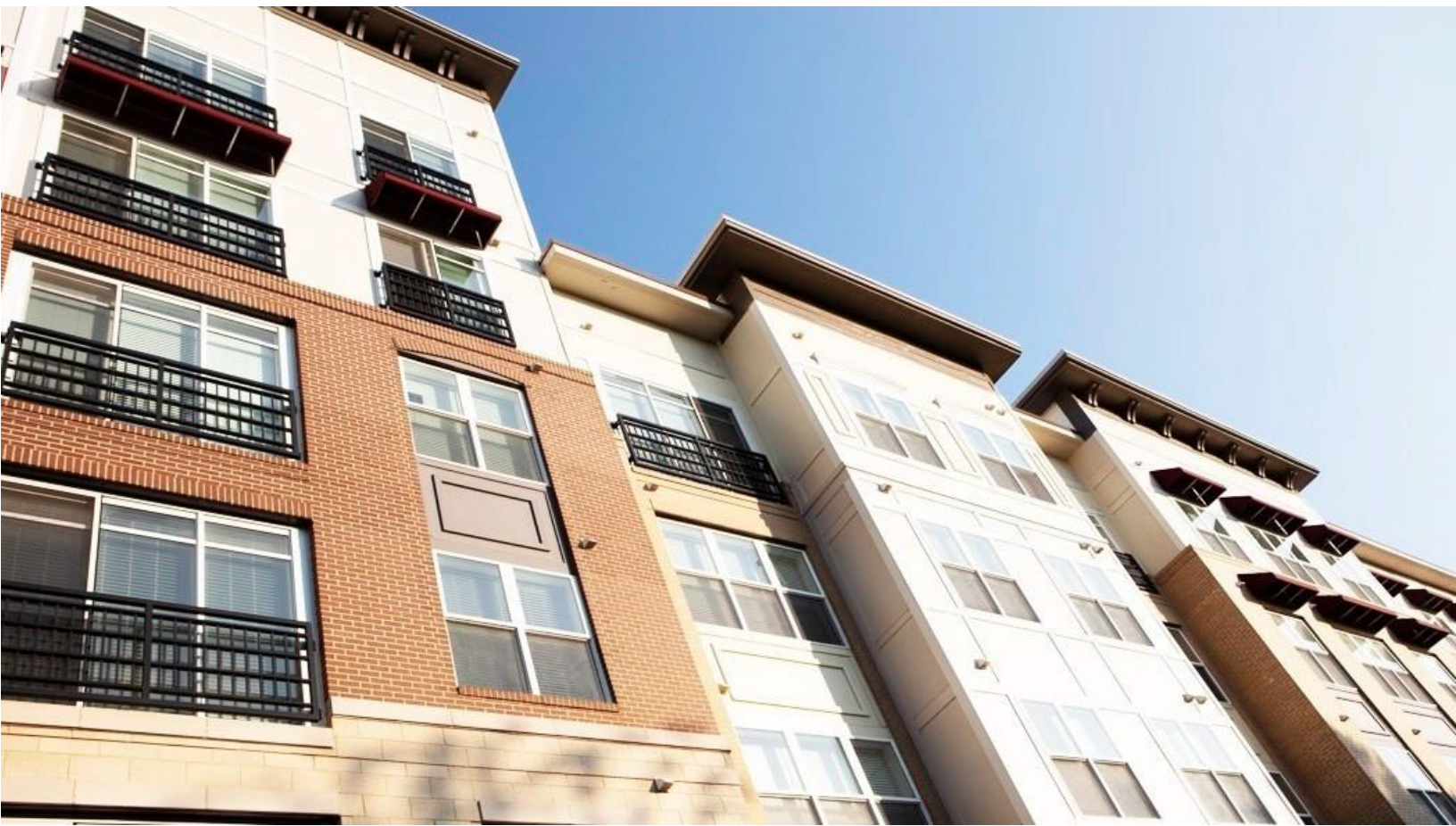




Fannie Mae™

Freddie Mac



COFI Transition Playbook

October 2021



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Change Summary

The table below details the list of changes since the July 2021 version of the COFI Playbook published on the Fannie Mae and Freddie Mac websites.

