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Last updated June 6, 2019.

Background Information

1. Why is LIBOR Going Away?

Many regulators have been more vocal regarding the shortcomings of the London Interbank Offered Rate (LIBOR), ultimately leading to the impending end of LIBOR.

- LIBOR is based on unsecured interbank transactions, of which the daily trading volume has declined significantly. Even as trading volume has fallen to $500 million or less per day, nearly $200 trillion of derivatives, loans, securities, and mortgages still reference LIBOR as of year-end 2016.
- Further, LIBOR panel banks do not always have current transactions on which to base their rate submissions.
- Consequently, there is a high reliance on “expert judgment” to estimate where institutions may have been able to borrow, creating the possibility of considerable distortion in the LIBOR index levels relative to where actual borrowing levels may take place.

For these reasons, LIBOR lacks robustness and sustainability, which poses risks to the safety and soundness of individual financial institutions and financial stability.

Sources:

- https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2018/ARRC-Second-report
- https://www.newyorkfed.org/arrc/sofr-transition

2. Who are the Regulators Responsible for the LIBOR Transition?

In 2013, the International Organization of Securities Commissions (IOSCO) published a set of principles for financial benchmark rates. Additionally, the Financial Stability Oversight Council (FSOC) recommended U.S. regulators cooperate with foreign regulators to identify and lead a transition to alternative interest rate benchmarks.

In 2014, the Federal Reserve tasked the Alternative Reference Rate Committee (ARRC) with developing a rate to replace LIBOR. The ARRC is a group of market participants organized by the Federal Reserve and the New York Fed to help ensure a successful transition from LIBOR to a more robust reference rate. It is comprised of various private-sector entities, such as banks, asset managers, insurers, and industry trade organizations, and official sector ex-officio members, including banking and financial sector regulators. Further, the ARRC is supported by 10 working groups, each tasked with specific objectives to assist in the transition.

The ARRC was tasked with four main objectives:

- identify alternative reference rates and whether identified alternative rates are consistent with the IOSCO’s Principles for Financial Benchmarks

- Identify best practices for contract robustness to ensure contracts are resilient to the possible cessation or material alteration of existing or new benchmarks
- Develop an adoption plan to outline the necessary steps that the official sector and market participants could take to make the adoption more successful
- Create a timeline and an implementation plan with metrics of success.

In 2017, the Financial Conduct Authority (FCA), which regulates LIBOR, announced it would no longer guarantee LIBOR production beyond 2021. This led the ARRC to select the Secured Overnight Financing Rate (SOFR) as LIBOR's replacement, which kicked off the U.S. transition plan to the new benchmark rate of SOFR.

Sources:

- *https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2018/ARRC-Second-report*
- *https://www.newyorkfed.org/arrc/sofr-transition*

3. When is LIBOR Going to End?

In 2017, the Financial Conduct Authority's (FCA) CEO Andrew Bailey publicly discussed the efforts that the official sector has had to exert in order to persuade panel banks to continue to submit rate information to LIBOR in recent years. As a result, the FCA sought voluntary agreements with the panel banks to continue their submissions through the end of 2021. Beyond 2021, LIBOR may still be published for some time, but the production of LIBOR is not guaranteed.

Sources:

- *https://www.fca.org.uk/news/speeches/the-future-of-libor*
- *https://www.theice.com/iba/libor*

