_{t2} = 0.219\% = 0.750\% - 0.531\%$

For illustration purposes, we used the assumed monthly rates of Federal COFI (Column A) for March 2022 onward and used the values above to show the calculation of Ent 11th COFI Repl at the time of the first publication date (in this case, February 28, 2022).

**Figure 4-1: Example calculation of the Enterprise 11th District COFI Replacement Index**

Publication Month	Federal COFI ¹⁴	Spread Adjustment	Ent 11th COFI Repl
Feb 2022	0.750%	0.531%	0.219%
Mar 2022	0.914%	0.549%	0.365%
Apr 2022	0.892%	0.567%	0.325%
May 2022	0.827%	0.585%	0.242%
Jun 2022	0.912%	0.603%	0.309%
Jul 2022	0.951%	0.621%	0.330%
Aug 2022	0.985%	0.639%	0.346%
Sep 2022	0.889%	0.657%	0.232%
Oct 2022	0.918%	0.675%	0.243%
Nov 2022	0.925%	0.693%	0.232%
Dec 2022	0.896%	0.711%	0.185%
Jan 2023	0.903%	0.729%	0.174%
Feb 2023	0.912%	0.729%	0.183%
Mar 2023	0.946%	0.729%	0.217%
Apr 2023	0.904%	0.729%	0.175%
May 2023	0.892%	0.729%	0.163%
Jun 2023	0.898%	0.729%	0.169%

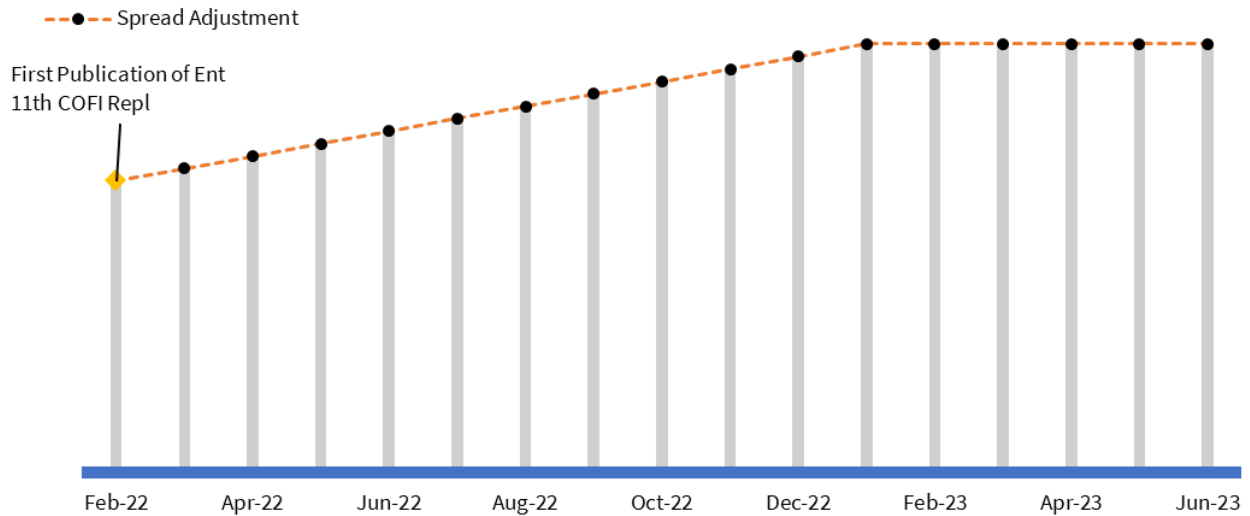
4.2 Appendix B: Spread adjustment scenarios

The following illustrates how the spread adjustment values will rise during the transition period because the initial spread adjustment is less than the five-year median spread (Figure 4-2).

¹⁴ Except for the publication month of February 2022, the values in this column are examples and are not indicative of future values of Federal COFI.



Figure 4-2: Initial spread adjustment is less than the five-year median spread



4.3 Appendix C: Example of the Enterprise 11th District COFI Institutional Replacement Index

Below is an example of Ent 11th COFI Inst Repl calculation. This example is not indicative of spread adjustment values, COFI rates, or Federal COFI rates after the transition; rather, it serves as an illustrative example of the methodology that is used.