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



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 Francisco¹ 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 preliminary and subject to revision and updates as deemed necessary or appropriate. This document is an indicative summary of our preliminary analysis regarding the upcoming transition away from COFI. This document and the analysis may be amended, superseded or replaced by subsequent summaries or actions. 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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This playbook does not constitute an offer to sell or the solicitation of an offer to buy securities of either GSE. Nothing in this playbook constitutes advice on the merits of buying or selling a particular investment. Any investment decision as to any purchase of securities referred to herein must be made solely based on information contained in the respective GSE’s applicable offering documents, and no reliance may be placed on the completeness or accuracy of the information contained in this playbook. You should not deal in securities unless you understand their nature and the extent of your exposure to risk. You should be satisfied that they are suitable for you considering your circumstances and financial position. If you are in any doubt you should consult an appropriately qualified financial advisor.

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



1. Overview

1.1 Introduction

❖ Playbook purpose and scope

To assist stakeholders in preparing for the transition from COFI to a replacement index, the GSEs are jointly publishing this COFI Transition Playbook, targeted to readers who need information about the following COFI-indexed products:

- 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 upcoming transition from COFI. This document serves as a tool to help plan and adapt business policies, procedures, and processes to prepare for discontinuing the use 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 Federal Home Loan Bank of San Francisco (“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

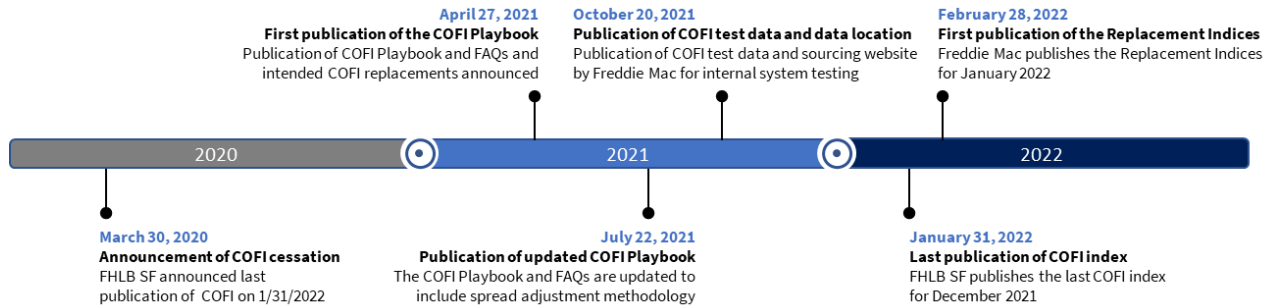
1.2 COFI transition timelines

The FHLB SF will cease 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 will publish replacement indices for SF and MF ARMs, Freddie Mac PCs, Fannie Mae MBS and Freddie Mac CMOs³ monthly, starting with the January 2022 indices on February 28, 2022. This change will affect legacy transactions only. Fannie Mae and Freddie Mac no longer purchase COFI-indexed ARMs, nor issue COFI-indexed CMOs.

Figure 1-1: COFI Transition Timeline

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

³ The replacement index for Fannie Mae COFI-indexed CMOs will be based on the fallback language in the governing prospectuses.



1.3 Actions market participants should consider

The GSEs encourage all market participants to conduct an operational assessment and start their operational builds as early as possible.

❖ 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. The GSEs encourage all stakeholders to identify potential 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 will be impacted by FHLB SF's decision to cease publication of COFI after January 31, 2022.

On April 27, 2021, the GSEs announced that the Enterprise 11th District COFI Replacement Index ("Ent 11th COFI Repl") will be the replacement index for their COFI-indexed ARMs once COFI is no longer available. The Enterprise 11th District COFI Replacement Index, which is comprised of the Federal Cost of Funds Index ("Federal COFI") plus a spread adjustment, gradually transitions to the 5-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 continue to believe the Enterprise 11th District COFI Replacement Index 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 will immediately and invariably be equal to the 5-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 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.⁴

Freddie Mac intends to publish the Enterprise 11th District COFI Replacement Index and the Enterprise 11th District COFI Institutional Replacement Index (collectively, the "Replacement Indices")⁵ containing the respective spread adjustments on its website starting February 28, 2022. On October 20, 2021, Freddie Mac published COFI test data on its [website](#) to allow market participants time to test internal systems prior to the February launch of the publication of the Replacement Indices.

The above plan will be effectuated barring any unforeseen circumstances and the remainder of this playbook is drafted assuming no such circumstances arise.