4. What is SOFR? Why was it chosen?

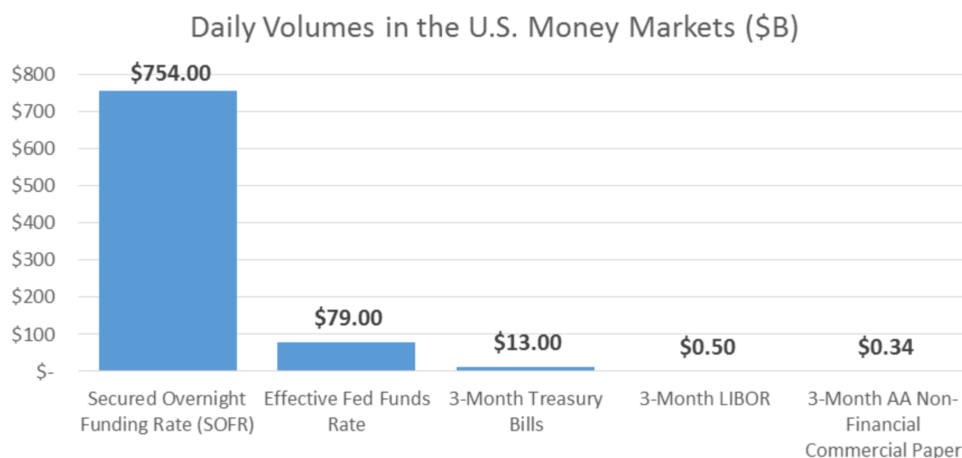
The ARRC selected the Secured Overnight Financing Rate (SOFR) as the recommended benchmark interest rate to be used in place of USD LIBOR. SOFR is an overnight, secured rate based on actual transactions in the repo market. It is considered to be risk free because its underlying transactions used to calculate the rate are secured by U.S. Treasury securities.

SOFR was chosen for various reasons, including:

- It is compliant with the IOSCO's Guiding Principles
- It is transaction-based in the repo market
- It relies on a more robust daily trading volume
- It is an overnight rate

The significant daily trading volume in repo, compared to other overnight rates, was a key reason for selection.

For information on how SOFR is calculated refer to this link.



Libor as of 2016; all else as of 2017year-end

Sources:

- *https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2018/ARRC-Second-report*
- *ARRC; Bloomberg*

5. What is the timing of the transition?

The ARRC has developed a paced transition plan, including specific steps and timelines to encourage the adoption of SOFR, which can be found here. The ARRC has also given an update on the transition progress in 2019 here.

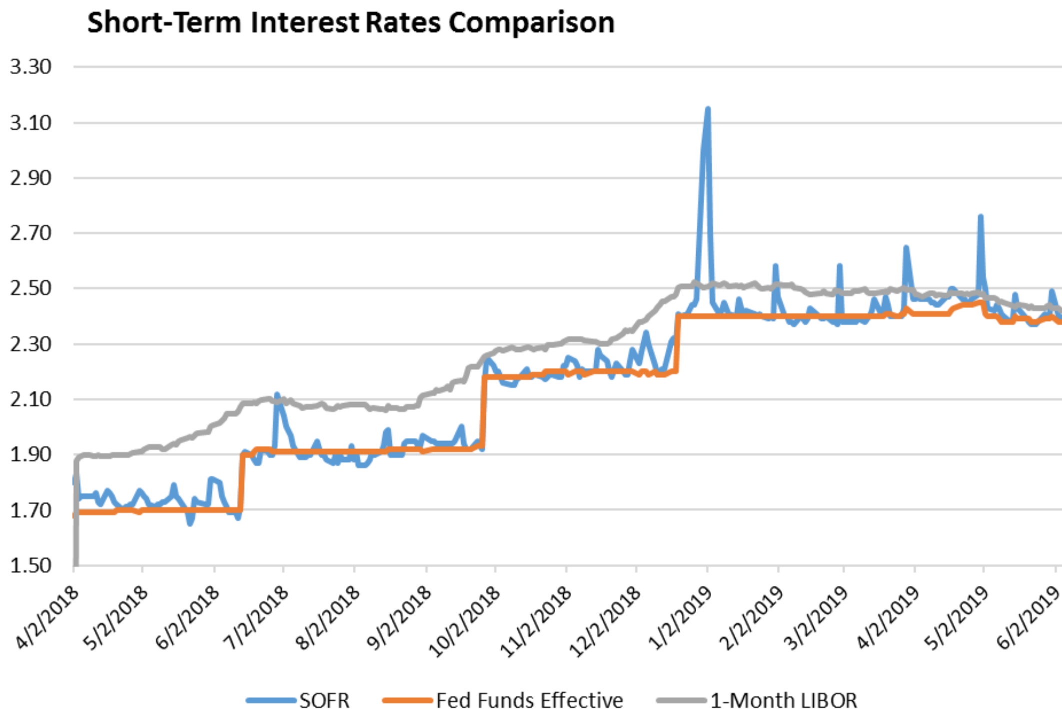
Since the Paced Transition Plan was adopted in 2017, the ARRC has completed the first four steps of its plan. The New York Fed began publishing SOFR, the Chicago Mercantile Exchange (CME) launched SOFR futures, the London Clearing House (LCH) began clearing SOFR swaps, GSEs including Fannie Mae and the FHLBank System issued SOFR-based floating-rate notes, and the CME began clearing SOFR swaps using PAI/discounting.

