Understanding SOFR Calculations

What you need to know about transitioning from LIBOR to SOFR

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For existing LIBOR contracts, state and local governments should review the applicable contract documents to ensure the document provisions contain sufficient language to enable the contracts to perform as intended after LIBOR ceases to be published or reference a new benchmark, such as SOFR.

The Government Finance Officers Association has distributed a suite of materials about LIBOR and replacement rates including:

- **LIBOR Resource Center for Governmental Issuers**
- **On the Hunt for LIBOR: Where to find your exposure and what to do about it**
- **LIBOR and the ISDA Protocol Top Ten (for swaps)**
- **GFOA Advisory on LIBOR Transition**
- **LIBOR References in Bank Loans or Privately Placed Debt Contracts**

As a continuation of the LIBOR – Public Sector Industry Workgroup's efforts, this document will discuss the pressing details governments need to consider about their bank loans, privately placed debt, and assorted other financings before the cessation of LIBOR. **Talk to your bank/lender/municipal advisor about fallback rate options in your contracts as well as opportunities to use a non-LIBOR index in new contracts (like SOFR).**

Background on LIBOR and SOFR

LIBOR is a global benchmark interest rate calculated daily. With $200 trillion in U.S. dollar exposures linked to it, LIBOR is the most widely used benchmark and has been called "the world's most important number." Financial products based on LIBOR include loans, corporate bonds, interest rate swaps, mortgages, student loans, and deposits. They also include municipal bonds and loans.

While ubiquitous, LIBOR became less suitable as a benchmark because it is meant to represent the cost of short-term unsecured borrowing by banks, and banks have substantially reduced their use of this type of borrowing. The LIBOR panel banks typically must submit rates based on their judgment rather than actual transactions, and many are reluctant to continue doing so if fewer borrowings on the basis of LIBOR are conducted. Regulators and market participants are concerned that this "most important number" is no longer robust and in 2013, the Financial Stability Board directed national regulators to evaluate alternatives to LIBOR.

In 2014, the Federal Reserve formed the Alternative Reference Rates Committee (the "ARRC"), a group including private-sector market participants, to select a rate to replace USD LIBOR and guide the transition. After much analysis of many potential alternatives, the ARRC announced in June 2017 that it had selected a new rate, the Secured Overnight Financing Rate ("SOFR"), as the recommended replacement for U.S. Dollar ("USD") LIBOR.

The Federal Reserve began publishing SOFR in April 2018. The ARRC selected SOFR for the following reasons:

- SOFR is fully based on actual transactions and does not rely on judgment.
- SOFR references multiple segments of the US Treasury repurchase agreement market, the largest rates market in the world.
- SOFR's underlying market is resilient and robust.
- SOFR is a true "risk-free" rate suitable as a reflection of interest rates overall.
- SOFR is produced by the public sector using a transparent methodology.
- SOFR correlates well with other overnight money market rates and with the cost of borrowing for non-financial corporations.

To guide the transition, the ARRC was reconstituted in April 2018 with broad representation from federal government entities, banks, asset managers, insurers, consumer groups, and industry trade associations. It is now tasked with (i) developing options for implementing SOFR across loans, bonds, and securities referencing USD LIBOR ("cash products"); (ii) transitioning derivatives transactions to SOFR; (iii) minimizing potential disruptions associated with either voluntary transition to SOFR or to an end of LIBOR; and (iv) communicating the rationale behind the change to SOFR and the status of implementation.

WHEN is the transition away from LIBOR going to happen?

You should be working on that now!

- 1-week and 2-month USD LIBOR will cease to be published on December 31, 2021.
- The remaining USD LIBORs (overnight, 1-month, 3-month, 6-month and 12-month) will cease to be published on June 30, 2023.

HOW is it going to happen?

For existing contracts:

1. Amend financial contracts to include an alternative reference rate now or amend to include robust fallback language in legacy contracts to account for the cessation of all tenors of LIBOR (consider how important the timing is for LIBOR and amend your fallback language accordingly).
2. Rely on contractual fallbacks and ensure they are robust. *If they are not robust, you will need to amend your contract to ensure that it will work for you.*

For new contracts:

Select an alternative rate. There are options that you and your financing team should evaluate but you should try to avoid using LIBOR.

In all cases, issuers should consult with their municipal advisors and bond counsel as soon as possible to discuss the best strategy for your situation.

How Do I Transition to SOFR?

Taking an inventory of existing products and processes that use LIBOR should be a first step for any municipal issuer. Because many older contracts referencing LIBOR do not (adequately) plan for the risk that LIBOR will be discontinued, such an event could have serious consequences for a wide range of market participants and investors. Where able, issuers should ensure LIBOR contracts are amended to include robust fallback language to provide for an alternative rate upon the LIBOR discontinuation.

For publicly issued outstanding securities, amending contracts may require consent from many unrelated bondholders. Where it is unlikely an issuer can amend an outstanding contract because of the difficulty in getting consent, there are legislative approaches under discussion or already in existence that may provide relief. For example, New York State passed LIBOR legislation in April 2021 to address contracts under NYS law and there is currently a federal legislative approach being discussed to provide fallback language where it is not otherwise provided.