2.2 Spread Adjustment Methodology for the Enterprise 11th District COFI Replacement Index

The spread adjustment for SF ARMs will be 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 will be applied under this spread adjustment methodology for Single-Family loans indexed to COFI. This methodology is consistent with the ARRC announcement on

⁴ [ARRC spread adjustment methodology](#)

⁵ 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.



spread adjustment methodology published in June 2020. Further ARRC announcements, as well as any relevant legislative or regulatory developments, will be reviewed and considered as well. The steps for calculating the spread adjustment are noted below. For a specific example of how the spread adjustment and Enterprise 11th District COFI Replacement Index will be 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” is calculated in early February 2022 (the “spread calculation date”, t₁) as the spot difference between Federal COFI and COFI (each as published in January 2022):

$$\text{Initial spot spread}_{t_1} = \text{Federal COFI}_{t_1} - \text{COFI}_{t_1}$$

2. Calculate the monthly linear adjustment to monthly spread adjustment

The monthly linear adjustment to the spread adjustment is one-twelfth⁶ of the difference between the 5-year median spread and the initial spot spread.

$$\text{Monthly linear adjustment} = \frac{1}{12} * (\text{5-year median spread} - \text{Initial spot spread}_{t_1})$$

3. Calculate the replacement index at initial publication

On the initial publication date after the spread calculation date_{t₁} (t₂) the Enterprise 11th District COFI Replacement Index will be calculated by subtracting the initial spot spread and the monthly linear adjustment from Federal COFI.

$$\text{Ent 11th COFI Repl}_{t_2} = \text{Federal COFI}_{t_2} - \text{Initial spot spread}_{t_1} - \text{Monthly linear adjustment}$$

4. Continue spread adjustments in successive months

During the 1-year transition period, the spread adjustment values for each month are linearly interpolated to reach the 5-year median spread between Federal COFI and COFI by the end of the 1-year transition period. The following illustrates each subsequent spread adjustment over the 1-year transition period:

- Spread adjustment calculation one month after the initial publication date_{t₂} (t₃):

$$\text{Ent 11th COFI Repl}_{t_3} = \text{Federal COFI}_{t_3} - \text{Initial spot spread}_{t_1} - (2 * \text{Monthly linear adjustment})$$

- Spread adjustment calculation two months after the initial publication date_{t₂} (t₄):

$$\text{Ent 11th COFI Repl}_{t_4} = \text{Federal COFI}_{t_4} - \text{Initial spot spread}_{t_1} - (3 * \text{Monthly linear adjustment})$$

- Spread adjustment calculation eleven months after the initial publication date_{t₂} (t₁₃):

$$\text{Ent 11th COFI Repl}_{t_{13}} = \text{Federal COFI}_{t_{13}} - \text{Initial spot spread}_{t_1} - (12 * \text{Monthly linear adjustment})$$

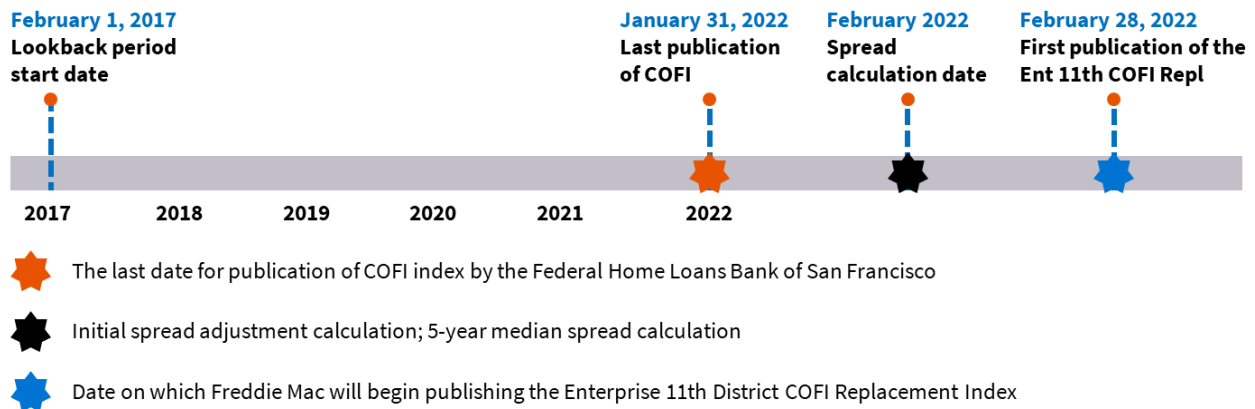
- After the 1-year transition period, the spread adjustment value will equal the 5-year median spread:

$$\text{Ent 11th COFI Repl}_{t_{14 \text{ onward}}} = \text{Federal COFI}_{t_{14 \text{ onward}}} - \text{5-year median spread}$$