Remaining steps include ISDA offering amended definitions and protocol for derivative contracts, all new swap contracts using the new discounting method, and a forward-looking SOFR term reference rate being created.

SOFR Developments

6. How does SOFR compare to LIBOR and other rates?

Since its introduction in April 2018, SOFR has closely tracked the Fed Funds Effective Rate. However, on month- and quarter-ends, SOFR has shown considerably more volatility than the EFFR.



As of 6/5/2019

Sources: Bloomberg; New York Fed

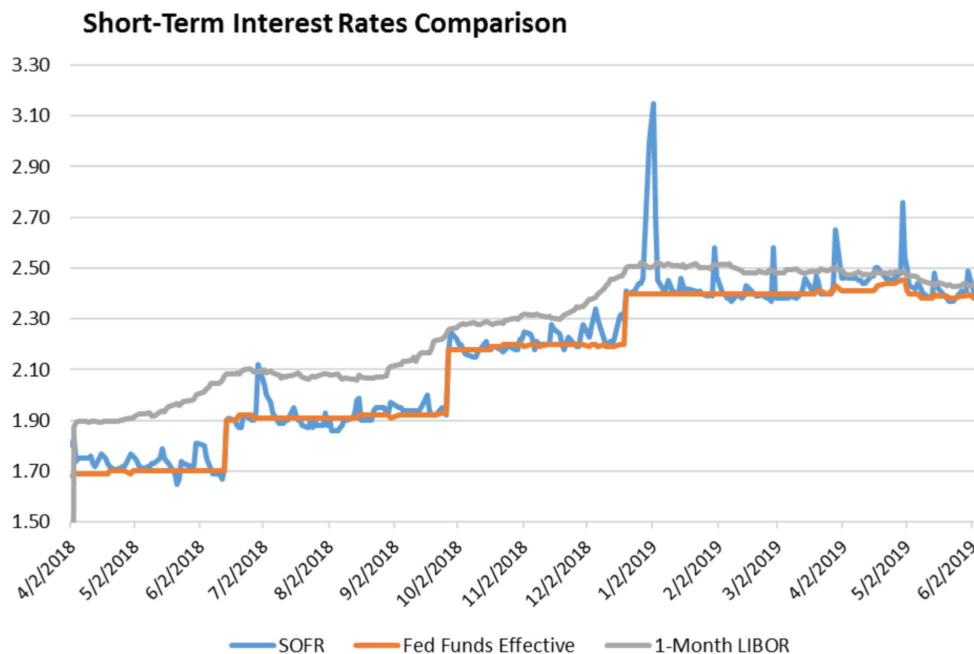
7. Why has SOFR been so volatile?

