

Frequently Asked Questions

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Please note: These Frequently Asked Questions were prepared by the ARRC for use by market participants and are current as of the version date noted above. However, this document will evolve over time as new developments take place and new questions are raised. If you have a question to which you are seeking an answer, general ARRC inquiries can be directed to the ARRC Secretariat at ARRC@ny.frb.org. The ARRC will endeavor to incorporate those topics below. Please also visit the ARRC's [website](#) or [sign up](#) to receive alerts from the ARRC. Thank you.

1. What is the Alternative Reference Rates Committee (ARRC)?

The ARRC, which first met in December of 2014, is comprised of a group of market participants initially convened by the Board of Governors of the Federal Reserve System (Federal Reserve Board) and the New York Fed in cooperation with the U.S. Department of the Treasury (Treasury), the U.S. Commodity Futures Trading Commission (CFTC), and the U.S. Office of Financial Research (OFR) to identify an alternative reference rate for use primarily in derivatives contracts. The ARRC was charged with finding a rate that was more firmly based on transactions from a robust underlying market and that would comply with certain standards, including the IOSCO Principles for Financial Benchmarks. The ARRC was also tasked with preparation of a plan to facilitate the acceptance and use of the selected alternative reference rate on a voluntary basis. Finally, the ARRC was tasked with considering best practices related to robust contract design to ensure that contracts are resilient to the possible cessation or material alteration of existing or new benchmarks.

Given the focus on alternative reference rates for derivatives at the time of its inception, the ARRC initially consisted of representatives from fifteen large global dealers in U.S. dollar interest rate derivatives. As its work progressed, the ARRC invited several central counterparties (CCPs) and other organizations to join. Following the release of its [Interim Report and Consultation](#) in May 2016, the ARRC formed an Advisory Group of key end users across a variety of market sectors in order to ensure that its recommendations reflected a wide consensus of market participants.

The ARRC has also held three public roundtables, in June 2016, November 2017, and July 2018 to inform market participants and seek their views. The ARRC's Interim Report in May 2016 also [included a request for comments](#) in order to consult widely and closely with a wide range of market participants with exposure to LIBOR as it sought to finalize a choice of alternative rate and transition strategies. The ARRC's progress in meeting its initial objectives is summarized in its [Second Report, issued in March of 2018](#).

Andrew Bailey's [speech in July 2017](#) called into question the availability of LIBOR post-2021 and pushed a wider segment of market participants to focus on their long-standing exposure to LIBOR. After publication of its [Second Report](#), the ARRC was reconstituted in 2018 with an expanded membership to facilitate the much broader interest in mitigating risks related to LIBOR.

2. Why does the market need a new benchmark interest rate?

The ICE LIBOR is the most widely used interest rate benchmark in the world. LIBOR is calculated and published daily across five currencies and seven maturities by ICE Benchmark Administration and based on submissions by panel banks. This benchmark is meant to reflect the cost at which large, globally-active banks can borrow on an unsecured basis in “wholesale” markets, which include borrowing from other banks as well as using commercial paper or uninsured certificates of deposit. U.S. dollar (USD) LIBOR is used as a reference rate for more than \$200 trillion in notional amount of financial contracts in the cash and derivatives markets.

LIBOR is increasingly based on the expert judgment of panel banks due to the declining amount of unsecured, wholesale borrowings by banks since the financial crisis. For this reason, LIBOR is increasingly less of a robust, transactions-based market interest rate as envisioned by international standards for benchmarks as set forth in the International Organization of Securities Commissions’ (IOSCO) Final Report: [Principles for Financial Benchmarks](#) and the Financial Stability Board’s (FSB) Report: [Reforming Major Interest Rate Benchmarks](#), published in July 2013 and 2014 respectively. As noted by the Financial Stability Oversight Council, the scarcity of underlying transactions also makes LIBOR potentially unsustainable, as many banks have grown uncomfortable in providing submissions based on expert judgment and may eventually choose to stop submitting altogether. Two banks have already stopped submitting to USD LIBOR since 2016. The relatively small number of transactions underpinning LIBOR has been driven by changing market structure, regulatory capital, and liquidity requirements as well as changes in bank risk appetite for short-term funding, and is unlikely to change.