⁶ We are using a 30/360 calculation for the Monthly linear adjustment because COFI and Federal COFI are calculated and published monthly



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 will be 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. Further ARRC announcements, as well as any relevant legislative or regulatory developments, will be reviewed and considered as well. The steps for calculating the spread adjustment are noted below. For a specific example of how the spread adjustment and Enterprise 11th District COFI Institutional Replacement Index will be calculated, 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 5-year historical median difference between Federal COFI and COFI with the five-year lookback period ending on the calculation date. The spread adjustment will remain constant and there will be no transition period.

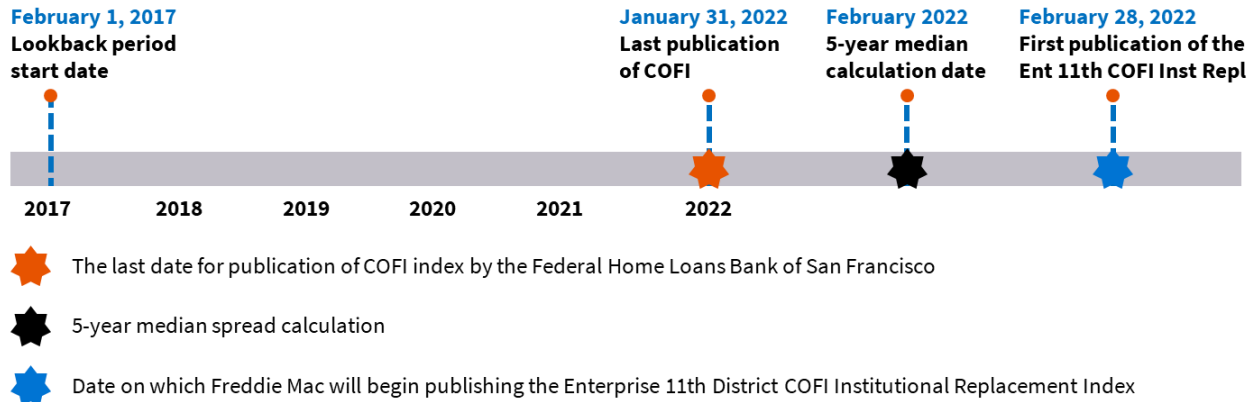
$$\text{Spread Adjustment} = 5\text{-year median spread}$$

2. Calculate the replacement index

Subtract the fixed spread adjustment from Federal COFI to arrive at the Enterprise 11th District COFI Institutional Replacement Index.

$$\text{Ent 11th COFI Inst Repl} = \text{Federal COFI} - \text{Spread Adjustment}$$

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



2.4 Scenarios for COFI-indexed ARMs transition

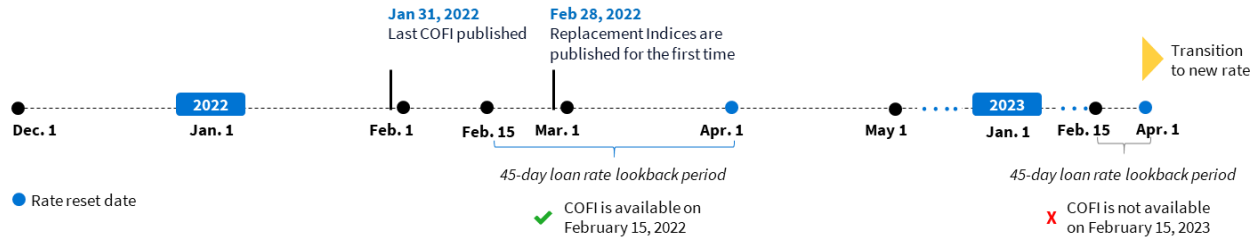
The transition date of each legacy COFI-indexed ARM will depend on the characteristics of the ARM, such as the next interest rate reset date and loan interest rate lookback period. If the date calculated by applying the loan interest rate lookback period occurs on or after February 28, 2022, COFI-indexed SF ARMs will transition to the Enterprise 11th District COFI Replacement Index and COFI-indexed MF ARMs will transition to the Enterprise 11th District COFI Institutional Replacement Index.