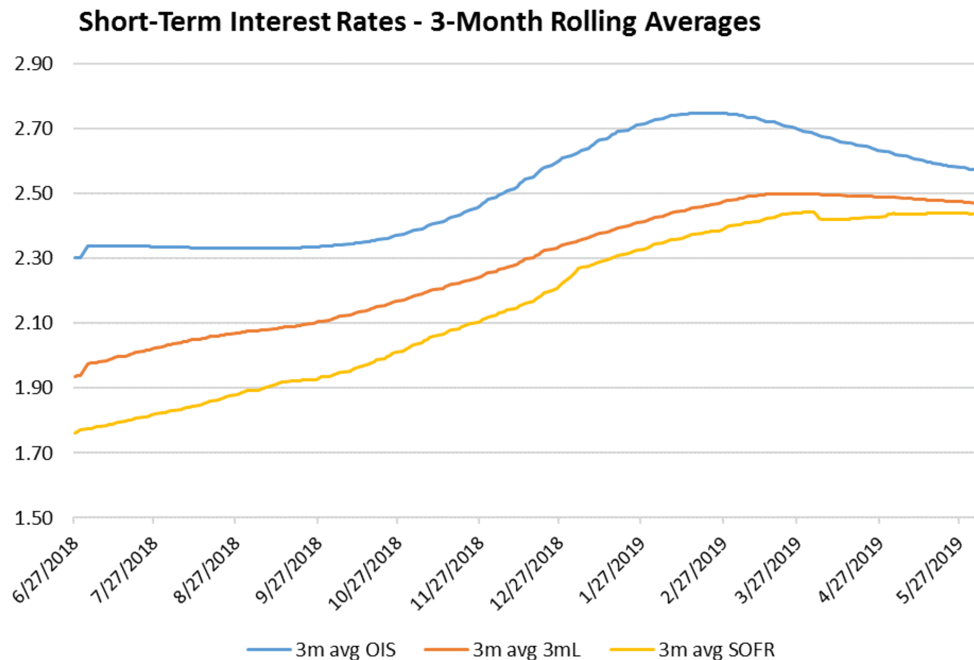
Due to fluctuations in demand on month- and quarter-ends in the repo market, SOFR has been volatile at certain periods. SOFR was very volatile at the end of 2018 and into 2019 when it increased to 2.46% on December 28, 2018 to 3.0% on December 31, 2018 and spiked at 3.15% on January 2, 2019. However, the volatility is generally smoothed out on a 3-month rolling basis with respect to LIBOR.

Changes in demand for the U.S. Treasury collateral leg of the repo transaction have been the main cause of the volatility, which has in turn impacted the rate on the cash leg of the repo transaction. At month and quarter ends, large banks have been adjusting their balance sheets to be in compliance with exposures related to Basel III leverage ratios. This has led to a reduction in

demand for U.S. Treasury securities at these times. Additionally, the U.S. Treasury has been increasingly funding with shorter-dated maturity securities as it has been increasing auctions of Treasury bills. As a result, demand for Treasury collateral decreased and demand for cash increased, causing repo rates, and thus, SOFR rates to jump.

Additionally, while U.S. banks are required to report their net exposures on a daily average basis, many non-U.S. banks report exposures on an end-of-quarter basis. In January 2019, the Basel Committee on Bank Supervision released a document to address reporting arbitrage tied to the leverage ratio. Under the proposed rules, which would take effect on January 1, 2022, banks would be required to publish the quarterly average of daily levels for balance sheet items related to the leverage ratio. Banks would also be required to explain any differences between quarterly averages and quarter-end values. These rules should help reduce any quarter-end patterns in repo volumes and will likely lead to a less volatile SOFR.