❖ Key dates

- First publication date: February 28, 2022
- Spread calculation date: February 2022

❖ Calculations

1. The five-year median spread_{t1} is equal to the median spot spread between Federal COFI and COFI as published during the last five years (February 2017 through January 2022)
 - Calculation: Five-year median spread_{t1} = 0.729%
2. Equation: Spread adjustment = Five-year median spread_{t1}
 - Inputs: Five-year median spread_{t1} = 0.729%
 - Calculation: Spread adjustment = 0.729%
3. Equation: Ent 11th COFI Inst Repl_{t2} = Federal COFI_{t2} - Spread adjustment
 - Inputs: Federal COFI_{t2} = 0.750%; Spread adjustment = 0.729%
 - Calculation: Ent 11th COFI Inst Repl_{t2} = 0.021% = 0.750% - 0.729%

For illustration purposes, we used the assumed monthly rates of Federal COFI (Column A) and the values above to show the calculation of Ent 11th COFI Inst Repl at the time of the first publication date (in this case, February 28, 2022).

**Figure 4-4: Example calculation of the Enterprise 11th District Enterprise COFI Replacement Index**

Publication Month	Federal COFI	Spread Adjustment	Ent 11th COFI Inst Repl
Feb 2022	0.750%	0.729%	0.021%
Mar 2022	0.914%	0.729%	0.185%
Apr 2022	0.892%	0.729%	0.163%
May 2022	0.827%	0.729%	0.098%
Jun 2022	0.912%	0.729%	0.183%
Jul 2022	0.951%	0.729%	0.222%
Aug 2022	0.985%	0.729%	0.256%
Sep 2022	0.889%	0.729%	0.160%
Oct 2022	0.918%	0.729%	0.189%
Nov 2022	0.925%	0.729%	0.196%
Dec 2022	0.896%	0.729%	0.167%
Jan 2023	0.903%	0.729%	0.174%
Feb 2023	0.912%	0.729%	0.183%
Mar 2023	0.946%	0.729%	0.217%
Apr 2023	0.904%	0.729%	0.175%
May 2023	0.892%	0.729%	0.163%
Jun 2023	0.898%	0.729%	0.169%



5. Summary of Prior Changes

October 2021	
Section	Summary of Changes
All sections	<ul style="list-style-type: none"> Updated formatting throughout document
1. Overview	<ul style="list-style-type: none"> Figure 1-1: Added October 20, 2021, milestone for the publication of COFI test data
2. Single-Family and Multifamily ARMs	<ul style="list-style-type: none"> 2.1 Introduction: Updated language around the comparability of COFI and the Replacement Indices; updated language around spread adjustment methodology; added information about the publication of COFI test data by Freddie Mac; added a hyperlink to COFI test data Figure 2-7: Added Legal Documentation information for Multifamily 2.6 Administration of SF and MF MBS/PC: Specified differences in each GSE's handling of COFI Replacement Indices; Added hyperlinks to Freddie Mac's SF PC Offering Circular language and COFI test data
3. Collateralized Mortgage Obligations	<ul style="list-style-type: none"> 3.1 Introduction: Updated language around the comparability of COFI and the Replacement Indices; added information about the publication of COFI test data by Freddie Mac; added a hyperlink to COFI test data 3.2 Administration: Added a hyperlink to Freddie Mac's disclosure applicable to CMOs
February 2022	
Section	Summary of Changes
All sections	<ul style="list-style-type: none"> Updated wording to reflect the completion of COFI transition milestones, including the final publication of COFI and the first publication of the indices chosen to replace COFI Clarified instances in which transition statements do not apply to non-standard COFI notes held by Fannie Mae Updated formatting and abbreviations for consistency
2. Single-Family and Multifamily ARMs	<ul style="list-style-type: none"> Added example calculations of the COFI Replacement Indices to the steps and equations
4. Appendix	<ul style="list-style-type: none"> Replaced hypothetical values with actual values used in the calculation of the COFI Replacement Indices published at the end of February 2022 Figures 4-1 and 4-2: revised example calculations based on the values of Federal COFI and COFI Removed spread adjustment scenario that will not occur