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 will be used on the subsequent annual interest rate reset date on April 1, 2023 and each reset date thereafter to calculate interest and related payments.

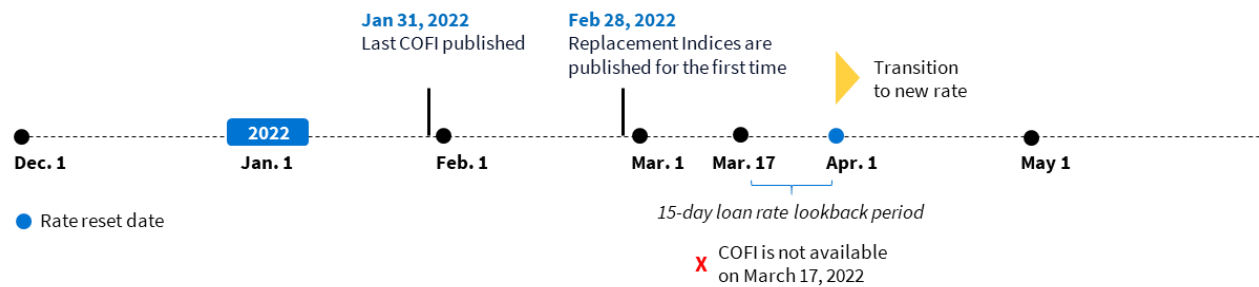
Figure 2-3: Scenario A



❖ **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-Amortizing⁷ 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:

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

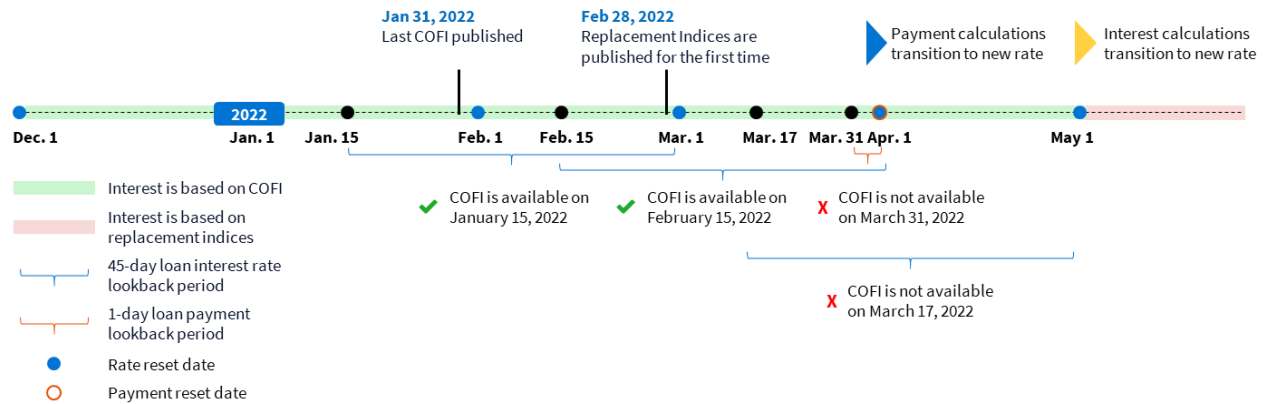
- Since COFI is still available forty-five days prior to the ARM’s interest rate reset dates of March

⁷ The GSEs no longer offer the negative-amortizing ARM product. However, there may be legacy negative-amortizing COFI-indexed ARMs that remain outstanding at the time of the transition.

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 will be 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 will be 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