Graphs as of 6/5/2019

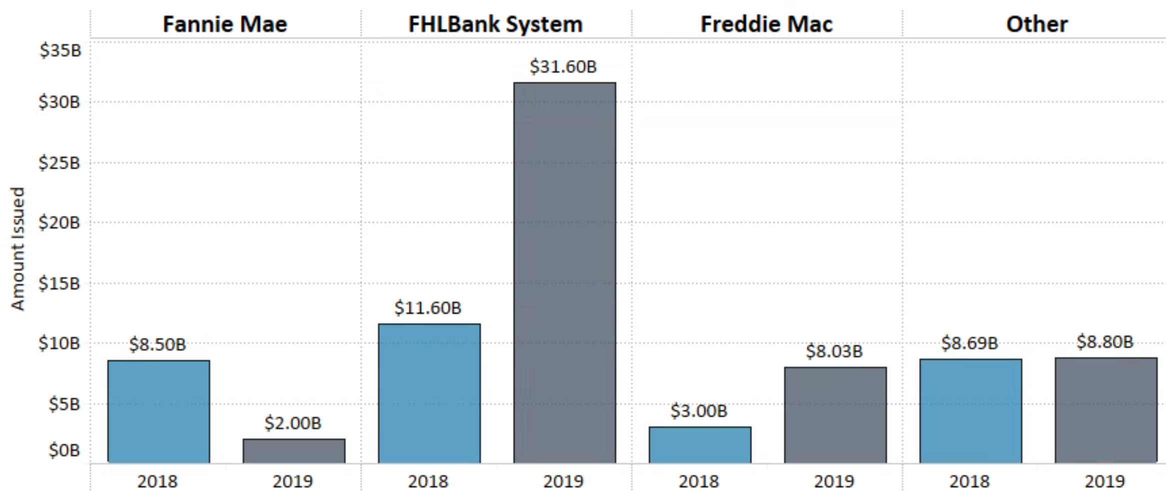
Sources:

- *https://www.federalreserve.gov/econres/feds/files/2019014pap.pdf*
- *Bloomberg; New York Fed*

8. What has SOFR bond issuance been like?

The FHLBank Chicago recognizes it is critical that a robust market for SOFR debt be developed in order for the transition from LIBOR to SOFR to be successful for financial markets and our members. The Federal Home Loan Bank System has been the lead issuer of SOFR-linked debt in an effort to develop and lead the market. The system has issued over $43B in SOFR floating-rate notes from November 13, 2018 through April 10, 2019.

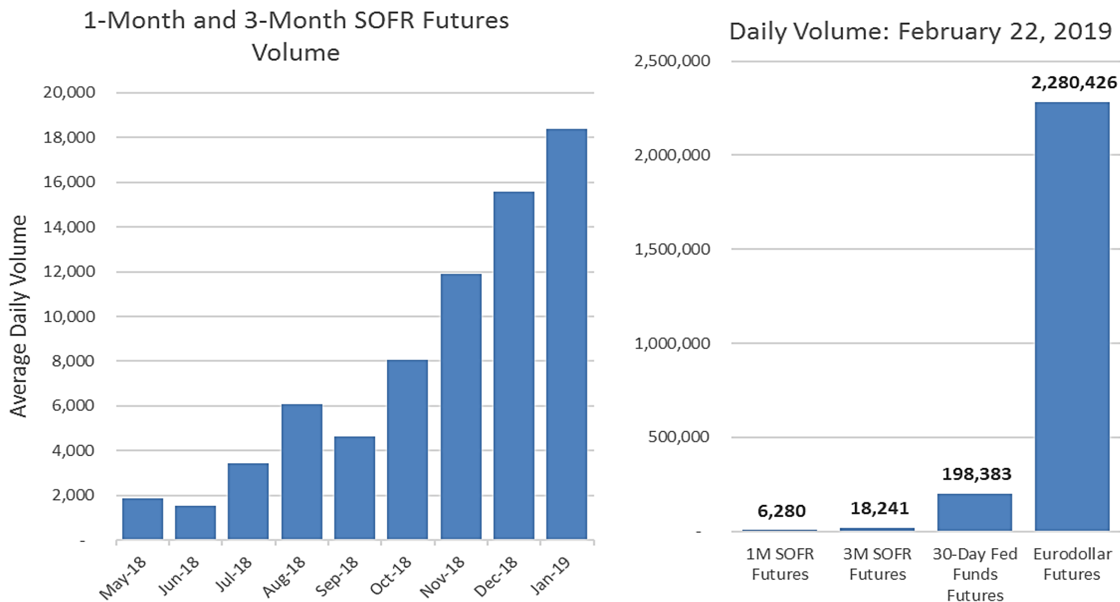
Other government-sponsored enterprises (GSE), such as Fannie Mae and Freddie Mac, have also been major issuers with money market funds as the primary buyers. Most issuance has been concentrated in the six month to two year term. Through price action and surveys, cash investors tend to prefer GSE issues over financials, in part because overnight SOFR lacks the credit component that is inherent within financial names.