Accelerating concerns about LIBOR’s viability, on July 27, 2017, Andrew Bailey (the Chief Executive of the United Kingdom’s Financial Conduct Authority, or FCA, the regulator of LIBOR) publicly stated [in a speech](#) about the future of LIBOR that the FCA had to exert significant effort in convincing banks to remain on the LIBOR panels and that it would not persuade or compel LIBOR panel banks to make LIBOR submissions beyond the end of 2021. As a consequence, the future of LIBOR beyond 2021 is uncertain. Bailey has advised that firms should treat LIBOR’s end as something that will occur and not as a remote “black swan” event.

Because USD LIBOR is used in such a large volume and broad range of financial products and contracts, the uncertainty surrounding LIBOR’s sustainability poses a potential threat to the safety and soundness of individual financial institutions and to the financial system. Without advance preparation, a sudden cessation of such a heavily-used reference rate would cause considerable disruptions to, and uncertainties around, the large gross flows of USD LIBOR-related payments and receipts among many firms. It would also impair the normal functioning of a variety of markets, including business and consumer lending.

Hence, financial markets need a durable and more robust alternative interest rate benchmark.

3. Which organizations are members of the ARRC?

The ARRC's structure facilitates collaboration between the market and the official sector. ARRC members currently include both banks and a number of non-banks. The full list of members [are here](#) on the ARRC's website.

4. What is the recommended alternative for USD LIBOR and what other rates were considered?

On June 22, 2017, the ARRC [identified](#) the Secured Overnight Financing Rate (SOFR), as its recommended alternative to USD LIBOR. The ARRC considered a comprehensive list of potential alternatives, including other term unsecured rates, overnight unsecured rates such as the Effective Federal Funds Rate (EFFR) and the Overnight Bank Funding Rate (OBFR), other secured repo rates, Treasury bill and bond rates, and overnight index swap rates linked to EFFR. After extensive discussion, the ARRC preliminarily narrowed this list to two rates that it considered to be the strongest potential alternatives: OBFR and some form of overnight Treasury repo rate. The ARRC discussed the merits of and sought feedback on both rates in its 2016 [Interim Report and Consultation](#) and in [a public roundtable](#). The ARRC made its final choice of SOFR after incorporating feedback from the consultation and from the members of its Advisory Group.

5. What is SOFR and why is it more robust than LIBOR?

SOFR is a broad measure of the cost of borrowing cash overnight collateralized by U.S. Treasury securities. SOFR is [published by the Federal Reserve Bank of New York](#) and is determined based on transaction data composed of: (i) tri-party repurchase agreements (repo), (ii) General Collateral Finance (GCF) repo, and (iii) bilateral Treasury repo transactions cleared through Fixed Income Clearing Corporation (FICC). In terms of the transactions underpinning SOFR, it has the widest coverage of any Treasury repo rate available. The transaction volumes underlying SOFR are far larger than the transactions in any other U.S. money market and dwarf the volumes underlying LIBOR.

SOFR is a good representation of general funding conditions in the overnight Treasury repo market. As such, it will reflect an economic cost of lending and borrowing relevant to the wide array of market participants active in the market, including not only broker-dealers, but also money market funds, asset managers, insurance companies, securities lenders, and pension funds.

The ARRC believes that SOFR is the most appropriate reference rate for wide-spread and long-term adoption as market participants seek to transition from LIBOR because, among other reasons, it:

- is IOSCO compliant;
- is fully transaction-based;
- encompasses a robust underlying repo market with more than \$700 billion in daily transactions;
- is an overnight nearly risk-free reference rate that correlates closely with other money market rates; and
- covers multiple repo market segments allowing for future market evolution.

6. What is the timeline for the transition from LIBOR to SOFR? Will there be a “term SOFR”?

To facilitate a smooth and orderly transition from USD LIBOR to SOFR, the ARRC published a plan (the Paced Transition Plan), which outlines the key milestones until the end of 2021.

The first steps in the Paced Transition Plan, targeted for 2018 and early 2019, are focused on creating a baseline level of liquidity for derivatives contracts referencing SOFR. End users cannot be expected to choose or transition cash products to a benchmark that does not have at least a threshold level of liquidity in derivatives markets required for hedging of interest rate risk.