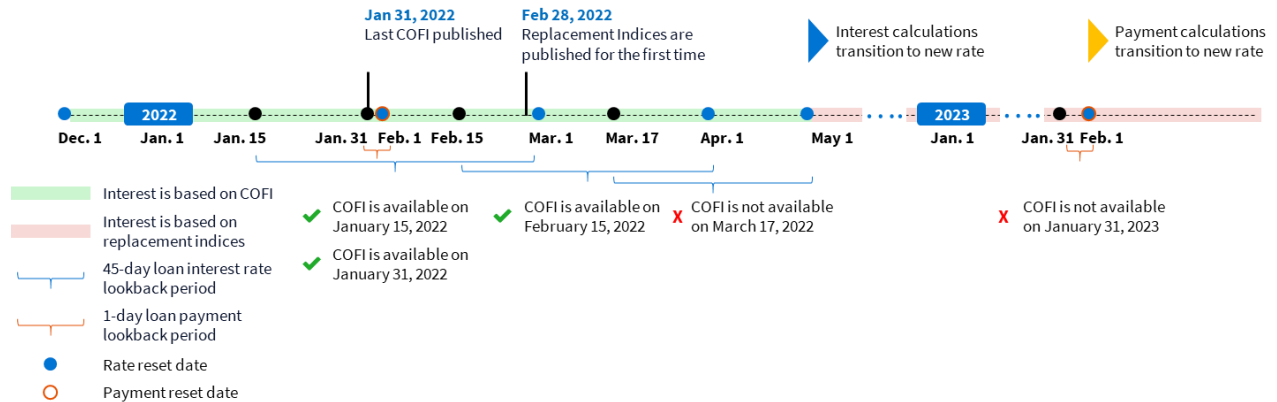
- Loan D is a 10-year seasoned negative-amortizing ARM loan indexed to COFI, with the following characteristics:

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 will be 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 will remain 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 will be used to calculate the new payments.

Figure 2-6: Scenario D



2.5 Servicing of SF and MF ARMs

SF and MF ARMs indexed to COFI will transition to the respective Replacement Indices, requiring borrower communications and updated payment calculations.

❖ Key concepts

Servicers will need to incorporate the Replacement Indices into calculations and reconciliations for borrower payments. The calculations will 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

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



Focus areas	Actions to consider
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 ▪ Engage in testing with Freddie Mac once Freddie Mac provides access to the Replacement Indices for testing ▪ 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 features**

The COFI transition will impact COFI-indexed ARMs pooled into MBS/PC. Unless terminated at or prior to the time of the COFI transition⁸, those outstanding MBS/PC will also transition to the Replacement Indices.

For the COFI transition, Fannie Mae will create one new index code and reuse sub-types and Freddie Mac will reuse the existing index code for SF PCs. Freddie Mac MF no longer has MF PCs outstanding. Descriptions for index codes and Fannie Mae sub-types will be updated to reflect the transition to the Replacement Indices.

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

⁸ See [1.2 COFI transition timelines](#)



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❖ **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](#)



3. Collateralized Mortgage Obligations

3.1 Introduction

COFI-indexed CMOs will be 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.⁹

❖ 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 the Enterprise 11th District COFI Institutional Replacement Index as the replacement index for CMOs once COFI is no longer available. The Enterprise 11th District COFI Institutional Replacement Index, which is comprised of Federal COFI plus a spread adjustment, transitions immediately to the 5-year historical median spread between COFI and Federal COFI. Freddie Mac continues to believe the Enterprise 11th District COFI Institutional Replacement Index is a comparable replacement rate for and successor to COFI for Freddie Mac CMOs.

The above plan will be effectuated barring any unforeseen circumstances.

Freddie Mac intends to publish the Enterprise 11th District COFI Institutional Replacement Index on its website starting February 28, 2022.

On October 20, 2021, Freddie Mac published COFI test data on its [website](#) to allow market participants time to test internal systems prior to the February launch of the publication of the Replacement Indices in February. For a specific example of how the spread adjustment and Enterprise 11th District COFI Institutional Replacement Index will be 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

⁹ Since the anticipated index cessation date for one-month 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, 2022. In that event, we currently anticipate providing more information on the replacement index for LIBOR no later than December 31, 2022.



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

❖ **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 the Enterprise 11th District COFI Replacement Index 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 will be used.

❖ Key Dates

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

❖ Inputs

- $COFI_{t1}$: 0.455%
- Federal $COFI_{t1}$: 0.923%

❖ Calculations

1. Initial spot spread_{t1} = Federal $COFI_{t1}$ – $COFI_{t1}$
 - Initial spot spread = 0.923% - 0.455% = 0.468%
2. 5-year median spread_{t1} = median spot spread between Federal COFI and COFI during the last five years (February 1, 2017 through January 31, 2022)
 - 5-year median spread_{t1} = 0.719%
3. Monthly linear adjustment = $\frac{1}{12}$ * (5-year median spread_{t1} – Initial spot spread_{t1})
 - Monthly linear adjustment = $\frac{1}{12}$ * (0.719% - 0.468%) = 0.021%
4. Spread adjustment_{t1} = Initial spot spread_{t1} + 1 * (Monthly linear adjustment)
 - Spread adjustment_{t1} = 0.468% + 1 * (0.021%) = 0.489%
 - Spread adjustment_{t2} = 0.468% + 2 * (0.021%) = 0.510%
5. Ent 11th COFI Repl_{t1} = Federal $COFI_{t1}$ – Spread adjustment_{t1}
 - Ent 11th COFI Repl_{t1} = 0.923% - 0.489% = 0.434%