Sources:
FHLBank Chicago; Bloomberg (November 13, 2018 through April 10, 2019)

9. What has developed in the SOFR futures market?

A SOFR futures market currently exists in two formats as of February 22, 2019 – 1-month futures and 3-month futures – and have been steadily growing since SOFR's introduction in May 2018. However, volume still remains minimal relative to other interest rate futures products (see below). The futures market is being used to build up a SOFR curve up to two years, after that the OIS curve is being used.



Source:
https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2018/ARRC-Second-report
Bloomberg; as of February 22, 2019

Fallback Language

10. What is "Fallback Language"?

Fallback language is a legal mechanism in contracts to provide a back-up plan if the underlying reference rate in the product is discontinued or unavailable. In other words, if LIBOR ceased to exist tomorrow, to what interest rate would your contract "fall back" to?

Source: https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/ARRC-faq.pdf

11. What are regulators doing in regards to fallback language?

For most contracts, historically used contractual language may not sufficiently address a permanent or indefinite discontinuation of LIBOR.

The International Swaps and Derivatives Association (ISDA) is leading the development of new fallback language for derivatives. The ARRC is leading similar efforts for fallback language for bilateral business loans, floating rate notes, securitizations, and syndicated business loans. Both ISDA and ARRC are primarily focused on defining triggers, or contingency events, and fallback rates to be used in place of LIBOR if one of the triggers is set off.

ISDA and ARRC have two overlapping triggers that would signal the conversion from LIBOR to a new reference rate, assuming a permanent cessation of LIBOR. The summarized triggers are below:

1. A public statement by the benchmark administrator announcing it will no longer provide the rate (permanently or indefinitely).
2. A public statement by the regulator or other authority stating that the administrator will no longer provide the rate (permanently or indefinitely).

Specific pre-cessation triggers have been defined by ARRC in its final consultations on each cash product. ISDA also released two consultations on benchmark fallbacks on May 16, 2019. One addresses the permanent cessation of LIBOR and the other relates to pre-cessation triggers. Two consultations were released on May 16, 2019 by ISDA addressing benchmark fallbacks and triggers. View the consultations here.

Source: https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2018/ARRC-FRN-Consultation.pdf

12. What is the progress on fallback language for cash products?

The ARRC has suggested that fallback language should be consistent across asset classes in order to reduce operational, legal, and basis risk. ARRC recommends that market participants include more robust fallback language in new and amended contracts going forward. Final consultations have been released for each cash product.

A summary of the ARRC's guiding principles for fallback language can be found here and the specific consultations on each asset class may be found here:

The ARRC's proposed provisions and language for fallbacks are tailored to each specific product but seek consistency in defining key terms, including:

- **"Trigger events** – events that start the transition from LIBOR to a new reference rate
- **A successor rate "waterfall"** – a provision specifying the priority of unadjusted rates that would replace LIBOR
- **A spread adjustment "waterfall"** – a provision specifying the priority of spread adjustments that would be applied to the successor rate because of differences between LIBOR and SOFR"

Bilateral Business Loans: Typical contract language for these loans may or may not address an end to LIBOR, depending on the contract. However, roughly 80% of currently outstanding business loans will mature by the end of 2021, and syndicated loans are amended frequently, which means most exposed contracts could be amended before the end of 2021 to include more robust fallback language. The ARRC is recommending three sets of fallback language for new bilateral business loans: hardwired approach, amendment approach, and hedged loan approach.