During the course of the year in 2019, increased trading activity in SOFR-linked futures and OIS markets should foster accumulation of price histories and in turn help market participants develop an understanding of the term-structure dynamics of longer-dated exposures in SOFR. As liquidity develops, as the next step, CCPs are expected to provide their members with a choice of clearing instruments using discounting curves based on SOFR and paying SOFR as interest on collateral posted by the first quarter of 2020. As liquidity in longer-term SOFR derivatives develops further, CCPs would then move to exclusively using SOFR discount curves and paying SOFR as interest on collateral for all new trades.

Once these initial steps of the Paced Transition Plan are successfully accomplished, which is expected in 2021, and liquid derivative markets referencing SOFR have developed, the final step in the Paced Transition Plan calls the creation of a forward-looking term rate based on SOFR-linked derivative markets. Availability of a forward-looking term structure for SOFR may be necessary to transition some cash products from USD LIBOR to SOFR to ensure certainty of cash flows for retail and corporate end users. With the availability of SOFR term rates and liquid derivative markets, it is expected it will be possible to use SOFR for cash products before the end of 2021.

Subsequent to the publication of SOFR on April 3, 2018, there have been a number of notable steps made by the industry in line with the Paced Transition Plan, certain elements of which are now ahead of schedule. These include CME Group successfully launching 1-month and 3-month SOFR futures on May 7, 2018, clearing of SOFR OIS and basis swaps at LCH beginning July 18, 2018, and the announcement that CME Group will clear SOFR swaps in the third quarter of 2018.

7. Who administers and produces SOFR and how is the rate production process reviewed?

The New York Fed is the administrator and producer of SOFR. The New York Fed publishes SOFR on a daily basis on its website at approximately 8:00 a.m. eastern time.

An internal New York Fed Oversight Committee periodically reviews the rate production process. The Oversight Committee consists of members from across the New York Fed organizational structure who are not involved in the daily production of SOFR. It is chaired by the New York Fed's Chief Risk Officer and includes senior staff from various control areas of the New York Fed, in addition to a representative from the OFR.

The New York Fed has endeavored to adopt policies and procedures consistent with best practices for financial benchmarks, including the IOSCO Principles for Financial Benchmarks. In June 2018, the New York Fed [updated](#) its [IOSCO Statement of Compliance](#) to cover SOFR, Broad General Collateral Rate, and the Tri-Party General Collateral Rate.

More information is available at: <https://www.newyorkfed.org/markets/treasury-repo-reference-rates-information>

To view the rate, visit: <https://apps.newyorkfed.org/markets/autorates/sofr>

8. Is SOFR meant to co-exist with LIBOR, or is it meant to replace LIBOR?

The ARRC's focus is to encourage voluntary adoption of SOFR, rather than to mandate a transition away from USD LIBOR. SOFR, therefore, will co-exist with USD LIBOR as long as USD LIBOR is published, offering market participants an alternative reference rate for new transactions.

Although the adoption of SOFR is voluntary, the heightened risk of discontinuation of LIBOR after the end of 2021 makes it essential that market participants consider moving to alternative rates such as SOFR and that they have appropriate fallback language in existing contracts referencing LIBOR. In its 2018 [Second Report](#), the ARRC estimated that only 82% of contracts referencing USD LIBOR as of December 31, 2016 will have matured by 2021. The ARRC is currently working to promote the use of SOFR on a voluntary basis as well as to recommend more robust fallback language in new contracts referencing LIBOR.

9. Who will be impacted by this transition from LIBOR to SOFR?

The total exposure to USD LIBOR, as of the end of 2016, is close to \$200 trillion, roughly equivalent to 10 times U.S. Gross Domestic Product. Although the notional size of the derivatives markets accounts for 95 percent of the outstanding gross notional value of all financial products referencing USD LIBOR, it is also referenced in several trillion dollars of corporate loans, floating-rate mortgages, floating rate notes, and securitized products. Due to the broad use of USD LIBOR as a reference rate, all financial market participants including retail customers, corporations, issuers, investors, asset managers, service providers of financial products, and large financial institutions are impacted by the risks associated with USD LIBOR.