For illustration purposes, we used the assumed monthly rates of Federal COFI (Column A) and the values above to show the calculation of the Enterprise 11th District COFI Replacement Index 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	Spread Adjustment	Ent 11th COFI Repl
Feb 2022	0.923%	0.489%	0.434%
Mar 2022	0.914%	0.510%	0.404%
Apr 2022	0.892%	0.531%	0.361%
May 2022	0.827%	0.552%	0.275%
Jun 2022	0.912%	0.573%	0.339%



Publication Month	Federal COFI	Spread Adjustment	Ent 11th COFI Repl
Jul 2022	0.951%	0.594%	0.358%
Aug 2022	0.985%	0.614%	0.371%
Sep 2022	0.889%	0.635%	0.254%
Oct 2022	0.918%	0.656%	0.262%
Nov 2022	0.925%	0.677%	0.248%
Dec 2022	0.896%	0.698%	0.198%
Jan 2023	0.903%	0.719%	0.184%
Feb 2023	0.912%	0.719%	0.193%
Mar 2023	0.946%	0.719%	0.227%
Apr 2023	0.904%	0.719%	0.185%
May 2023	0.892%	0.719%	0.173%
Jun 2023	0.898%	0.719%	0.179%

4.2 Appendix B: Spread Adjustment Scenarios

The following provides an illustration of how the spread adjustment values may evolve depending on the calculation of the initial spread adjustment and 5-year median spread. Two scenarios may occur when calculating the spread adjustment: 1) initial spread adjustment is greater than the 5-year median spread (Figure 4-2) 2) initial spread adjustment is less than the 5-year median spread (Figure 4-3). In the current rate environment, Scenario 2 is more probable to occur. However, for comprehensiveness, we highlight in figures below the change of spread adjustment values under both the scenarios.