Floating Rate Notes: Similar to business loans, an estimated 84% of floating rate notes are due to mature before the end of 2021, which leaves opportunity for new and amended contracts to include more robust fallback language. The ARRC has proposed one specific approach for fallback language for these contracts. It involves defining the events that would start the transition from LIBOR, outlining a clear waterfall for determining which rate would replace LIBOR, and deciding how a spread adjustment to that rate would be calculated.

Securitizations: Contract language varies among these products, but the ARRC has proposed one approach to new fallback language. It proposes a hardwired approach regarding trigger events and fallback rates with spread adjustments. It also addresses the unique challenges presented by the securitization market's asset and liability components.

Syndicated Loans: The ARRC has recommended two options for fallback language of new syndicated loans: hardwired approach and amendment approach. The fallback provisions use clear and observable triggers and successor rates with spread adjustments, subject to some flexibility to fall back to an amendment.

Sources:

- *https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2018/ARRC-Dec-7-2018-announcement.pdf*
- *https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2018/ARRC-Second-report*

13. What happens when a trigger goes off?

If a triggering event were to occur, the ARRC's proposed fallback provisions would follow a waterfall structure in order to replace the benchmark rate in cash products. The Replacement Benchmark Waterfall is used in the case of a trigger event to replace the benchmark rate. The waterfall differs for each cash product, but they share some common steps as summarized below.

- **Term SOFR** – If a forward-looking term SOFR is published at the time of transition, it would be the replacement rate.
- **Compounded SOFR** – If SOFR only exists as an overnight rate, the replacement rate would be the overnight SOFR compounded over the contract term.
- **Replacement rate recommended by the ARRC** – If SOFR is unavailable in both formats above, the rate would be whichever is recommended by the ARRC at that time.
- **Replacement rate in then-current ISDA definitions** – If the ARRC is unavailable, the rate would then be what is recommended in the ISDA definitions.
- **Replacement rate determined by designee for product such as issuer, a designated transaction representative, or other in an amendment** – If none of the above rates are available, a new rate would be determined by whichever body is designated to do so in the contract.

Note the waterfall only applies to cash products and is defined by ARRC. There may be differences between the above and the final consultations for each cash product.

Sources:

- https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2018/ARRC-FRN-Consultation.pdf
- https://www.newyorkfed.org/arrc/fallbacks-contract-language
- https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2018/ARRC-Sept-24-2018-announcement.pdf
- https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2019/ARRC_Securitizations_Consultation_Webinar.pdf

14. What is the progress on fallback language for derivatives?

Consultations released by ISDA in December 2018 and May 2019 have preliminarily selected the "compounded in arrears" approach to calculate term adjustments to the relevant risk-free rate and the "historical mean/median" approach for the spread calculation. Final results are expected to be released this year.

Alternatives: Term Adjustments	Alternatives: Spread Methodologies
Spot Overnight Rate – RFR as of one or two business days prior to the beginning of the LIBOR leg	**Forward Approach** – market forward spread between the relevant LIBOR and RFR in the relevant tenor at the time of trigger
Convexity-adjusted Overnight Rate – similar to spot overnight rate but modified for daily compounding over the LIBOR term	**Historical Mean/Median Approach** – historical mean or median spread between the relevant LIBOR and RFR calculated over a significant, static lookback period
Compounded Setting in Arrears – RFR observed over the relevant LIBOR tenor and compounded daily during that period	**Spot-Spread Approach** – spot spread between relevant LIBOR and RFR on the day preceding the trigger event
Compounded Setting in Advance – RFR observed over relevant LIBOR tenor and compounded daily over previous LIBOR period	

In December 2018, ISDA published results highlighting that the majority of market respondents preferred “compounded setting in arrears” for the replacement benchmark rate and the “historical mean/median approach” for the spread adjustment of the replacement rate.