In addition, LIBOR is extensively used across a range of business processes (for example, accounting, valuation, and financial modeling) across many industries. Hence, beyond financial products and legal contracts, businesses that have exposure to USD LIBOR embedded in their business processes are also likely to be impacted.

10. What sort of financial products are expected to reference SOFR?

SOFR is a fully transaction-based, overnight near risk-free reference rate and is a good representation of general funding conditions in the U.S. money markets. As such, SOFR is suitable to be used across a broad range of financial products, including but not limited to, derivatives (listed, cleared, and bilateral-OTC), and many variable rate cash products that have historically referenced LIBOR. The ARRC's Paced Transition Plan also contemplates the development of term SOFR rates to better accommodate certain cash products (e.g. corporate loans) that may require a forward-looking term rate. In addition, SOFR is also suitable as a reference rate to be used as a general proxy for interest rates in a range of business processes (accounting, valuation, and financial modeling).

The heightened risk that LIBOR will stop after 2021 makes it essential that market participants consider moving to alternative rates. SOFR should be considered for use in both new products and as a fallback for USD LIBOR in existing contracts that reference USD LIBOR.

11. What is “fallback language”?

In this context, “fallback language” refers to the legal provisions in a contract that apply if the underlying reference rate in the product (e.g. LIBOR) is discontinued or unavailable. The FSB's Official Sector Steering Group (OSSG) has recommended that market participants both understand their contractual fallback arrangements and ensure that those arrangements are robust enough to prevent potentially serious market disruptions in a LIBOR cessation event. The ARRC supported this recommendation in its Second Report, and in July 2018, the ARRC [released](#) its [guiding principles](#) for the development of fallback language in new financial contracts for cash products. Because LIBOR is a heavily-used reference rate, its permanent cessation without viable fallback language in contracts would cause considerable disruption to financial markets and uncertainties around the large gross flows of USD LIBOR-related payments and receipts between many financial participants. It would also impair the normal functioning of a variety of markets, including business and consumer lending.

12. What should market participants do to strengthen fallback language in derivatives?

Fallback provisions for LIBOR in derivatives contracts currently trigger only if a temporary cessation of LIBOR occurs (e.g., a computer glitch) and may not be workable and could lead to an unintended economic outcome if LIBOR ceases to be published. Accordingly, in July 2016, the OSSG requested that the derivatives industry trade group (the International Swaps and Derivatives Association, or ISDA) lead a cross-currency initiative to improve derivatives contract robustness to address risks of discontinuance of widely-used interest rate benchmarks, including LIBOR. As such, ISDA is in the process of updating the definitions of USD LIBOR and other key benchmarks tied to interbank funding markets used in derivatives contracts to include new fallbacks (SOFR with certain contemplated adjustments for USD LIBOR) in the event of a permanent discontinuation of the relevant benchmark. ISDA also plans to publish a multilateral protocol to assist market participants in including

the amended definitions (i.e., the definitions with fallbacks for benchmark cessations) in legacy swap contracts. In contrast to non-derivatives (cash products), because of the standardization of derivative contracts and the leadership of ISDA described above, updating fallbacks in LIBOR-based derivatives contracts should be relatively straightforward. ISDA has not yet finalized its fallback language primarily because of plans to apply both a credit spread adjustment and a term fixing adjustment at the time of the fallback to SOFR. In order to select the best methods for calculating such adjustments, ISDA will be inviting market participants to weigh in on a number of proposed methodologies during market-wide consultations, the first of which is open until October 12, 2018.

13. What should market participants do to strengthen fallbacks in cash products?

As discussed above, in order to protect against a potential cessation of LIBOR, it is recommended that market participants include more robust fallback language in LIBOR-based non-derivatives contracts, including loans, bonds, securitizations, consumer mortgages, etc. (collectively, “cash products”). The challenge of preparing consistent and durable new fallback language for various cash products has drawn the attention of the ARRC, which has formed a number of cash product-focused working groups leveraging experts in its expanded membership to review alternative fallback language. Although the timing and method of implementing new fallbacks in cash products will vary with the product type, the ARRC plans to consult on standardized fallback language available for voluntary adoption for a variety of cash products by the end of 2018.