Figure 4-2: Initial spread adjustment is greater than the 5-year median spread

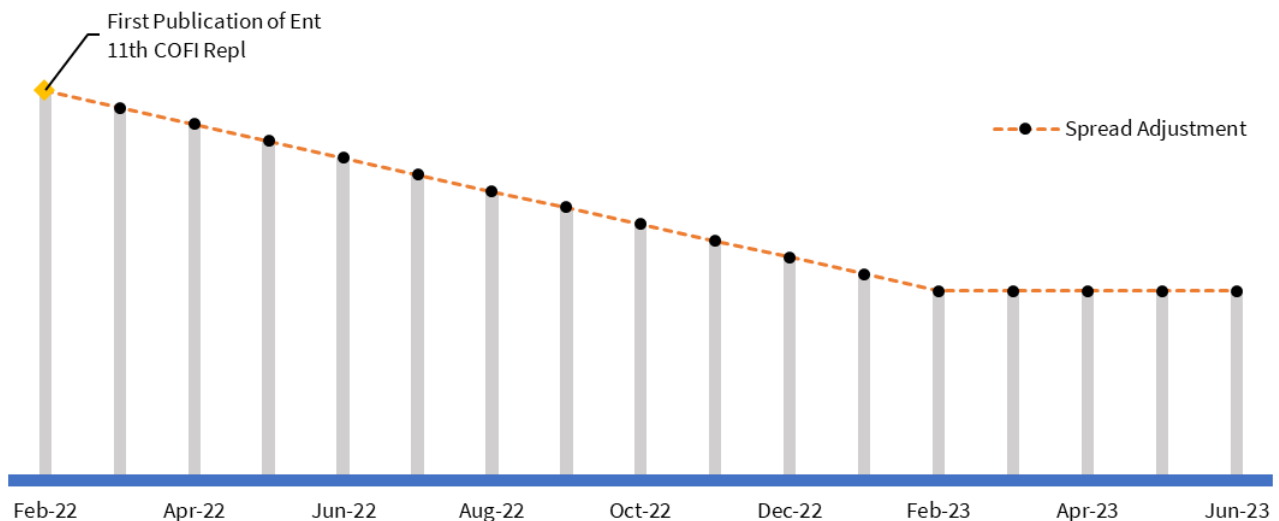
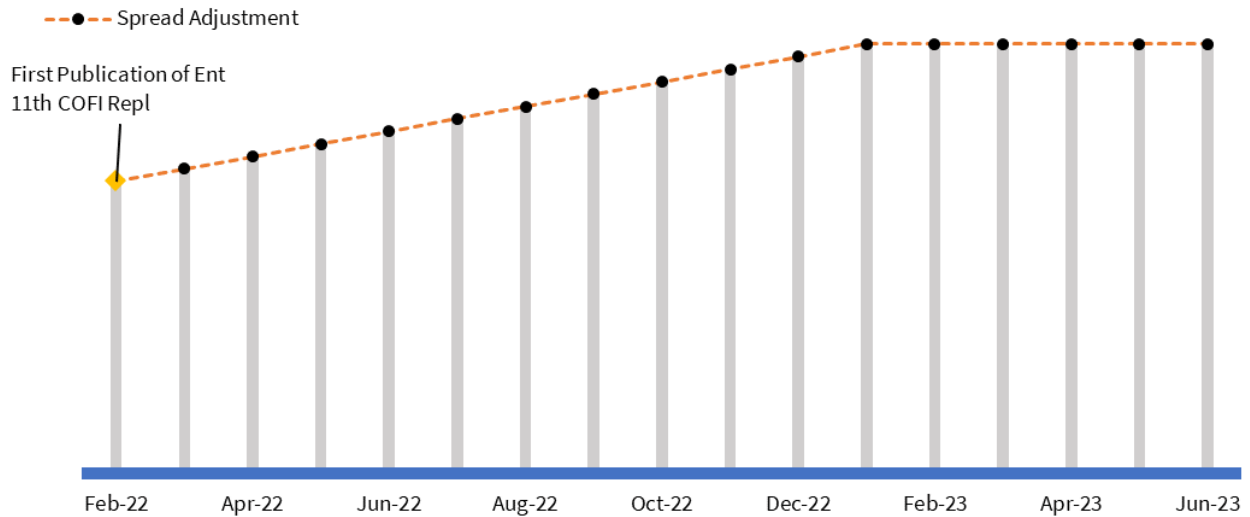




Figure 4-3: Initial spread adjustment is lower than the 5-year median spread



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

Below is an example of the Enterprise 11th District COFI Institutional Replacement Index 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 will be used.

❖ Key Dates

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

❖ Inputs

- $COFI_{t1}$: 0.455%
- Federal $COFI_{t1}$: 0.923%

❖ Calculations

1. 5-year median spread_{t1} = median spot spread between Federal COFI and COFI during the last five years (February 1, 2017 through January 31, 2022)
 - 5-year median spread_{t1} = 0.719%
2. Spread adjustment = 5-year median spread_{t1}
 - Spread adjustment = 0.719%
3. Ent 11th COFI Repl_{t1} = Federal $COFI_{t1}$ – Spread adjustment
 - Ent 11th COFI Repl_{t1} = 0.923% - 0.719% = 0.204%

For illustration purposes, we used the assumed monthly rates of Federal COFI (Column A) and the values above to show the calculation of the Enterprise 11th District COFI Institutional Replacement Index 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	0.923%	0.719%	0.204%
Mar 2022	0.914%	0.719%	0.195%
Apr 2022	0.892%	0.719%	0.173%
May 2022	0.827%	0.719%	0.108%
Jun 2022	0.912%	0.719%	0.193%
Jul 2022	0.951%	0.719%	0.232%
Aug 2022	0.985%	0.719%	0.266%
Sep 2022	0.889%	0.719%	0.170%
Oct 2022	0.918%	0.719%	0.199%
Nov 2022	0.925%	0.719%	0.206%
Dec 2022	0.896%	0.719%	0.177%
Jan 2023	0.903%	0.719%	0.184%
Feb 2023	0.912%	0.719%	0.193%
Mar 2023	0.946%	0.719%	0.227%
Apr 2023	0.904%	0.719%	0.185%
May 2023	0.892%	0.719%	0.173%
Jun 2023	0.898%	0.719%	0.179%