In April 2019, ISDA released a letter detailing its consultation plans for 2019. ISDA plans to publish consultations on a term and spread adjustment for USD LIBOR, to select a vendor to publish those adjustments, and to publish a protocol to include amendments to the 2006 ISDA Definitions. ISDA also plans to launch a protocol to update existing derivative contracts with the amended 2006 ISDA Definitions.

In May 2019, ISDA released two consultations on benchmark fallbacks. One addresses the permanent cessation of LIBOR and the other relates to pre-cessation triggers.

Sources:

- *https://www.isda.org/a/SZYEE/ISDA-Publishes-Consultation-on-Benchmark-Fallbacks.pdf*
- *https://www.isda.org/2018/07/12/interbank-offered-rate-ibor-fallbacks-for-2006-isda-definitions*
- *https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2018/ARRC-Second-report*
- *https://www.isda.org/2019/05/16/isda-publishes-two-consultations-on-benchmark-fallbacks/*

FHLBank Chicago and Member Developments

15. What changes related to LIBOR and SOFR has the FHLBank Chicago made?

The FHLBank Chicago now offers a floating-rate advance linked to SOFR. The Adjustable Advance (A300) rate is equal to SOFR plus a fixed spread. You can find current Adjustable Advance rates on the FHLBank Chicago rate sheet under the "Floating Rate Advances" section.

The FHLBank Chicago has updated fallback language in the Member Product Guide, which is incorporated into all new Advance Applications to reflect the Bank's sole and reasonable discretion to select a comparable replacement rate once a determination has been made.

16. Should I be doing anything to prepare for the transition?

ARRC suggests market participants include more robust fallback language in LIBOR-based contracts in order to protect against a potential cessation of LIBOR. As ARRC has issued its final consultations for fallback language of cash products, it is recommended members review these consultations.

It is also recommended that members review their institutions' LIBOR exposure including fallback language of legacy contracts as well as any system or process limitations that may require changes to effectively move to a new reference rate. Further, members should review ARRC and ISDA recommendations for new fallback language when considering making new contracts going forward.

Finally, members should assess all areas of the organization that could be affected by the transition and determine if changes need to be made.

17. What will happen to my FHLBank Chicago LIBOR-indexed advances?

Currently, the FHLBank Chicago is still offering LIBOR-indexed advances across all available terms. Fallback language has been updated in the current Member Products Guide, which is incorporated into all new Advance Applications and Agreements to reflect the FHLBank Chicago's sole discretion to select a comparable replacement floating rate index for LIBOR-linked advances in the event LIBOR is determined to no longer be a reliable market indicator.

The FHLBank Chicago will continue to monitor member usage and the need of LIBOR-indexed advances and make changes accordingly. Further, sales directors will directly engage with members with outstanding LIBOR-indexed advances to assist in the transition.

18. Will FHLBank Chicago Offer a SOFR-Linked Advance?

The FHLBank Chicago currently offers a floating-rate advance linked to SOFR. The Adjustable Advance (A300) rate is equal to SOFR plus a fixed spread. You can find current Adjustable Advance rates on the FHLBank Chicago rate sheet under the "Floating Rate Advances" section.

The advance will initially be offered on a limited term basis and is anticipated to be offered up to 10 years. The rate is reset daily on calendar days. For any reset date that is not a U.S. Government Securities business day, the interest rate will be the same as the preceding U.S. Government Securities Business day. The Federal Reserve Bank of New York publishes SOFR on its website on or about 8:00 a.m. Eastern Time on the following business day (backward-looking). Funds are available same-day and there is no minimum.

For more details regarding an Adjustable Advance, see the A300 Adjustable Advance term sheet in the Member Products Guide or contact your sales director at membership@fhlbc.com.

19. Who can I contact to learn more about SOFR?

Contact your sales director at membership@fhlbc.com to learn more.

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Because the transition from LIBOR to SOFR continues to evolve, information here may become stale at any given time.

Last updated June 6, 2019.