14. How do we know SOFR is here to stay?

After more than two years of research and consultation, the ARRC identified SOFR as the most suitable alternative reference rate for USD LIBOR. In recommending SOFR as the alternative reference rate, the ARRC considered a variety of factors, including the depth of the underlying market and its likely robustness over time; the rate’s usefulness to market participants; and whether the rate’s construction, governance, and accounting would be consistent with the IOSCO Principles for Financial Benchmarks. The ARRC also considered the input of a wide range of market participants, including feedback from its Advisory Group, in making its recommendations. The overnight U.S. Treasury repo market that SOFR is based on is the largest rates market at a given maturity in the world, and SOFR encompasses the widest coverage of the market available, which will allow it to evolve with the market. The ARRC concluded that SOFR is superior to USD LIBOR, and other alternative reference rates considered by the ARRC. The coordination with a broad range of financial market participants, and commitments from the private-sector (including the financial services industry) will ensure the availability, adoption, and transition to SOFR in a smooth and timely manner.

15. How does SOFR compare to other “IBOR” alternatives selected in other countries?

The FSB identified its concerns on the vulnerability of LIBOR across currencies. As a result, the need to transition away from LIBOR to alternative reference rates is not limited to

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USD LIBOR. Most major currency jurisdictions have identified a need for reforming major interest rate benchmarks. Public/private-sector working groups similar to the ARRC have been formed in the other currencies for which LIBOR is quoted.

The alternative reference rates selected by the major currency areas are outlined in the table below. Most have selected some form of overnight rate:

Jurisdiction	Working Group	Alternative Rate	Secured vs. Unsecured	Overnight vs. Term	Rate Administration
U.S.	Alternative Reference Rates Committee	Secured Overnight Financing Rate (SOFR)	Secured	Overnight	Federal Reserve Bank of New York
U.K.	Working Group on Sterling Risk-Free Reference Rates	Reformed Sterling Overnight Index Average (SONIA)	Unsecured	Overnight	Bank of England
Switzerland	The National Working Group on Swiss Franc Reference Rates	Swiss Average Rate Overnight (SARON)	Secured	Overnight	SIX Swiss Exchange
Japan	Study Group on Risk-Free Reference Rates	Tokyo Overnight Average Rate (TONAR)	Unsecured	Overnight	Bank of Japan
Euro area	Working Group on Risk-Free Reference Rates for the Euro Area	Euro Short-Term Rate (ESTER)	Unsecured	Overnight	ECB

16. How volatile is SOFR as a benchmark rate?

Contracts referencing SOFR are usually based on an average of daily interest rates over a given period of time. These averages of SOFR are quite smooth and can be easily referenced in financial contracts, as demonstrated by the growing use of SOFR in futures, swaps, and floating-rate notes. SOFR futures and OIS, and the many SOFR floating rate notes that have been issued all use either a

compound or linear average of SOFR over a fixed period of time as the floating rate paid under the terms of the contract, not a single day's realization of SOFR.

Overnight rates in the repo market are inherently somewhat volatile, and the dynamics that generate much of the volatility are well-known and somewhat predictable. For example, settlements of Treasury securities typically cause fluctuations in rates throughout the month, and in particular on coupon settlement dates at the middle and end of months, while balance sheet management by some repo market participants contributes to temporary volatility around quarter-end dates.

While these features of the Treasury repo market can contribute to some day-to-day volatility of SOFR, this volatility has little impact on the averages of SOFR that are used in financial contracts. These averages of SOFR are less volatile than SOFR itself.

The ARRC's Second Report emphasized this point, showing that a 3-month average of overnight Treasury repo rates has historically been less volatile than 3-month U.S. dollar LIBOR over a wide range of market conditions (see Figure 5 of the [ARRC's Second Report](#)).

The charts below make clear that this remains the case, even given the volatility witnessed in Treasury repo rates at the end of 2018. The first chart shows overnight SOFR along with 1-, 3- and 6-month averages of SOFR. The volatility in overnight SOFR is clearly visible, but it also can be seen to have had a negligible impact on the averages of SOFR. The second chart demonstrates that the point made in the ARRC's Second Report remains true: a 3-month average of SOFR is less volatile than 3-month LIBOR.