Issuers should consider the differences between LIBOR and SOFR when they review options for legacy contracts. First, SOFR is based on transactions in the overnight U.S. Treasury collateralized repurchase market compared to LIBOR which is derived from banks' submissions of estimated borrowing costs which are uncollateralized. These submissions are judgement based and therefore may have less volatility than SOFR. On average, there are over $2 trillion in repurchase agreements that are traded each day which can create more rate volatility, but this volatility is reduced by the averaging of SOFR rates. SOFR can come in two forms: (i) backward looking based on an average history of rates or (ii) forward looking term rate based on various markets. LIBOR is available in many different maturities, from the overnight rate (also called the spot rate) out to maturities of one year. On July 29, 2021 the ARRC formally recommended a forward looking SOFR Term Rate for use in markets where transitioning from LIBOR has been difficult. This move towards a SOFR Term Rate may be used in loans and should also help create more liquidity in the USD derivatives market.

Developing strategies through which market participants can transition remaining legacy LIBOR-based products to SOFR, and launching new contracts referencing SOFR or other rates should be two priorities for municipal issuers now.

Legacy Contracts

The long duration of existing municipal bonds and loans implies that a considerable volume will not have matured or rolled over by LIBOR's cessation beginning at the end of December 2021 and continuing through complete cessation in June 2023.

As issuers consider amending legacy contracts, the calculation of SOFR will be of primary interest to both the issuer as well as the counterparty. There are several key concepts incorporated in the calculation and timing of SOFR that you should consider when amending or entering into new contracts referencing SOFR:

SIMPLE vs. COMPOUND AVERAGE: Issuers and lenders will face a technical choice between using a simple or a compound average of SOFR as they seek to use SOFR in cash products.

In the short-term, using simple interest conventions may be easier since many systems are already established to accommodate it. However, compounded interest would more accurately reflect the time value of money, which becomes a more important consideration as interest rates rise, and it can allow for more accurate hedging and better market functioning. The standard provisions for derivatives under ISDA definitions use compound calculations, however they can be adjusted to use a simple average if applicable. Talk to your advisor about what's best for you.

SOFR IN ADVANCE vs. SOFR IN ARREARS: Users need to determine the period of time over which the daily SOFRs are observed and averaged. An in-advance structure would reference an average of SOFR observed before the current interest period begins, applied for a future period. For example, for a June 1 – June 30 interest period, SOFR in advance would use the published May average, providing the issuer with the known rate on day 1 of the accrual period, similar to LIBOR conventions. An in-arrears structure would reference an average of SOFR over the current interest period. For example, for a June 1 – June 30 interest period, SOFR in arrears would use the June average, providing the issuer with the rate at the end of the accrual period.

SOFR IN ADVANCE vs. SOFR IN ARREARS:

SOFR in Advance: Know your rate in advance, on day 1 of the interest accrual period

SOFR in Arrears: Know your rate at the end of the period using a daily rate or SOFR compounded in arrears

OPERATIONAL ISSUES TO CONSIDER: SOFR in advance is operationally easier to implement, but SOFR in arrears will reflect movements in rates contemporaneously. An average of SOFR in arrears will reflect what actually happens to interest rates over the period; however it provides very little notice before payment is due. There are a number of conventions designed to allow for a longer notice of payment within the in arrears framework. These include payment delays, lookbacks, and lockouts.

Who will make the alternative rate decision? In general, the choice will be made by financial institutions in consultation with issuers. The options offered by the financial institution may differ between financial institutions and between business lines, but the process of amending the contract will be a discussion and negotiation between the issuer and the financial institution with the issuer consulting with their advisor and bond counsel. Consider the following points in discussing rate changes:

1. **Choose simple or compound interest.** How are longer-maturity rates calculated?
2. **Decide on whether SOFR is calculated in arrears or in advance.** Are rates based on an average of SOFR observed before the current interest period begins, or on an average of SOFR over the current interest period?
3. **Set a notice for how payment is due.** For the in arrears arrangement, how long do interested parties have to muster the contract payment if rates are volatile at the end of the reference period? There may be a need for a longer notice of payment.

What is a "lookback period"?

You may want to request a lookback period where you have a couple days to look back and determine the payment before you have to pay it.

New Contracts: Issuers should also start thinking about and planning for new reference rates and terms other than LIBOR. As soon as issuers are comfortable with new language they should incorporate it in new contracts.

Education and Resources: All market participants should prepare themselves for a world with SOFR, and one without LIBOR. The ARRC maintains a **website** accessible to all where it will be releasing guidance and steps on transitioning as well as updates on market progress in this transition.

Other Considerations

There are numerous other items that governments should discuss with their municipal advisor and/or bond counsel about their particular contracts. These include:

Tax and Accounting Issues: Tax and accounting issues that may need to be addressed, include whether a move from LIBOR to an alternative index would cause tax consequences to the bond, such as a reissuance. Please consult with your tax/bond counsel to discuss specific examples and whether there could be other federal tax consequences.

Other Possible Reference Rates: While SOFR has been discussed as the most likely index to replace LIBOR, organizations should review with their financing team other reference rates that may be appropriate for contracts and financings. Other applicable reference rates may include, without limitation, the American Interbank Offered Rate (Ameribor), the Bloomberg Short Term Bank Yield Index (BSBY) and the bank prime rate.

The entire LIBOR transition is a fluid matter within the financial sector, including for state and local governments. Additional information and industry standards will be forthcoming and enhanced. Governments should keep abreast of these developments through gfoa alerts, GFOA's website and discussions with their own financing team.